pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028801**
Facility Type	**Municipal**	APS ID	**814242**
Major / Minor	**Major**	Authorization ID	**1287667**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Moon Township Municipal Authority**	Facility Name	**Leonard L. Nary WWTP at Montour Run**
Applicant Address	1700 Beaver Grade Road, Suite 200	Facility Address	1935 Hassem Road
	Moon Township, PA 15108-3109		Moon Township, PA 15108
Applicant Contact	Deborah Walker	Facility Contact	Ryan Gubala
Applicant Phone	(412) 264-4300	Facility Phone	(412) 262-9482
Applicant Email	dwalker@moontma.com	Facility Email	rgubala@moontma.com
Client ID	28901	Site ID	260867
Ch 94 Load Status	Not Overloaded	Municipality	Moon Township
Connection Status	No Limitations	County	Allegheny
Date Application Received	September 6, 2019	EPA Waived?	No
Date Application Accepted	September 10, 2019	If No, Reason	Major Facility, Pretreatment

Purpose of Application: NPDES permit renewal for discharges of treated sewage from a publicly owned treatment works.

Summary of Review

On September 6, 2019, on behalf of the Moon Township Municipal Authority (MTMA), KLH Engineers, Inc. submitted an application to renew NPDES Permit PA0028801 for discharges from MTMA's Leonard L. Nary Wastewater Treatment Plant (WWTP) at Montour Run. The application was received by DEP on September 6, 2019. The current NPDES permit was issued on February 25, 2015 with an effective date of March 1, 2015 and an expiration date of February 29, 2020. The renewal application was not submitted at least 180 days before the permit expired (i.e., was not submitted on or before September 2, 2019), so the terms and conditions of the 2015 permit were not automatically extended past February 29, 2020. MTMA was not approved to submit a late application, so MTMA is currently discharging under an expired permit.

On May 6, 2022, pursuant to a request by DEP dated April 6, 2022, MTMA submitted updated low-level results for Total Mercury (three effluent and one influent) analyzed using EPA Method 1631, Revision E. The updates were necessary for DEP to evaluate compliance with requirements from the Ohio River Valley Water Sanitation Commission (ORSANCO).

Changes for this NPDES permit renewal include the following:

- marginal reductions in the mass loading limits for CBOD5 and TSS at Outfall 001 consistent with DEP's rounding guidelines
- a monthly reporting requirement for *E. coli* is added to Outfall 001 based on new water quality criteria for *E. coli* in 25 Pa. Code Chapter 93 (approved by the U.S. Environmental Protection Agency in March 2021) and related permitting policy updates
- new water quality-based effluent limits are imposed for Total Mercury based on ORSANCO requirements

Approve	Deny	Signatures	Date
X		*Ryan C. Decker* Ryan C. Decker, P.E. / Environmental Engineer	May 16, 2022
x		*Mahbuba Iasmin* Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	May 17, 2022

Summary of Review

Sludge use and disposal description and location(s): Class B biosolids are disposed of at Allied Waste Systems' Imperial Landfill.

Pretreatment Program

MTMA implements a pretreatment program that imposes local limits on industrial users of the WWTP. According to the 2019 permit application, the United States Environmental Protection Agency's most recent approval MTMA's local limits was in 2016. The Leonard L. Nary WWTP has two significant industrial users: Allied Waste Systems of PA, which operates the Imperial Landfill; and Inland Technologies, which operates some airport deicing fluid facilities at the Pittsburgh International Airport. The Imperial Landfill discharges about 35,000 gpd of pretreated landfill leachate to MTMA's sanitary sewer system. Inland Technologies discharges about 12,800 gpd of pretreated wastewater to the sanitary sewer system from a glycol recovery unit associated with the use of airport deicing fluid. When the NPDES permit renewal application was submitted in 2019, there were no active compliance issues with MTMA's industrial users. High ammonia-nitrogen and BOD loadings from the Imperial Landfill were resolved in 2018.

Summary of Whole Effluent Toxicity (WET) Tests

The 2015 permit required MTMA to collect discharge samples and perform WET tests to generate chronic survival and reproduction data for the cladoceran (water flea), *Ceriodaphnia dubia* and chronic survival and growth data for the fathead minnow, *Pimephales promelas*. The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) used to analyze the results was 2.0%, which was not consistent with the TIWC identified in the 2015 NPDES permit (1.09%). DEP generally identifies TIWC percentages as whole numbers, so DEP likely erred in not identifying the TIWC as 1.0%. However, MTMA did not use the TIWC required by the permit.

As summarized in the Whole Effluent Toxicity (WET) section of this Fact Sheet, MTMA passed all of its most recent WET tests conducted in October 2018, October 2019, October 2020, and October 2021, so no WET limits will be imposed in the permit.

The TIWC in the renewed permit will be 1.0%. The dilution series in the renewed permit will be the same as the previous permit: 100%, 60%, 30%, 2%, and 1%. Annual testing will be required. If MTMA does not use the correct TIWC for WET test analyses, then DEP may increase the frequency of WET testing as part of a subsequent permit action.

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.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	6.2
Latitude	40° 30' 52.00"	Longitude	-80° 8' 58.00"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	Treated sewage effluent		
Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID	996804060	RMI	971.68
Drainage Area	19,500	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	2,365 (half of regulated Q_{7-10})	Q_{7-10} Basis	2019 ORSANCO Pol. Ctrl. Stds.
Elevation (ft)	692 (normal pool elev.)	Slope (ft/ft)	0.0001
Watershed No.	20-G	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired (Fish Consumption, Recreation); Attaining (Aquatic Life, Potable Water Supply)		
Cause(s) of Impairment	1. PCBs (Fish Consumption); 2. Dioxins (Fish Consumption); 3. Pathogens (Recreation)		
Source(s) of Impairment	1. Source unknown; 2. Source unknown; 3. Source unknown		
TMDL 1 Status	Final (PCBs; Fish Consumption)	Name	Ohio River TMDL (4/9/2001)
TMDL 2 Status	Pending (Dioxins, Fish Consumption)	Name	N/A
TMDL 3 Status	Pending (Pathogens, Recreation)	Name	N/A

Background/Ambient Data		Data Source
pH (S.U.)	7.7	WQN 902 – Ohio River at Sewickley (10/1998 to 3/2020) Median of data reported between July 1 and Sept. 30
Temperature (°C) (Summer)	25.27	WQN 902 – Ohio River at Sewickley (10/1998 to 3/2020) Median of data reported between July 1 and Sept. 30
Temperature (°C) (Winter)	7.03	WQN 902 – Ohio River at Sewickley (10/1998 to 3/2020) Arithmetic mean of data reported between Nov. 1 and Apr. 30
Hardness, Total (mg/L)	100.1	WQN 902 – Ohio River at Sewickley (10/1998 to 3/2020) Arithmetic mean of data
Other:		

Nearest Downstream Public Water Supply Intake	Moon Township Municipal Authority		
PWS ID	5020011	PWS Withdrawal (MGD)	5.2
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	969.38	Distance from Outfall (mi)	2.3

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	Variable
Latitude	40° 29' 35.00"	Longitude	-80° 8' 59.00"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	Storm water		
Receiving Waters	Montour Run (TSF)	Stream Code	36684

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	Variable
Latitude	40° 29' 36.00"	Longitude	-80° 9' 1.00"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	Storm water		
Receiving Waters	Montour Run (TSF)	Stream Code	36684

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	004	Design Flow (MGD)	Variable
Latitude	40° 29' 36.00"	Longitude	-80° 9' 2.00"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	Storm water		
Receiving Waters	Montour Run (TSF)	Stream Code	36684

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	005	Design Flow (MGD)	Variable
Latitude	40° 29' 38.00"	Longitude	-80° 9' 3.00"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	Storm water		
Receiving Waters	Montour Run (TSF)	Stream Code	36684

Treatment Facility Summary		
Treatment Facility: Leonard L. Nary WWTP at Montour Run (6.2 MGD average daily design flow; 9.3 MGD peak flow)		
WQM Permit No.	**Issuance Date**	**Purpose**
0270413	June 4, 1970	Permit issued to Moon Township Municipal Authority by the Department of Health's Sanitary Water Board for a 2.5 MGD sewage treatment plant consisting of two 1.0 to 10.5 MGD comminutors; one four-foot wide manual bar screen with 1-5/8" clear openings; a two-bay wet well (6,284 gallons each) with two 875-gpm variable speed centrifugal pumps and one 2,250-gpm constant speed centrifugal pump; one 17,130-gallon aerated, spiral flow grit chamber; two 129,000-gallon rectangular primary settling tanks; two 156,000-gallon rectangular aeration contact tanks with swing diffusers supplied with air by two centrifugal blowers with each blower independently capable of supplying the plant's air requirements; two 191,000-gallon circular final settling tanks; two 156,000-gallon rectangular sludge reaeration (stabilization) tanks with swing diffusers supplied by two centrifugal 3,600 cfm compressors; two 29,700-gallon chlorine contact tanks; one 28-foot diameter, 46,000-gallon circular sludge thickener with bottom rake; two 412,229-gallon circular anaerobic sludge digesters arranged for two-stage operation with gas recirculation and external heating using recovered gas (81-day detention time); and one vacuum filter to dewater digested sludge. This permit also authorized intercepting sewer lines and about 160 manholes with the main intercepting sewer line following parts of Beaver Grade Road, the Airport Parkway, and McClarens Run.
0270413 Letter amendment	October 2, 1986	Letter amendment issued to Moon Township Municipal Authority by the Pennsylvania Department of Environmental Resources to authorize the replacement of the aeration tank diffuser units and modification of the return activated sludge pumps to increase the plant capacity from 2.5 MGD to 3.1 MGD to facilitate treatment of flows from a projected hydraulic overload.
0270413 A-1	July 17, 1989	Permit issued to Moon Township Municipal Authority by the Pennsylvania Department of Environmental Resources to expand the design flow of the STP from 3.1 MGD to 6.2 MGD. The expansion maintained the contact stabilization mode of the activated sludge process but duplicated parts of the existing system. The upgraded system included: two 9-MGD comminutors; one 46-MGD manual bar screen; two 3,200-gpm variable speed pumps and two 3,200-gpm constant speed pumps; one 3.3-MGD aerated grit removal unit; one 10-foot diameter 7-MGD circular grit removal unit; four 125,664-gallon primary settling tanks; four 162,500-gallon contact tanks; four 162,500-gallon reaeration tanks; two 4,200 cfm blowers (and one spare) to supply air to the aeration tanks, an aerated channel, the grit removal chambers, and the wet well; four 176,200-gallon secondary clarifiers; two chlorinators and two chlorine contact tanks; two 412,229-gallon anaerobic sludge digesters; and two belt filter presses.
0270413 A-2	January 14, 2005	Permit issued to Moon Township Municipal Authority by PADEP to replace gas chlorination disinfection with liquid sodium hypochlorite disinfection. Replacement system included two 3,000-gallon sodium hypochlorite storage tanks, two 22-gpm (31,680 gpd) transfer pumps (one as backup) to convey sodium hypochlorite solution to a 275-gallon day tank, and three 45-gph (1080 gpd) diaphragm pumps (one as backup) to convey sodium hypochlorite solution to the plant influent and to the chlorine contact tanks using flow proportional dosing.
0270413 A-3	August 15, 2005	Permit issued to Moon Township Municipal Authority by PADEP to replace the swing diffuser aeration assemblies in the aeration tanks with an aeration grid system of fine bubble ceramic disc diffusers with a higher oxygen transfer efficiency. New facilities consisted of 560 diffusers in each of the four contact tanks, 392 diffusers in each of the four reaeration tanks, and new valving to control the air supply to each drop-leg to the manifold in each aeration tank. Existing blowers provided sufficient air capacity.

WQM Permit No.	Issuance Date	Purpose
0270413 A-4	March 30, 2006	Permit issued to Moon Township Municipal Authority by PADEP to relocate a portion of the outfall sewer. Approximately 230 feet of existing 30-inch outfall sewer was dislocated by Hurricane Ivan floodwaters resulting in the outfall sewer discharging to Montour Run about 300 feet upstream of the Ohio River main stem. The proposal was to abandon an additional 120 feet of existing outfall sewer and install approximately 380 feet of new 30-inch ductile iron pipe to the Ohio River backchannel with 220 feet of the new sewer enclosed in 48-inch steel casing bored under an existing railroad bed.
0270413 A-5	September 16, 2009	Permit issued to Moon Township Municipal Authority by PADEP for a microturbine system and gas compressor to convert excess methane gas from the two anaerobic digesters into electricity. Gas production exceeds the volume needed to heat sludge in the digesters. The gas was previously directed to a waste gas burner. A digester gas conditioning system was installed before the microturbine system to filter out particulates and pressurize the gas to the proper operating pressure. A waste heat recovery unit was installed to use exhaust heat from the microturbine system to heat the digester sludge through the existing sludge heater. The microturbine heat recovery system was connected to the existing hot water recirculation system for the sludge. Natural gas is retained and used to supplement digester sludge heating when exhaust heat from the microturbine system is not adequate.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Contact stabilization with disinfection	Sodium Hypochlorite	1.693

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
6.2	10,200	Not Overloaded	Anaerobic digestion and dewatering with a belt filter press	Landfill

Treatment Facility Summary

Treatment Facility: Leonard L. Nary WWTP at Montour Run – Extension of the outfall sewer to the Ohio River back channel

WQM Permit No.	Issuance Date	Purpose
0286416	September 17, 1986	Permit issued to Moon Township Municipal Authority by Pennsylvania Department of Environmental Resources to construct a 30” diameter outfall sewer to extend the discharge from its previous location to Montour Run to the Ohio River back channel behind Neville Island. The extension was undertaken to avoid plant upgrades needed to comply with more stringent NPDES permit limits for discharges to Montour Run.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	N/A	N/A	N/A	9.9

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
25.0 (under pressure)	N/A	N/A	N/A	N/A

Treatment Facility Summary		
Treatment Facility: Leonard L. Nary WWTP at Montour Run – Hershinger Road Sanitary Sewer Extension		
WQM Permit No.	**Issuance Date**	**Purpose**
0220401	August 7, 2020	Permit issued to Moon Township Municipal Authority by PA DEP for a gravity sewer extension along Hershinger Road to serve Phase 1 of the Village at Marketplace Residential Land Development. Phase 1 of the Village at Marketplace Residential Land Development proposed 17 single-family homes and 53 townhouses for a total of 70 units. The full buildout of the Village at Marketplace Residential Land Development proposed 125 single-family homes and 312 townhome units for a total of 437 lots, generating 109,250 gallons of sewage per day. The Hershinger Road mainline sanitary sewer extension is approximately 4,457 linear feet of 8-inch diameter PVC pipe. The sewer extension connects to the existing MTMA Montour Run interceptor and conveys sewage from the Village at Marketplace Residential Land Development to the Leonard L. Nary WWTP. The sanitary sewer extension serving Phase 1 of the Village at Marketplace Residential Land Development includes approximately 2,880 linear feet of 8-inch and 10-inch diameter sanitary sewers, comprised of a combination of PVC and ductile iron pipe. Portions of Phase 1 sanitary sewer will convey sewage from the anticipated full buildout of the Village at Marketplace Residential Land Development to the mainline sewer extension along Hershinger Road.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	N/A	N/A	N/A	N/A

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
N/A	N/A	N/A	N/A	N/A

Treatment Facility Summary		
Treatment Facility: Leonard L. Nary WWTP at Montour Run – Clover Ridge Sanitary Sewer Extension		
WQM Permit No.	**Issuance Date**	**Purpose**
0278407	January 10, 1979	Permit issued to Moon Township Municipal Authority by the Pennsylvania Department of Environmental Resources for a sanitary sewer extension to serve the Clover Ridge Residence Plan of Lots. The design population was 140 (0.014 MGD design flow).

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	N/A	N/A	N/A	0.014

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.056	N/A	N/A	N/A	N/A

Treatment Facility Summary		
Treatment Facility: Leonard L. Nary WWTP at Montour Run – Maple Lane Pump Station No. 3 Abandonment and Sanitary Sewer Replacement/Extension		
WQM Permit No.	**Issuance Date**	**Purpose**
0279461	December 12, 1979	Permit issued to Moon Township Municipal Authority by the Pennsylvania Department of Environmental Resources to eliminate the Maple Lane Pump Station No. 3 located directly across from the Pittsburgh International Airport by replacing and raising approximately 1,000 linear feet of 8-inch diameter sewer pipe from Port Vue Drive to an existing storm culvert. The replacement sewer was raised to meet an invert elevation that allowed the sewer to be supported from the crown of the existing storm culvert; 2,500 linear feet of sewer was installed in the culvert and connected to an existing 10-inch sanitary sewer that flows to the Montour Run Interceptor for treatment by the Leonard L. Nary WWTP.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	N/A	N/A	N/A	N/A

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
N/A	N/A	N/A	N/A	N/A

Treatment Facility Summary		
Treatment Facility: Leonard L. Nary WWTP at Montour Run – Edgetowne Square Sanitary Sewer Extension		
WQM Permit No.	**Issuance Date**	**Purpose**
0279483	January 16, 1980	Permit issued to Moon Township Municipal Authority by the Pennsylvania Department of Environmental Resources to install approximately 430 linear feet of 8-inch diameter sanitary sewer to serve the Edgetowne Square commercial development.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	N/A	N/A	N/A	0.006

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.024	N/A	N/A	N/A	N/A

Compliance History

DMR Data for Outfall 001 (from December 1, 2020 to November 30, 2021)

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
Flow (MGD) Average Monthly	2.48	2.61	3.10	3.60	3.16	2.86	3.25	2.66	3.87	3.37	3.34	3.27
Flow (MGD) Daily Maximum	2.87	5.33	11.22	7.70	4.30	3.68	6.98	3.89	8.11	5.76	5.57	5.26
pH (S.U.) Minimum	6.30	6.52	6.65	6.59	6.60	6.59	6.43	6.45	6.30	6.52	6.40	6.04
pH (S.U.) Maximum	7.06	7.09	7.26	7.14	7.02	6.98	6.81	6.87	6.90	7.16	6.81	6.91
DO (mg/L) Minimum	9.79	10.75	8.36	6.54	8.29	9.94	11.07	6.43	7.97	9.35	101.83	11.8
TRC (mg/L) Average Monthly	0.44	0.42	0.44	0.41	0.43	0.40	0.45	0.45	0.44	0.45	0.45	0.44
TRC (mg/L) Instantaneous Maximum	0.52	0.50	0.49	0.50	0.49	0.49	0.49	0.50	0.50	0.56	0.50	0.50
CBOD5 (lbs/day) Average Monthly	81.83	63.04	56.17	126.28	65.30	68.17	78.28	71.40	96.45	118.67	89.46	90.31
CBOD5 (lbs/day) Weekly Average	108.96	97.23	116.92	202.65	83.78	92.87	114.38	94.64	147.93	152.22	88.38	113.33
CBOD5 (mg/L) Average Monthly	4.020	2.784	2.190	3.948	2.487	2.827	2.913	3.193	2.765	4.236	3.181	3.35
CBOD5 (mg/L) Weekly Average	5.586	3.429	2.500	5.886	3.286	3.525	4.586	3.883	3.543	5.786	3.800	3.83
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	4609.6	4377.7	3206.5	3957.7	3313.8	3634.5	3401.6	3185.6	3898.7	4930.7	4353.6	4513
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	11328.1	12706.8	8366.7	8818.0	7826.3	11092.2	8757.0	5414.7	7897.6	9725.9	7761.2	133336
BOD5 (mg/L) Raw Sewage Influent Average Monthly	224.4	199.2	139.1	137.9	129.4	152.3	138.8	144.6	130.5	178.1	164.9	164
TSS (lbs/day) Average Monthly	101.69	103.75	94.04	205.46	152.40	148.57	157.08	129.14	200.06	327.44	195.00	226.83
TSS (lbs/day) Raw Sewage Influent Average Monthly	5052.1	4399.7	3075.3	4397.8	2780.5	2569.6	3107.4	2837.5	2547.2	3997.1	5688.8	4464

Parameter	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20
TSS (lbs/day) Raw Sewage Influent Daily Maximum	14754	15312	7611	19265	7215	10392	8699	6949	10333	10875.4	12910.3	12639
TSS (lbs/day) Weekly Average	115.00	158.85	107.99	290.20	150.91	188.42	201.55	209.63	294.09	414.27	215.28	398.52
TSS (mg/L) Average Monthly	5.367	4.677	3.967	6.806	5.806	6.167	6.000	5.767	6.355	11.429	6.677	8.23
TSS (mg/L) Raw Sewage Influent Average Monthly	244.7	197.6	137.7	148.4	107.2	106.7	116.5	129.6	88.2	144.1	211.9	159
TSS (mg/L) Weekly Average	5.857	6.000	5.400	8.286	5.857	7.857	8.714	8.500	9.000	12.143	8.429	12.4
Fecal Coliform (CFU/100 ml) Geometric Mean	2.335	2.582	3.982	3.068	1.215	3.625	2.009	1.219	1.357	1.025	1.391	2.21
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	72	291	105	205	13	63	88	4	18	2	8	770
Total Nitrogen (mg/L) Daily Maximum			37.9			44.4			36.1			40.6
Ammonia (lbs/day) Average Monthly	58.31	27.91	22.57	102.76	85.97	34.97	52.55	106.33	206.69	167.23	113.68	82.93
Ammonia (mg/L) Average Monthly	2.82	1.28	0.87	3.43	3.26	1.47	1.94	4.80	6.41	5.95	4.09	3.04
Ammonia (mg/L) Instantaneous Maximum	4.26	3.71	2.63	7.17	9.42	2.81	5.11	6.61	9.68	7.54	6.18	4.82
Total Phosphorus (mg/L) Daily Maximum			3.64			3.89			1.91			4.39

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 6.2
Latitude 40° 30' 52.00" **Longitude** -80° 8' 58.00"
Wastewater Description: Treated sewage effluent

The WWTP consists of one bar screen to remove solids, two comminutors to grind any remaining solids, four raw sewage pumps, two aerated grit separators to remove grit, four primary sedimentation tanks to settle sludge, four solids contact aeration units for biological secondary treatment, four secondary clarifiers, two sodium hypochlorite chemical feed units, two chlorine contact tanks, two anaerobic sludge digesters, and one belt filter press for sludge dewatering.

001.A. Technology-Based Effluent Limitations (TBELs)

25 Pa. Code § 92a.47 – Sewage Permits

Regulations at 25 Pa. Code § 92a.47 specify TBELs and effluent standards that apply to sewage discharges. Section 92a.47(a) requires that sewage be given a minimum of secondary treatment with significant biological treatment that achieves the following:

Table 1. Regulatory TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Average Weekly (mg/L)	Instant. Max (mg/L)	Basis
CBOD5	25	40†	50††	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(a)(4)(i) & (ii)
Total Suspended Solids	30	45	60††	25 Pa. Code § 92a.47(a)(1), (a)(2) & 40 CFR §§ 133.102(b)(1) & (b)(2)
Fecal Coliform (No./100 mL) May 1 – September 30	200 (Geometric Mean)	N/A	1,000‡	25 Pa. Code § 92a.47(a)(4)
Fecal Coliform (No./100 mL) October 1 – April 30	2,000 (Geometric Mean)	N/A	10,000	25 Pa. Code § 92a.47(a)(5)
Total Residual Chlorine	0.5 (or facility-specific)	N/A	1.6 (or facility-specific)	25 Pa. Code § 92a.47(a)(8) & § 92a.48(b)(2)
pH (s.u.)	not less than 6.0 and not greater than 9.0			25 Pa. Code § 92a.47(a)(7) & § 95.2(1), & 40 CFR § 133.102(c)

† Outfall 001 is currently subject to a more stringent CBOD5 weekly average limit of 38 mg/L.

†† IMAX values are calculated as two times the monthly average in accordance with Chapter 2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001].

‡ Outfall 001 is currently subject to more stringent Fecal Coliform limits including a 400/100mL IMAX limit instead of 1,000/100mL. Also, both the 200/100mL average monthly limit and 400/100mL IMAX limit apply from April 1 through October 31.

The CBOD5, TSS, and pH limits in § 92a.47(a) are the same as those in EPA's secondary treatment regulation (40 CFR § 133.102). Outfall 001 is currently subject to a more stringent average weekly CBOD5 limit of 38 mg/L. That limit will be maintained in the renewed permit pursuant to EPA's anti-backsliding regulation (40 CFR § 122.44(l)).

Outfall 001 is currently subject to more stringent fecal coliform limits than those in Table 1. The limits are discussed in the following section pertaining to the Ohio River Valley Water Sanitation Commission's Pollution Control Standards.

Average monthly and maximum daily flows must be reported pursuant to 25 Pa. Code § 92a.61(d)(1). The existing minimum dissolved oxygen limit of 4.0 mg/L will be maintained at Outfall 001 pursuant to 40 CFR § 122.44(l) (regarding anti-backsliding) and 25 Pa. Code § 92a.61(b) (regarding reasonable monitoring requirements).

In accordance with Section I of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033, Version 1.9, March 24, 2021] and under the authority of 25 Pa. Code § 92a.61(b), reporting for Total Nitrogen and Total Phosphorus is required for sewage discharges with design flows greater than 2,000 gpd to evaluate treatment effectiveness and to monitor nutrient loading to the receiving watershed. The SOP states that the monitoring frequencies for Total Nitrogen and Phosphorus should be equivalent to the monitoring frequencies for other conventional pollutants if the facility discharges to a nutrient-impaired water or a lesser frequency if the receiving water is not nutrient-impaired. The Ohio River is not impaired by nutrients, so DEP previously used its discretion to require quarterly monitoring for Total N and P, which will be maintained in the renewed permit.

Pursuant to that same SOP and under the authority of § 92a.61(b), a monthly reporting requirement for *E. coli* will be added to Outfall 001 because the design flow of the STP exceeds 1 MGD. *E. coli* was recently added to the bacteria water quality criteria in 25 Pa. Code § 93.7(a). The monitoring will be used to determine if *E. coli* require additional controls.

Mass Limits

In accordance with Table 5-3 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" and Section IV of DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", mass limits are calculated for CBOD5 and TSS. Average monthly and average weekly mass limits (in units of pounds per day) are calculated using the concentration limits in Table 1 (including the 38 mg/L average weekly CBOD5 limit) and the WWTP's 6.2 MGD design flow with the following formula:

Design flow (avg. annual) (MGD) × concentration limit (mg/L) at design flow × conversion factor (8.34) = mass limit (lb/day)

Table 2. Mass TBELs for Sanitary Wastewaters

Parameter	Average Monthly (mg/L)	Average Weekly (mg/L)
CBOD5	1,290	1,960
Total Suspended Solids	1,550	2,325

Pursuant to Chapter 5, Section C.2 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" mass limits for conventional pollutants with a magnitude greater than 60.0 are rounded down to the nearest 5.0 mg/L. The mass limits in Table 2 account for that rounding convention.

ORSANCO Pollution Control Standards

The Ohio River Valley Water Sanitation Commission (ORSANCO) is an interstate commission established by interstate compact that sets water quality standards (Pollution Control Standards) for the Ohio River. The Ohio River is a water of the Commonwealth and is the receiving water for discharges from MTMA's WWTP. DEP implements ORSANCO's Standards pursuant to 25 Pa. Code § 92.12(b), which states:

> When interstate or international agencies under an interstate compact or international agreement establish applicable effluent limitations or standards for dischargers of this Commonwealth to surface waters that are more stringent than those required by this title, the more stringent standards and limitations apply.

Chapter 5.4(A) of ORSANCO's 2019 Pollution Control Standards (the current version) requires the following level of treatment for sewage discharges to the Ohio River:

Table 3. ORSANCO TBELs and Effluent Standards for Sewage Discharges

Parameter	Average Monthly (mg/L)	Weekly Average (mg/L)	Basis
Total Suspended Solids	30	45	Section 5.4(A)(2)
$CBOD_5$	25	40	Section 5.4(A)(1)(ii)
Fecal Coliform (No. /100mL)	2,000 (Geometric Mean)	—	Section 5.4(A)(4)(i)
E. coli (No. /100mL) April 1 – October 31	130 (90-day Geometric Mean)	240 (in 25% of samples)	Section 5.4(A)(4)(ii)
pH	not less than 6.0 and not greater than 9.0 s.u.		Section 5.4(A)(3)

The effluent standards given by ORSANCO are similar to those required by 25 Pa. Code § 92a.47(a) except for the application of *E. coli* limits from April 1 through October 31 and a fecal coliform limit of 2,000/100mL as a 30-day geometric mean that applies year-round. ORSCANO's fecal coliform effluent standard is already superseded by the effluent standards of § 92a.47(a)(4) and (a)(5) because the same 2,000/100mL fecal coliform limit as ORSANCO's applies to sewage discharges between October 1 and April 30 and a more stringent limit (200/100mL) applies during the rest of the year.

With respect to ORSANCO's *E. coli* limit, DEP previously determined that the fecal coliform limits currently in effect in MTMA's permit are more stringent than the *E. coli* effluent standards given by ORSANCO. That determination was based

on calculations performed using a correlation equation developed by Ohio EPA[1] that converts between the numbers of fecal coliform and *E. coli* bacteria present in a sample. For reference, the calculations are shown below.

Ohio EPA: Fecal Coliform to *E. coli* Conversion Equation

$$E.coli = 0.403 \times (Fecal\ Coliform)^{1.028}$$

$$Fecal\ Coliform = \sqrt[1.028]{\frac{E.coli}{0.403}}$$

Fecal Coliform Equivalent of 130/100mL *E. coli* (90-Day Geometric Mean)

$$Fecal\ Coliform = \sqrt[1.028]{\frac{130}{0.403}} \approx 275/100mL$$

Fecal Coliform Equivalent of 240/100mL *E. coli* (in 25% of Samples)

$$Fecal\ Coliform = \sqrt[1.028]{\frac{240}{0.403}} \approx 500/100mL$$

MTMA's existing fecal coliform limit of 200/100mL as a 30-day geometric mean is more stringent than the 275/100mL fecal coliform equivalent of ORSANCO's *E. coli* limit of 130/100mL as a 90-day geometric mean. That is, MTMA is already obligated by its existing permit limits to achieve a higher level of disinfection over a shorter timeframe (30 days instead of 90 days) than ORSANCO requires.

Additionally, MTMA's existing instantaneous maximum fecal coliform limit of 400/100mL is more stringent than the 500/100mL fecal coliform equivalent of ORSANCO's *E. coli* limit of 240/100mL in 25% of samples. That is, MTMA is already obligated by its existing permit limits to achieve a higher level of disinfection in all samples than ORSANCO requires in only 25% of samples.

Since MTMA's existing fecal coliform limits are more stringent than the fecal coliform equivalents of ORSANCO's *E. coli* effluent standards, the *E. coli* effluent standards from ORSANCO will not be imposed at Outfall 001. Monitoring for *E. coli* still will be required at Outfall 001, as discussed previously.

As with the previous permit, the months during which MTMA's fecal coliform limits are in effect are modified from the time periods given in § 92a.47(a)(4) and (a)(5) to match the months during which ORSANCO's *E. coli* limits apply, which is necessary to maintain equivalent (or greater) stringency between MTMA's fecal coliform requirements and ORSANCO's *E. coli* requirements. As a result, MTMA's 200/100mL and 400/100mL limits will apply from April 1 through October 31 (one month earlier and one month later than § 92a.47(a)(4) requires). The months during which MTMA's 2,000/100mL and 10,000/100mL limits apply are reduced accordingly to November 1 through March 31.

Pursuant to the above discussion and 40 CFR § 122.44(l) (regarding anti-backsliding) MTMA's existing fecal coliform limits will be maintained in the renewed permit.

Chapter 5, Section B of ORSANCO's Pollution Control Standards also requires each holder of an individual NPDES permit to post a permanent marker on the stream bank at each outfall discharging directly to the Ohio River. That requirement will be included as a condition of the permit.

001.B. Water Quality-Based Effluent Limitations (WQBELs)

WQM 7.0 Water Quality Modeling Program

WQM 7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD5"), ammonia-nitrogen, and dissolved oxygen ("D.O.") for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and

[1] Ohio EPA Bacterial TMDL Correlation Equations for Converting Between Fecal Coliform and *E. Coli* (December 2006).

compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of CBOD5 and ammonia-nitrogen and compares calculated instream D.O. concentrations to D.O. water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

Water Quality Modeling with WQM 7.0

Table 4. 001 WQM 7.0 Inputs

Discharge Characteristics	
Parameter	**Value**
River Mile Index (RMI)	971.68
Discharge Flow (MGD)	6.2
Discharge Temp. (°C) (Summer)	20.0
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	19,500
Q_{7-10} (cfs)	2,365
Low-flow yield (cfs/mi^2)	0.106
Elevation (ft)	692
Slope (ft/ft)	0.0001
Stream Width (ft)	550
Stream Depth (ft)	12.0
Stream Temp. (°C) (Summer)	25.27
Stream pH (s.u.)	7.7

The WQM 7.0 model is run for Outfall 001 to determine whether WQBELs are necessary for $CBOD_5$, ammonia-nitrogen, and D.O. Input values for the WQM 7.0 model are shown in Table 4.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced D.O. levels also appear to increase ammonia toxicity and the maximum concentration of D.O. in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period. For the summer period, pursuant to DEP's "Implementation Guidance of Section 93.7 Ammonia Criteria" [Doc. No. 391-2000-013] (Ammonia Guidance) and in the absence of site-specific data, the discharge temperature is assumed to be 20°C. Per that same guidance, the site-specific stream temperature is 25.27°C based on the median temperature from July through September at Water Quality Network Station 902 – Monongahela River at Charleroi for the period of record lasting from October 1998 through March 2020. The site-specific stream pH is 7.7 s.u., which is the median pH from that same period of record at WQN Station 902.

The Q_{7-10} flow of the Ohio River in the vicinity of Outfall 001 is regulated at a minimum of about 2,365 cfs. Outfall 001 discharges to the back channel of the Ohio River behind Neville Island, so the Q_{7-10} flow at Outfall 001 is half of the 4,730 cfs critical flow value given in Appendix C of ORSANCO's 2019 Pollution Control Standards for the Ohio River segment extending from RMI 981.0 at Pittsburgh to RMI 949.3 at the Montgomery Dam. The downstream node that identifies the end of the modeled segment of the river is entered at RMI 969.38 where MTMA has a 5.2 MGD potable water supply withdrawal.

To ensure that mixing conditions are properly represented in WQM 7.0, the reach width and reach depth of the Ohio River backchannel are approximated as 550 feet and 12 feet, respectively. The width and depth of the river at the downstream node (after flows in the main channel and back channel of the river combine downstream of Neville Island) are estimated as 1,150 feet and 12 feet, respectively.

There are three combined sewer overflows (CSO) within the modeled reach: CSO Outfalls 003, 005, and 007 from the Coraopolis Water and Sewer Authority permitted by PAG066135. However, those CSOs should not discharge at Q_{7-10} conditions, so they are not included in the modeling.

The discharge flow used for modeling is the average design flow of the WWTP (6.2 MGD). The input discharge concentrations of CBOD5 and ammonia-nitrogen are the model's defaults: 25 mg/L for both CBOD5 and ammonia-nitrogen. The D.O. of the discharge is input as 4.0 mg/L, which is the minimum D.O. limit at Outfall 001.

Downstream nodes are entered into WQM 7.0 at river mile indices 38.25 and 25.33. At RMI 38.25, the Mon Valley Sewer Authority discharges treated sewage at an average rate of 4.96 MGD (NPDES PA0026158). At RMI 25.33, Pennsylvania American Water Company has a 70 MGD potable water supply withdrawal (PWS ID 5020039).

WQM 7.0 modeling (see **Attachment A**) returns the input discharge concentrations as the recommended limits, which means that WQBELs are not needed for CBOD5 or ammonia-nitrogen. Pursuant to DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits", for existing dischargers where modeling results for summer indicate that an average monthly limit of 25 mg/L for ammonia-nitrogen is acceptable, year-

round monitoring requirements are established for ammonia-nitrogen (mass and concentration). Such monitoring was imposed in the previous permit and will be maintained in the renewed permit.

Toxics Management Spreadsheet Water Quality Modeling Program and Procedures for Evaluating Reasonable Potential

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The Department of Environmental Protection developed the Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP's TOXCONC.xls spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling.

The TMS evaluates each pollutant by computing a Wasteload Allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following RP thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. 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).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP's Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring.

ORSANCO Requirements for Mercury

ORSANCO's 2019 Pollution Control Standards include a non-carcinogenic human health criterion for mercury of 0.000012 mg/L (12 nanograms/liter). Pursuant to Chapter 4.F.6 of ORSANCO's Standards, mercury is a bioaccumulative chemical of concern (BCC). Pursuant to Chapter 4.F.1 of ORSANCO's Standards, facilities with discharges that were in existence on or before October 16, 2003 (such as discharges from MTMA's sewage treatment plant at Montour Run with direct discharges to the Ohio River commencing sometime in 1986 or 1987 after the issuance of WQM Permit 0286416), must have mixing zones eliminated for any BCC as soon as practicable. In short, any ongoing discharges that commenced on or before October 16, 2003 must comply with ORSANCO's 12 ng/L mercury criterion at the point of discharge as soon as practicable. The Toxics Management Spreadsheet accounts for ORSANCO's limitations on BCCs subject to the aforementioned TMS modeling step that eliminates pollutants as candidates for water quality modeling if the pollutants are not detected at laboratory reporting limits that are equivalent to DEP's Target Quantitation Limits (Target QLs). DEP's Target QL for mercury is 0.2 µg/L (200 ng/L) based on the use of EPA-approved Cold Vapor-Atomic Absorption Spectroscopy (CVAAS) analytical methodologies (e.g., EPA Method 245.1, 245.2, Standard Methods 3112 B, etc.).

In 2014, EPA promulgated the Sufficiently Sensitive Methods rule, which requires facilities to use EPA-approved analytical methods that are capable of detecting and measuring pollutants at, or below, the applicable water quality criteria or permit limits. The rule is codified in 40 CFR § 122.21(e) (regarding application completeness), as a new subsection (3), and at 40 CFR § 122.44(i)(1)(iv) (regarding permit monitoring requirements). EPA also modified 40 CFR § 136.1 (regarding the

applicability of tests procedures for the analysis of pollutants) by adding a new paragraph (c), which is simply a cross-reference to the changes promulgated in 40 CFR § 122.21(e)(3) and 40 CFR § 122.44(i)(1)(iv).

Table IB in 40 CFR § 136.3 identifies additional EPA-approved analytical methods that employ Cold Vapor-Atomic Fluorescence Spectroscopy (CVAFS) (e.g., EPA Methods 245.7 and 1631 Revision E). EPA Method 1631, Revision E has a detection level on the order of 1 to 2 ng/L. Since there are EPA-approved analytical methods for mercury that can quantify the presence of mercury at a level sufficient to evaluate compliance with ORSANCO's 12 ng/L end-of-pipe standard, DEP is requesting that any direct dischargers to the Ohio River that report results for total mercury must use the more sensitive method.

MTMA reported on its permit renewal application that total mercury was not detectable in its discharge at a level of 0.2 µg/L consistent with the Target QL for total mercury in the application instructions. However, pursuant to the Sufficiently Sensitive Methods Rule, DEP requested by letter dated April 6, 2022 that MTMA collect additional samples and analyze those samples using a more sensitive test method for mercury to facilitate DEP's evaluation of MTMA's ability to comply with ORSANCO's 12 ng/L limit. On May 6, 2022, MTMA submitted three new effluent results and one new influent result for total mercury based on the use of EPA Method 1631, Revision E. The updated mercury results are used for TMS modeling.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on the maximum concentrations reported on the permit renewal application, as amended with MTMA's updated results for total mercury. The TMS model is run for Outfall 001 with the modeled discharge and receiving stream characteristics shown in Table 4 (excluding temperatures which are not required for TMS analyses). Pollutants for which water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling. Pursuant to 25 Pa. Code § 93.2(b), water quality criteria developed by ORSANCO for the Ohio River are used in the TMS modeling to the extent that ORSANCO's water quality criteria are more stringent than Pennsylvania's statewide water quality criteria in 25 Pa. Code Chapter 93.

Output from the TMS model run is included in **Attachment B**. Based on the results of the TMS modeling, the permit requirements listed in Table 4 apply at Outfall 001.

Table 4. Water Quality-Based Requirements for Outfall 001

Parameter	Permit Limits			Max. Reported Discharge Conc. (µg/L)	Governing WQBEL Basis†	Reasonable Potential Basis
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Mercury, Total	0.012	0.019	0.03	0.0064	THH	Discharge Conc. > 50% of WQBEL

† THH = Threshold Human Health

Since the maximum result from MTMA's supplemental mercury analyses is greater than 50% of the most stringent WQBEL, reasonable potential is demonstrated, and ORSANCO's mercury limit is imposed. Even though reasonable potential is demonstrated, MTMA's updated mercury results are all less than the mercury WQBELs. Therefore, the limits will take effect immediately without a schedule of compliance.

Table 5. Updated Mercury Results for MTMA Using EPA Method 1631E

4/13/2022 Effluent Sample	4/14/2022 Effluent Sample	4/18/2022 Effluent Sample	4/14/2022 Influent Sample
4.6 ng/L	1.7 ng/L	6.4 ng/L	5.6 ng/L

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors (calculated by the WQM 7.0 or TMS models), and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of those average monthly TRC limitations is imposed in the permit.

The results of the modeling, included in **Attachment C**, indicate that no WQBELs are required for TRC, which is consistent with DEP's determinations for previous permits. Technology-based limits from 25 Pa. Code § 92a.47(a)(8) will control TRC.

Ohio River Use Impairments

MTMA is not expected to discharge PCBs, chlordane, or dioxins, so the WWTP will not contribute to the Ohio River's fish consumption use impairment. There should be no adverse contribution of pathogens to the river from the wastewaters discharged at Outfall 001 because the sewage is disinfected prior to discharge.

001.C. Influent Monitoring

Pursuant to Section IV.E.8 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage Individual NPDES Permit Applications" [SOP No. BCW-PMT-002, Version 1.9, January 6, 2020], for POTWs with design flows greater than 2,000 GPD, influent BOD5 and TSS monitoring is established in the permit with the same sample frequency and sample type used for the effluent. As explained below, the WWTP's effluent must be analyzed for CBOD5 and TSS 1/day using 24-hour composite sampling. Therefore, influent samples must be analyzed for BOD5 and TSS 1/day using 24-hour composite sampling.

001.D. Effluent Limits

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 40 CFR § 122.44(l)[2] (incorporated by reference in Pennsylvania regulations at 25 Pa. Code § 92a.44), effluent limits at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet. Applicable effluent limits and monitoring requirements are summarized below.

Table 6. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
Flow (MGD)	Report	Report (Daily Max)	—	—	—	25 Pa. Code § 92a.61(h)
$CBOD_5$	1,290	1,960	25.0	38.0	50.0	25 Pa. Code § 92a.47(a)(1)
Total Suspended Solids	1,550	2,325	30.0	45.0	60.0	25 Pa. Code § 92a.47(a)(1)
BOD5 (Influent)	Report	Report (Daily Max)	Report	—	—	25 Pa. Code § 92a.61(b)
TSS (Influent)	Report	Report (Daily Max)	Report	—	—	25 Pa. Code § 92a.61(b)
Fecal Coliform (No. /100mL) April 1 – October 31	—	—	200	—	400	25 Pa. Code § 92a.47(a)(4) & 40 CFR § 122.44(l)
Fecal Coliform (No. /100mL) November 1 – Mar 31	—	—	2000	—	10000	25 Pa. Code § 92a.47(a)(5) & 40 CFR § 122.44(l)
E. coli (No./100mL)	—	—	—	—	Report	25 Pa. Code § 92.61(b)
Dissolved Oxygen	—	—	4.0 (Inst. Min.)	—	—	CWA § 402(a)(1); BPJ TBEL
Total Residual Chlorine	—	—	0.5	—	1.6	25 Pa. Code § 92a.47(a)(8)
Ammonia-Nitrogen	Report	—	Report	—	Report	25 Pa. Code § 92.61(b)
Total Nitrogen	—	—	—	Report (Daily Max)	—	25 Pa. Code § 92.61(b)
Total Phosphorus	—	—	—	Report (Daily Max)	—	25 Pa. Code § 92.61(b)
Mercury, Total (ng/L)	—	—	12.0 (Annl Avg)	19.0 (Daily Max)	30.0	WQBELs; 25 Pa. Code § 92a.12

[2] *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

Table 6 (continued). Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Weekly Average	Average Monthly	Weekly Average	Instant. Maximum	
pH (standard units)	not less than 6.0 nor greater than 9.0 standard units					25 Pa. Code § 92a.47(a)(7) & § 95.2(1)

Monitoring frequencies and sample types are established pursuant to Table 6-3 in DEP's "Technical Guidance for the Development and Specification of Effluent Limitations. and Other Permit Conditions in NPDES Permits" and DEP's "Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits".

For facilities with design flows between 5.0 and 25.0 MGD, CBOD5, TSS, and ammonia-nitrogen must be sampled 1/day using 24-hour composite sampling. Influent BOD5 and TSS must be sampled 1/day using 24-hour composite sampling. Dissolved oxygen, TRC, pH, and fecal coliform must be sampled 1/day using grab sampling. *E. coli* must be sampled 1/month using grab sampling. Total nitrogen and total phosphorus must be sampled 1/quarter using 24-hour composite sampling. As explained previously, the sampling frequencies for Total Nitrogen and Total Phosphorus are less frequent than Table 6-3 requires (daily), but the SOP gives permit writers discretion to require less frequent monitoring for Total Nitrogen and Total Phosphorus when the receiving water is not nutrient-impaired (the Ohio River is not impaired by nutrients). Flow must be measured continuously using a flow meter.

Mercury will require 2/year sampling with a sample type of 4 grabs/24 hours. The sampling frequency is reduced from the 1/week frequency for toxics in Table 6-3 of DEP's guidance because the reduction is consistent with the nature and effect of this discharge as it relates to mercury loading to the Ohio River.

According to a report from ORSANCO titled "Ohio River Basin Mercury Loading Analysis" from June 2020, the presence of mercury in the Ohio River is primarily attributable to atmospheric deposition with point sources contributing between 2% and 5% of the mercury loads reported in the river (see Figure 21 below from ORSANCO's report). Also, among those point source load contributors, about 60% were from upstream discharges and not direct dischargers to the Ohio River (see Figure 24 below from ORSANCO's report). Based on those data, it is evident that MTMA is not a primary contributor.

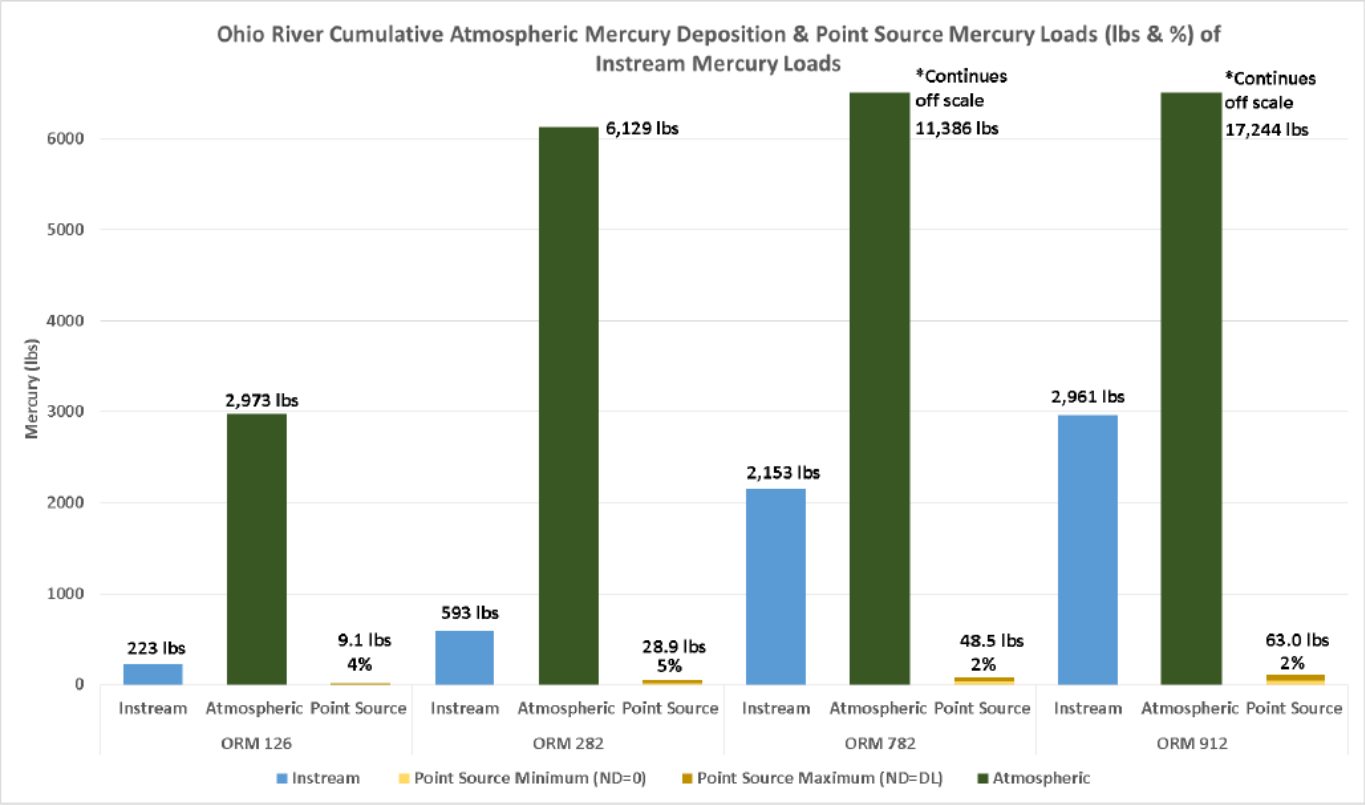

Figure 21. Comparing instream mercury loads at four Ohio River stations to monitored point source cumulative mercury loads and cumulative atmospheric deposition.

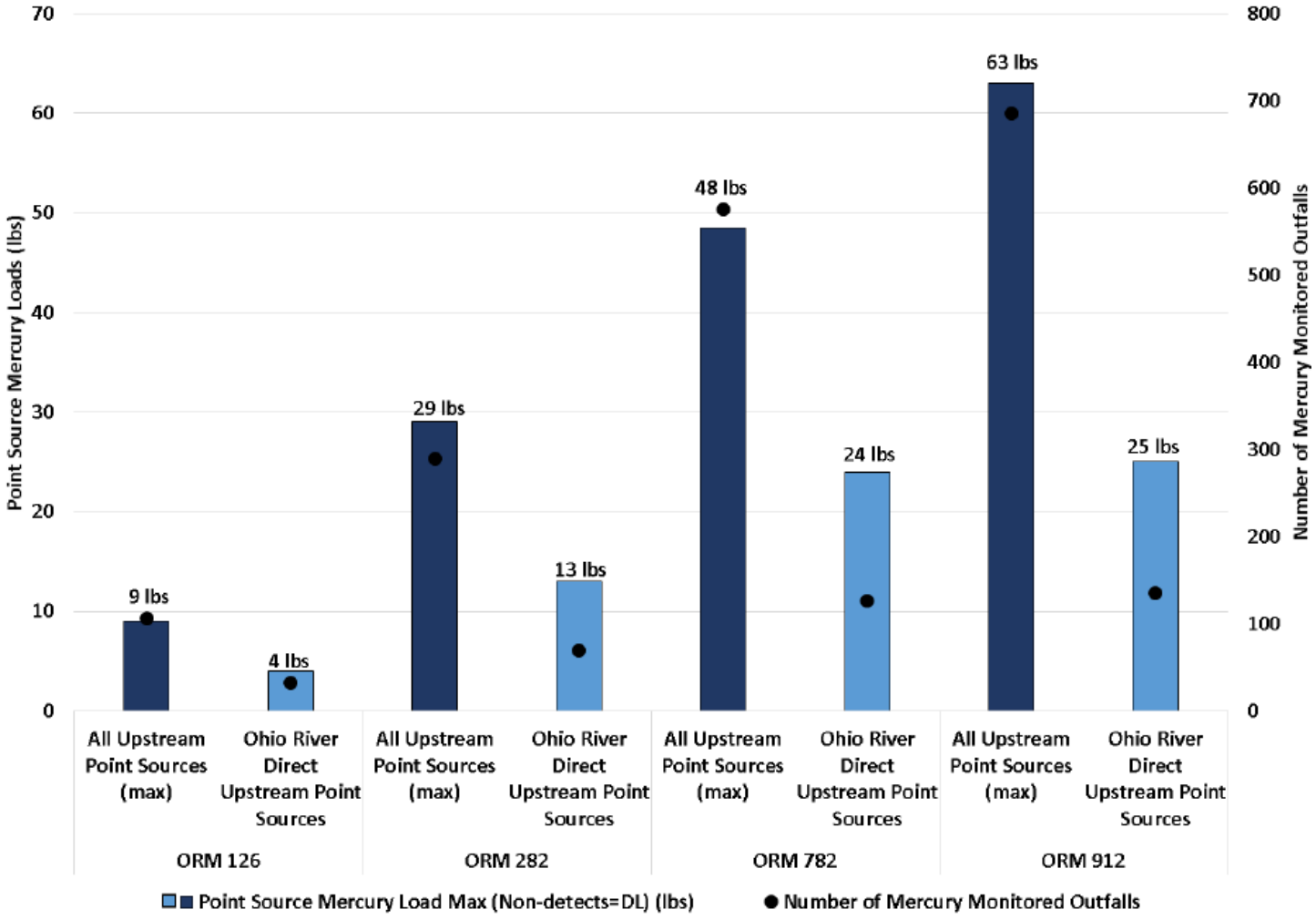

Figure 24. Comparison of cumulative upstream mercury loads for the entire basin to cumulative upstream loads from discharges direct to the Ohio River.

Development of Effluent Limitations

Outfall Nos.	002, 003, 004, 005	**Design Flow (MGD)**	Variable
	40° 29' 35"; 40° 29' 36"		-80° 08' 59"; -80° 09' 01"
Latitude	40° 29' 36"; 40° 29' 38"	**Longitude**	-80° 09' 02"; -80° 09' 03"

Wastewater Description: Storm water

The permittee is authorized to discharge non-polluting stormwater from its site, alone or in combination with other wastewaters through Outfalls 002, 003, 004, and 005.

Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☐ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☒ Other: Annually throughout the permit term.

The dilution series used for the tests was: 100%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 2.0%.

Summary of Four Most Recent Test Results

TST Data Analysis

(NOTE – In lieu of recording information below, the application manager may attach the DEP WET Analysis Spreadsheet).

Test Date	*Ceriodaphnia* Results (Pass/Fail)		*Pimephales* Results (Pass/Fail)	
	Survival	**Reproduction**	**Survival**	**Growth**
10/30/2018	PASS	PASS	PASS	PASS
10/8/2019	PASS	PASS	PASS	PASS
10/19/2020	PASS	PASS	—	—
10/20/2020	—	—	PASS	PASS
10/18/2021	PASS	PASS	—	—
10/19/2021	—	—	PASS	PASS

***** *A "passing" result is that in which the replicate data for the TIWC is not statistically significant from the control condition. This is exhibited when the calculated t value ("T-Test Result") is greater than the critical t value. A "failing" result is exhibited when the calculated t value ("T-Test Result") is less than the critical t value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☐ **YES** ☒ **NO**

Comments: None

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

Acute Partial Mix Factor (PMFa): **0.123** Chronic Partial Mix Factor (PMFc):**0.853**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$
$[(6.2\ MGD \times 1.547) / ((2{,}365\ cfs \times 0.123) + (6.2\ MGD \times 1.547))] \times 100 =$ **3.19%**

Is IWCa < 1%? ☐ **YES** ☒ **NO (YES - Acute Tests Required OR NO - Chronic Tests Required)**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

N/A

Type of Test for Permit Renewal: **Chronic**

2a. Determine Target IWCa (If Acute Tests Required)

TIWCa = IWCa / 0.3 = **% — ACUTE TEST NOT REQUIRED**

2b. Determine Target IWCc (If Chronic Tests Required)

$(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

[(6.2 MGD x 1.547) / ((2365 cfs x 0.853) + (6.2 MGD x 1.547))] x 100 = **0.47% — Use 1.0%**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = **100%, 60%, 30%, 2%, and 1%.**

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

Will WET limits be established in the permit? ☐ YES ☒ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

N/A

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A

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	Weekly Average	Instant. Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	1290	1960	XXX	25.0	38.0	50	1/day	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/day	24-Hr Composite
Total Suspended Solids	1550	2325	XXX	30.0	45.0	60	1/day	24-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Mar 31	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/day	Grab
Fecal Coliform (No./100 ml) Apr 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	400	1/day	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	Report	1/day	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	24-Hr Composite
Mercury, Total (ug/L)	XXX	XXX	XXX	0.012 Annl Avg	0.019 Daily Max	0.03	2/year	4 Grabs/24 Hours

Compliance Sampling Location: Outfall 001

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment A)
☒	Toxics Management Spreadsheet (see Attachment B)
☒	TRC Model Spreadsheet (see Attachment C)
☐	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: Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Sewage ndividual NPDES Permit Applications" [SOP No. BCW-PMT-002, Version 1.9, January 6, 2020]
☒	SOP: Standard Operating Procedure for Clean Water Program Establishing Effluent Limitations for Individual Sewage Permits" [SOP No. BCW-PMT-033, Version 1.9, March 22, 2021]
☒	Other: Ohio EPA Bacterial TMDL Correlation Equations for Converting Between Fecal Coliform and *E. Coli* (December 2006).

ATTACHMENT A

WQM 7.0 Modeling Results

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
20E	32317	OHIO RIVER	971.680	692.00	19500.00	0.00010	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	0.100	0.00	2365.00	0.000	0.000	0.0	550.00	12.00	25.27	7.70	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
Outfall 001	PA0028801	6.2000	0.0000	0.0000	0.000	20.00	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	4.00	8.38	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
20E	32317	OHIO RIVER	969.380	691.90	19501.00	0.00010	5.20	☑

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	0.100	0.00	4730.00	0.000	0.000	0.0	1150.00	12.00	25.27	7.70	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 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	0.64	Use Inputted Reach Travel Times	☑
Q30-10/Q7-10 Ratio	1.36	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
20E	32317	OHIO RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
971.680	2365.00	0.00	2365.00	9.5914	0.00010	12	550	45.83	0.36	0.391	25.25	7.69
Q1-10 Flow												
971.680	1513.60	0.00	1513.60	9.5914	0.00010	NA	NA	NA	0.23	0.609	25.24	7.69
Q30-10 Flow												
971.680	3216.40	0.00	3216.40	9.5914	0.00010	NA	NA	NA	0.49	0.288	25.25	7.69

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
971.680	Outfall 001	4.42	50	4.42	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
971.680	Outfall 001	.82	25	.82	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)		
971.68	Outfall 001	25	25	25	25	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
971.680	6.200	25.249	7.693
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
550.000	12.000	45.833	0.360
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.09	0.052	0.10	1.048
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.362	0.186	O'Connor	5
Reach Travel Time (days)			
0.391			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.039	2.09	0.10	7.51
0.078	2.08	0.09	7.51
0.117	2.08	0.09	7.51
0.156	2.07	0.09	7.51
0.195	2.07	0.08	7.51
0.234	2.06	0.08	7.51
0.273	2.06	0.08	7.51
0.313	2.05	0.07	7.51
0.352	2.05	0.07	7.51
0.391	2.04	0.07	7.51

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20E	32317	OHIO RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
971.680	Outfall 001	PA0028801	6.200	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

ATTACHMENT B

Toxics Management Spreadsheet for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Leonard L. Nary WWTP** NPDES Permit No.: **PA0028801** Outfall No.: **001**

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

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
6.2	198	7						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		674									
	Chloride (PWS)	mg/L		177									
	Bromide	mg/L	<	0.402									
	Sulfate (PWS)	mg/L		87.3									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		111									
	Total Antimony	µg/L		0.674									
	Total Arsenic	µg/L		2.99									
	Total Barium	µg/L		50									
	Total Beryllium	µg/L	<	0.4									
	Total Boron	µg/L		309									
	Total Cadmium	µg/L		0.12									
	Total Chromium (III)	µg/L	<	2.5									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.648									
	Total Copper	µg/L		19.6									
	Free Cyanide	µg/L		10									
	Total Cyanide	µg/L	<	2.4									
	Dissolved Iron	µg/L		113									
	Total Iron	µg/L		180									
	Total Lead	µg/L		0.21									
	Total Manganese	µg/L		70									
	Total Mercury	µg/L		0.0064									
	Total Nickel	µg/L		5.76									
	Total Phenols (Phenolics) (PWS)	µg/L	<	1									
	Total Selenium	µg/L	<	12.5									
	Total Silver	µg/L	<	2.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L		64.6									
	Total Molybdenum	µg/L		7.77									
	Acrolein	µg/L	<	7.8									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2.65									
	Benzene	µg/L	<	1.8									
	Bromoform	µg/L	<	2.4									

Group 3	Carbon Tetrachloride	µg/L	<	2.55									
	Chlorobenzene	µg/L	<	1									
	Chlorodibromomethane	µg/L		2.72									
	Chloroethane	µg/L	<	2.3									
	2-Chloroethyl Vinyl Ether	µg/L	<	24.2									
	Chloroform	µg/L		18.5									
	Dichlorobromomethane	µg/L		6.01									
	1,1-Dichloroethane	µg/L	<	2.5									
	1,2-Dichloroethane	µg/L	<	2.3									
	1,1-Dichloroethylene	µg/L	<	1.65									
	1,2-Dichloropropane	µg/L	<	2.6									
	1,3-Dichloropropylene	µg/L	<	1.45									
	1,4-Dioxane	µg/L	<	1.4									
	Ethylbenzene	µg/L	<	1.5									
	Methyl Bromide	µg/L	<	2.4									
	Methyl Chloride	µg/L	<	1.6									
	Methylene Chloride	µg/L	<	2.2									
	1,1,2,2-Tetrachloroethane	µg/L	<	2.2									
	Tetrachloroethylene	µg/L	<	1.9									
	Toluene	µg/L	<	1.85									
	1,2-trans-Dichloroethylene	µg/L	<	2.15									
	1,1,1-Trichloroethane	µg/L	<	1.65									
	1,1,2-Trichloroethane	µg/L	<	1.05									
	Trichloroethylene	µg/L	<	2.6									
	Vinyl Chloride	µg/L	<	2.1									
Group 4	2-Chlorophenol	µg/L	<	0.13									
	2,4-Dichlorophenol	µg/L	<	0.25									
	2,4-Dimethylphenol	µg/L	<	0.26									
	4,6-Dinitro-o-Cresol	µg/L	<	0.9									
	2,4-Dinitrophenol	µg/L	<	0.86									
	2-Nitrophenol	µg/L	<	0.25									
	4-Nitrophenol	µg/L	<	0.19									
	p-Chloro-m-Cresol	µg/L	<	0.4									
	Pentachlorophenol	µg/L	<	0.97									
	Phenol	µg/L	<	0.25									
	2,4,6-Trichlorophenol	µg/L	<	0.24									
Group 5	Acenaphthene	µg/L	<	0.26									
	Acenaphthylene	µg/L	<	0.22									
	Anthracene	µg/L	<	0.13									
	Benzidine	µg/L	<	0.35									
	Benzo(a)Anthracene	µg/L	<	0.21									
	Benzo(a)Pyrene	µg/L	<	0.2									
	3,4-Benzofluoranthene	µg/L	<	0.18									
	Benzo(ghi)Perylene	µg/L	<	0.26									
	Benzo(k)Fluoranthene	µg/L	<	0.19									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.15									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.25									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.34									
	Bis(2-Ethylhexyl)Phthalate	µg/L		2.2									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.19									
	Butyl Benzyl Phthalate	µg/L	<	0.22									
	2-Chloronaphthalene	µg/L	<	0.28									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.29									
	Chrysene	µg/L	<	0.34									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.26									
	1,2-Dichlorobenzene	µg/L	<	0.32									
	1,3-Dichlorobenzene	µg/L	<	0.17									
	1,4-Dichlorobenzene	µg/L	<	0.15									
	3,3-Dichlorobenzidine	µg/L	<	0.13									
	Diethyl Phthalate	µg/L		0.27									
	Dimethyl Phthalate	µg/L	<	0.23									
	Di-n-Butyl Phthalate	µg/L		0.34									
	2,4-Dinitrotoluene	µg/L	<	0.77									

	2,6-Dinitrotoluene	µg/L		0.46										
	Di-n-Octyl Phthalate	µg/L	<	0.27										
	1,2-Diphenylhydrazine	µg/L		0.31										
	Fluoranthene	µg/L	<	0.18										
	Fluorene	µg/L	<	0.25										
	Hexachlorobenzene	µg/L	<	0.25										
	Hexachlorobutadiene	µg/L	<	0.27										
	Hexachlorocyclopentadiene	µg/L	<	0.22										
	Hexachloroethane	µg/L	<	0.26										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.25										
	Isophorone	µg/L	<	0.23										
	Naphthalene	µg/L	<	0.25										
	Nitrobenzene	µg/L	<	0.26										
	n-Nitrosodimethylamine	µg/L	<	0.4										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.31										
	n-Nitrosodiphenylamine	µg/L	<	0.27										
	Phenanthrene	µg/L	<	0.21										
	Pyrene	µg/L	<	0.16										
	1,2,4-Trichlorobenzene	µg/L	<	0.17										
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												

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Leonard L. Nary WWTP, NPDES Permit No. PA0028801, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Ohio River**

No. Reaches to Model: **1**

- ○ Statewide Criteria
- ○ Great Lakes Criteria
- ◉ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032317	971.68	692	19500	0.0001		Yes
End of Reach 1	032317	969.38	691.9	19501	0.0001	5.2	Yes

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

Location	RMI	LFY (cfs/mi^2)*	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	971.68	0.1	2365			550	12					100.1	7.7		
End of Reach 1	969.38	0.1	4730			1150	12								

Q_h

Location	RMI	LFY (cfs/mi^2)	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	971.68														
End of Reach 1	969.38														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Leonard L. Nary WWTP, NPDES Permit No. PA0028801, Outfall 001

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

☑ ***Hydrodynamics***

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
971.68	2,365		2,365	9.591	0.0001	12.	550.	45.833	0.36	0.391	989.386
969.38	4,730	8.044	4721.9556								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
971.68	6602.63		6602.63	9.591	0.0001	18.831	550.	29.207	0.638	0.22	505.917
969.38	12100.894	8.044	12092.85								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.123 Analysis Hardness (mg/l): 103.22 Analysis pH: 7.65

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	
Total Aluminum	0	0		0	750	750	23,521	
Total Antimony	0	0		0	1,100	1,100	34,497	
Total Arsenic	0	0		0	340	340	10,663	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	658,575	
Total Boron	0	0		0	8,100	8,100	254,022	
Total Cadmium	0	0		0	2.077	2.2	69.1	Chem Translator of 0.943 applied
Total Chromium (III)	0	0		0	584.754	1,850	58,033	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	511	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	2,979	
Total Copper	0	0		0	13.847	14.4	452	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	690	

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	66.849	85.0	2,666	Chem Translator of 0.786 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	51.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	480.967	482	15,114	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	3.397	4.0	125	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,038	
Total Zinc	0	0		0	120.371	123	3,860	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	94.1	
Acrylonitrile	0	0		0	650	650	20,384	
Benzene	0	0		0	640	640	20,071	
Bromoform	0	0		0	1,800	1,800	56,449	
Carbon Tetrachloride	0	0		0	2,800	2,800	87,810	
Chlorobenzene	0	0		0	1,200	1,200	37,633	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	564,493	
Chloroform	0	0		0	1,900	1,900	59,585	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	470,411	
1,1-Dichloroethylene	0	0		0	7,500	7,500	235,205	
1,2-Dichloropropane	0	0		0	11,000	11,000	344,968	
1,3-Dichloropropylene	0	0		0	310	310	9,722	
Ethylbenzene	0	0		0	2,900	2,900	90,946	
Methyl Bromide	0	0		0	550	550	17,248	
Methyl Chloride	0	0		0	28,000	28,000	878,100	
Methylene Chloride	0	0		0	12,000	12,000	376,329	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	31,361	
Tetrachloroethylene	0	0		0	700	700	21,952	
Toluene	0	0		0	1,700	1,700	53,313	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	213,253	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	94,082	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	106,626	
Trichloroethylene	0	0		0	2,300	2,300	72,130	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	17,562	
2,4-Dichlorophenol	0	0		0	1,700	1,700	53,313	
2,4-Dimethylphenol	0	0		0	660	660	20,698	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	2,509	
2,4-Dinitrophenol	0	0		0	660	660	20,698	
2-Nitrophenol	0	0		0	8,000	8,000	250,886	
4-Nitrophenol	0	0		0	2,300	2,300	72,130	
p-Chloro-m-Cresol	0	0		0	160	160	5,018	
Pentachlorophenol	0	0		0	16.726	16.7	525	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	14,426	

Acenaphthene	0	0		0	83	83.0	2,603	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	9,408	
Benzo(a)Anthracene	0	0		0	0.5	0.5	15.7	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	940,821	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	141,123	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	8,467	
Butyl Benzyl Phthalate	0	0		0	140	140	4,390	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	25,716	
1,3-Dichlorobenzene	0	0		0	350	350	10,976	
1,4-Dichlorobenzene	0	0		0	730	730	22,893	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	125,443	
Dimethyl Phthalate	0	0		0	2,500	2,500	78,402	
Di-n-Butyl Phthalate	0	0		0	110	110	3,450	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	50,177	
2,6-Dinitrotoluene	0	0		0	990	990	31,047	
1,2-Diphenylhydrazine	0	0		0	15	15.0	470	
Fluoranthene	0	0		0	200	200	6,272	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	314	
Hexachlorocyclopentadiene	0	0		0	5	5.0	157	
Hexachloroethane	0	0		0	60	60.0	1,882	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	313,607	
Naphthalene	0	0		0	140	140	4,390	
Nitrobenzene	0	0		0	4,000	4,000	125,443	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	533,132	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	9,408	
Phenanthrene	0	0		0	5	5.0	157	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	4,077	

☑ ***CFC*** CCT (min): 720 PMF: 0.853 Analysis Hardness (mg/l): 100.56 Analysis pH: 7.69

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	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	46,496	
Total Arsenic	0	0		0	150	150	31,702	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	866,515	
Total Boron	0	0		0	1,600	1,600	338,152	
Total Cadmium	0	0		0	0.247	0.27	57.4	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.456	86.6	18,298	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	2,197	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	4,016	
Total Copper	0	0		0	8.999	9.37	1,981	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	1,099	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	371,363	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.532	3.2	677	Chem Translator of 0.79 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	191	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.254	52.4	11,077	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	1,054	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	2,747	
Total Zinc	0	0		0	118.703	120	25,443	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	634	
Acrylonitrile	0	0		0	130	130	27,475	
Benzene	0	0		0	130	130	27,475	
Bromoform	0	0		0	370	370	78,198	
Carbon Tetrachloride	0	0		0	560	560	118,353	
Chlorobenzene	0	0		0	240	240	50,723	

Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	739,708	
Chloroform	0	0		0	390	390	82,425	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	655,170	
1,1-Dichloroethylene	0	0		0	1,500	1,500	317,018	
1,2-Dichloropropane	0	0		0	2,200	2,200	464,959	
1,3-Dichloropropylene	0	0		0	61	61.0	12,892	
Ethylbenzene	0	0		0	580	580	122,580	
Methyl Bromide	0	0		0	110	110	23,248	
Methyl Chloride	0	0		0	5,500	5,500	1,162,399	
Methylene Chloride	0	0		0	2,400	2,400	507,228	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	44,382	
Tetrachloroethylene	0	0		0	140	140	29,588	
Toluene	0	0		0	330	330	69,744	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	295,883	
1,1,1-Trichloroethane	0	0		0	610	610	128,921	
1,1,2-Trichloroethane	0	0		0	680	680	143,715	
Trichloroethylene	0	0		0	450	450	95,105	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	23,248	
2,4-Dichlorophenol	0	0		0	340	340	71,857	
2,4-Dimethylphenol	0	0		0	130	130	27,475	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	3,382	
2,4-Dinitrophenol	0	0		0	130	130	27,475	
2-Nitrophenol	0	0		0	1,600	1,600	338,152	
4-Nitrophenol	0	0		0	470	470	99,332	
p-Chloro-m-Cresol	0	0		0	500	500	105,673	
Pentachlorophenol	0	0		0	12.832	12.8	2,712	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	19,232	
Acenaphthene	0	0		0	17	17.0	3,593	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	12,469	
Benzo(a)Anthracene	0	0		0	0.1	0.1	21.1	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	1,268,071	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	192,324	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	11,413	
Butyl Benzyl Phthalate	0	0		0	35	35.0	7,397	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	

Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	33,815	
1,3-Dichlorobenzene	0	0		0	69	69.0	14,583	
1,4-Dichlorobenzene	0	0		0	150	150	31,702	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	169,076	
Dimethyl Phthalate	0	0		0	500	500	105,673	
Di-n-Butyl Phthalate	0	0		0	21	21.0	4,438	
2,4-Dinitrotoluene	0	0		0	320	320	67,630	
2,6-Dinitrotoluene	0	0		0	200	200	42,269	
1,2-Diphenylhydrazine	0	0		0	3	3.0	634	
Fluoranthene	0	0		0	40	40.0	8,454	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	423	
Hexachlorocyclopentadiene	0	0		0	1	1.0	211	
Hexachloroethane	0	0		0	12	12.0	2,536	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	443,825	
Naphthalene	0	0		0	43	43.0	9,088	
Nitrobenzene	0	0		0	810	810	171,190	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	718,574	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	12,469	
Phenanthrene	0	0		0	1	1.0	211	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	5,495	

☑ ***THH*** CCT (min): ###### THH PMF: 0.853 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 0.754

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	#########	WQC applied at RMI 969.38 with a design stream flow of 4730 cfs
Chloride (PWS)	0	0		0	250,000	250,000	93,214,923	WQC applied at RMI 969.38 with a design stream flow of 4730 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	93,214,923	WQC applied at RMI 969.38 with a design stream flow of 4730 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	1,047	THH WQC applied at PWS at RMI 969.38
Total Arsenic	0	0		0	10	10.0	1,869	THH WQC applied at PWS at RMI 969.38
Total Barium	0	0		0	1,000	1,000	186,930	THH WQC applied at PWS at RMI 969.38
Total Boron	0	0		0	3,100	3,100	579,483	THH WQC applied at PWS at RMI 969.38
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	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	1,300	1,300	243,009	THH WQC applied at PWS at RMI 969.38
Free Cyanide	0	0		0	4	4.0	748	THH WQC applied at PWS at RMI 969.38
Dissolved Iron	0	0		0	300	300	56,079	THH WQC applied at PWS at RMI 969.38
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	186,930	THH WQC applied at PWS at RMI 969.38
Total Mercury	0	0		0	0.012	0.012	2.24	THH WQC applied at PWS at RMI 969.38
Total Nickel	0	0		0	610	610	114,027	THH WQC applied at PWS at RMI 969.38
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	1,864	WQC applied at RMI 969.38 with a design stream flow of 4730 cfs
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	44.9	THH WQC applied at PWS at RMI 969.38
Total Zinc	0	0		0	7,400	7,400	1,383,281	THH WQC applied at PWS at RMI 969.38
Acrolein	0	0		0	3	3.0	561	THH WQC applied at PWS at RMI 969.38
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	18,693	THH WQC applied at PWS at RMI 969.38
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	6,169	THH WQC applied at PWS at RMI 969.38
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	12,711	THH WQC applied at PWS at RMI 969.38
Methyl Bromide	0	0		0	47	47.0	8,786	THH WQC applied at PWS at RMI 969.38

Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	10,655	THH WQC applied at PWS at RMI 969.38
1,2-trans-Dichloroethylene	0	0		0	100	100.0	18,693	THH WQC applied at PWS at RMI 969.38
1,1,1-Trichloroethane	0	0		0	10,000	10,000	1,869,298	THH WQC applied at PWS at RMI 969.38
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	5,608	THH WQC applied at PWS at RMI 969.38
2,4-Dichlorophenol	0	0		0	10	10.0	1,869	THH WQC applied at PWS at RMI 969.38
2,4-Dimethylphenol	0	0		0	100	100.0	18,693	THH WQC applied at PWS at RMI 969.38
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	374	THH WQC applied at PWS at RMI 969.38
2,4-Dinitrophenol	0	0		0	10	10.0	1,869	THH WQC applied at PWS at RMI 969.38
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	747,719	THH WQC applied at PWS at RMI 969.38
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	13,085	THH WQC applied at PWS at RMI 969.38
Anthracene	0	0		0	300	300	56,079	THH WQC applied at PWS at RMI 969.38
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	37,386	THH WQC applied at PWS at RMI 969.38
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	18.7	THH WQC applied at PWS at RMI 969.38
2-Chloronaphthalene	0	0		0	800	800	149,544	THH WQC applied at PWS at RMI 969.38
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	78,511	THH WQC applied at PWS at RMI 969.38
1,3-Dichlorobenzene	0	0		0	7	7.0	1,309	THH WQC applied at PWS at RMI 969.38
1,4-Dichlorobenzene	0	0		0	63	63.0	11,777	THH WQC applied at PWS at RMI 969.38
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	112,158	THH WQC applied at PWS at RMI 969.38
Dimethyl Phthalate	0	0		0	2,000	2,000	373,860	THH WQC applied at PWS at RMI 969.38
Di-n-Butyl Phthalate	0	0		0	20	20.0	3,739	THH WQC applied at PWS at RMI 969.38
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	

1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	3,739	THH WQC applied at PWS at RMI 969.38
Fluorene	0	0		0	50	50.0	9,346	THH WQC applied at PWS at RMI 969.38
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	748	THH WQC applied at PWS at RMI 969.38
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	6,356	THH WQC applied at PWS at RMI 969.38
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	1,869	THH WQC applied at PWS at RMI 969.38
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	3,739	THH WQC applied at PWS at RMI 969.38
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	13.1	THH WQC applied at PWS at RMI 969.38

☑ ***CRL*** 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 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	
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	
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	
Free Cyanide	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	50	50.0	34,470	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.051	0.051	35.2	
Benzene	0	0		0	0.58	0.58	400	
Bromoform	0	0		0	4.3	4.3	2,964	
Carbon Tetrachloride	0	0		0	0.4	0.4	276	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	276	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	3,930	
Dichlorobromomethane	0	0		0	0.55	0.55	379	
1,2-Dichloroethane	0	0		0	0.38	0.38	262	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	345	
1,3-Dichloropropylene	0	0		0	0.27	0.27	186	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	4.6	4.6	3,171	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	117	
Tetrachloroethylene	0	0		0	0.69	0.69	476	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	379	
Trichloroethylene	0	0		0	0.6	0.6	414	
Vinyl Chloride	0	0		0	0.02	0.02	13.8	

2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	20.7	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	965	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.000086	0.00009	0.059	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.69	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.069	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.69	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	2.62	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	20.7	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	221	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.0038	0.004	2.62	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.069	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	14.5	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	34.5	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	34.5	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	20.7	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.055	
Hexachlorobutadiene	0	0		0	0.01	0.01	6.89	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	68.9	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.69	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	

Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.48	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	3.45	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	2,275	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Mercury	0.0006	0.001	0.012	0.019	0.03	µg/L	0.012	THH	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	186,430	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	93,215	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	93,215	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	15,076	µg/L	Discharge Conc ≤ 10% WQBEL

Total Antimony	1,047	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	1,869	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	186,930	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	162,818	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	44.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	18,298	µg/L	Discharge Conc < TQL
Hexavalent Chromium	328	µg/L	Discharge Conc < TQL
Total Cobalt	1,910	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	290	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	442	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	56,079	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	371,363	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	677	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	186,930	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	9,687	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	1,864	µg/L	Discharge Conc < TQL
Total Selenium	1,054	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	80.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	44.9	µg/L	Discharge Conc < TQL
Total Zinc	2,474	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	60.3	µg/L	Discharge Conc ≤ 25% WQBEL
Acrylonitrile	35.2	µg/L	Discharge Conc < TQL
Benzene	400	µg/L	Discharge Conc ≤ 25% WQBEL
Bromoform	2,964	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	276	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	18,693	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	276	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	361,817	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroform	3,930	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	379	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	262	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethylene	6,169	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-Dichloropropane	345	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichloropropylene	186	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	12,711	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Bromide	8,786	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	562,827	µg/L	Discharge Conc ≤ 25% WQBEL
Methylene Chloride	3,171	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	117	µg/L	Discharge Conc ≤ 25% WQBEL

Tetrachloroethylene	476	µg/L	Discharge Conc ≤ 25% WQBEL
Toluene	10,655	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	18,693	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,1-Trichloroethane	60,303	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2-Trichloroethane	379	µg/L	Discharge Conc ≤ 25% WQBEL
Trichloroethylene	414	µg/L	Discharge Conc ≤ 25% WQBEL
Vinyl Chloride	13.8	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chlorophenol	5,608	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	1,869	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	13,267	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	374	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	1,869	µg/L	Discharge Conc < TQL
2-Nitrophenol	160,808	µg/L	Discharge Conc < TQL
4-Nitrophenol	46,232	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	3,216	µg/L	Discharge Conc < TQL
Pentachlorophenol	20.7	µg/L	Discharge Conc < TQL
Phenol	747,719	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	965	µg/L	Discharge Conc < TQL
Acenaphthene	1,668	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	56,079	µg/L	Discharge Conc < TQL
Benzidine	0.059	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.69	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.069	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.69	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	2.62	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	20.7	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	37,386	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	221	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	5,427	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	18.7	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	149,544	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	2.62	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.069	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	16,483	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	1,309	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	11,777	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	14.5	µg/L	Discharge Conc < TQL
Diethyl Phthalate	80,404	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	50,252	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	2,211	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	34.5	µg/L	Discharge Conc < TQL

2,6-Dinitrotoluene	34.5	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	20.7	µg/L	Discharge Conc ≤ 25% WQBEL
Fluoranthene	3,739	µg/L	Discharge Conc < TQL
Fluorene	9,346	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	101	µg/L	Discharge Conc < TQL
Hexachloroethane	68.9	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.69	µg/L	Discharge Conc < TQL
Isophorone	6,356	µg/L	Discharge Conc < TQL
Naphthalene	2,814	µg/L	Discharge Conc < TQL
Nitrobenzene	1,869	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.48	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	3.45	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	2,275	µg/L	Discharge Conc < TQL
Phenanthrene	101	µg/L	Discharge Conc < TQL
Pyrene	3,739	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	13.1	µg/L	Discharge Conc < TQL

ATTACHMENT C

TRC Modeling Results

TRC EVALUATION – Outfall 001

2365	= Q stream (cfs)	0.5	= CV Daily
6.2	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.123	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.853	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc = 9.694	**1.3.2.iii**	WLA cfc = 65.423
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 3.612	**5.1d**	LTA_cfc = 38.034

Source	Reference	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)**

ATTACHMENT D

WET Testing Results

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Leonard L. Nary WWTP at Montour Run

Permit No.: PA0028801

Test Completion Date: 10/30/2018

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 10/8/2019

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 10/19/2020

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	0	1
11		
12		
13		
14		
15		
Mean	0.900	1.000
Std Dev.	0.316	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

Test Completion Date: 10/18/2021

Replicate No.	Control	TIWC
1	1	1
2	1	1
3	1	1
4	1	1
5	1	1
6	1	1
7	1	1
8	1	1
9	1	1
10	1	1
11		
12		
13		
14		
15		
Mean	1.000	1.000
Std Dev.	0.000	0.000
# Replicates	10	10

T-Test Result
Deg. of Freedom
Critical T Value
Pass or Fail: **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.02
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Leonard L. Nary WWTP at Montour Run

Permit No.: PA0028801

Test Completion Date: 10/30/2018

Replicate No.	Control	TIWC
1	25	23
2	25	26
3	19	20
4	25	27
5	17	29
6	24	25
7	22	21
8	26	24
9	24	28
10	26	25
11		
12		
13		
14		
15		
Mean	23.300	24.800
Std Dev.	3.057	2.898
# Replicates	10	10

T-Test Result	6.2682
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	**PASS**

Test Completion Date: 10/8/2019

Replicate No.	Control	TIWC
1	33	32
2	35	33
3	40	34
4	31	21
5	37	28
6	35	30
7	33	39
8	40	37
9	38	31
10	37	36
11		
12		
13		
14		
15		
Mean	35.900	32.100
Std Dev.	3.035	5.131
# Replicates	10	10

T-Test Result	2.9156
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	**PASS**

Test Completion Date: 10/19/2020

Replicate No.	Control	TIWC
1	38	29
2	35	26
3	35	34
4	31	26
5	30	29
6	31	20
7	31	29
8	30	23
9	32	26
10	14	27
11		
12		
13		
14		
15		
Mean	30.700	26.900
Std Dev.	6.430	3.784
# Replicates	10	10

T-Test Result	1.9990
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	**PASS**

Test Completion Date: 10/18/2021

Replicate No.	Control	TIWC
1	28	31
2	29	25
3	27	29
4	23	31
5	27	27
6	24	30
7	28	31
8	32	29
9	21	13
10	25	17
11		
12		
13		
14		
15		
Mean	26.400	26.300
Std Dev.	3.204	6.325
# Replicates	10	10

T-Test Result	3.0377
Deg. of Freedom	13
Critical T Value	0.8702
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Leonard L. Nary WWTP at Montour Run

Permit No.: PA0028801

Test Completion Date: 10/30/2018

Replicate No.	Control	TIWC
1	1	0.6
2	1	0.4
3	1	0.9
4	0.8	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.950	0.725
Std Dev.	0.100	0.275
# Replicates	4	4

T-Test Result	1.2036
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	**PASS**

Test Completion Date: 10/8/2019

Replicate No.	Control	TIWC
1	1	1
2	0.9	1
3	1	1
4	0.9	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.950	0.975
Std Dev.	0.058	0.050
# Replicates	4	4

T-Test Result	14.6365
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 10/20/2020

Replicate No.	Control	TIWC
1	1	0.9
2	1	0.9
3	1	1
4	1	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	1.000	0.925
Std Dev.	0.000	0.050
# Replicates	4	4

T-Test Result	15.8623
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Test Completion Date: 10/19/2021

Replicate No.	Control	TIWC
1	1	1
2	0.9	1
3	1	1
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.975	1.000
Std Dev.	0.050	0.000
# Replicates	4	4

T-Test Result	26.1497
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.02
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Leonard L. Nary WWTP at Montour Run

Permit No.: PA0028801

Test Completion Date: 10/30/2018

Replicate No.	Control	TIWC
1	0.255	0.25
2	0.247	0.282
3	0.266	0.344
4	0.25	0.265
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.255	0.285
Std Dev.	0.008	0.041
# Replicates	4	4

T-Test Result	4.5196
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	**PASS**

Test Completion Date: 10/8/2019

Replicate No.	Control	TIWC
1	0.385	0.393
2	0.29	0.343
3	0.32	0.336
4	0.268	0.323
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.316	0.349
Std Dev.	0.051	0.031
# Replicates	4	4

T-Test Result	4.5762
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 10/20/2020

Replicate No.	Control	TIWC
1	0.43	0.443
2	0.457	0.47
3	0.382	0.507
4	0.41	0.512
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.420	0.483
Std Dev.	0.032	0.033
# Replicates	4	4

T-Test Result	8.3396
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

Test Completion Date: 10/19/2021

Replicate No.	Control	TIWC
1	0.265	0.28
2	0.243	0.285
3	0.283	0.263
4	0.247	0.285
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.260	0.278
Std Dev.	0.018	0.010
# Replicates	4	4

T-Test Result	9.6808
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	**PASS**

WET Summary and Evaluation

Facility Name	Leonard L. Nary WWTP at Montour Run
Permit No.	PA0028801
Design Flow (MGD)	6.2
Q_{7-10} Flow (cfs)	2365
PMF_a	0.123
PMF_c	0.853

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/30/18	10/8/19	10/19/20	10/18/21
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/30/18	10/8/19	10/19/20	10/18/21
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/30/18	10/8/19	10/20/20	10/19/21
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	10/30/18	10/8/19	10/20/20	10/19/21
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**	
TIWC	**1**	% Effluent
Dilution Series	**1, 2, 30, 60, 100**	% Effluent
Permit Limit	**None**	
Permit Limit Species		