pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0051985**
Facility Type	**Municipal**	APS ID	**1094525**
Major / Minor	**Major**	Authorization ID	**1450363**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Horsham Water & Sewer Authority**	Facility Name	**Park Creek STP**
Applicant Address	617 Horsham Road	Facility Address	1010 Park Ridge Road
	Horsham, PA 19044-1207		Horsham, PA 19044-1419
Applicant Contact	Tina O'Rourke	Facility Contact	Michael Healey
Applicant Phone	(215) 672-8011	Facility Phone	(215) 343-4283
Client ID	41581	Site ID	451655
Ch 94 Load Status	Not Overloaded	Municipality	Horsham Township
Connection Status	No Limitations	County	Montgomery
Date Application Received	July 1, 2023	EPA Waived?	No
Date Application Accepted	February 22, 2024	If No, Reason	Major Facility
Purpose of Application	NPDES permit renewal application.		

Summary of Review

The Pa Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Gilmore & Associates, Inc (consultant) on July 1, 2023 on behalf of Horsham Water & Sewer Authority (HWSA/permittee) for Permittee's Park Creek STP (facility). This is a major sewage facility with a design flow of 2.25 MGD that discharges into Park Creek (WWF, MF) in state watershed 2-F. The current permit expired on December 31, 2023. The terms and conditions of the current permit is automatically extended since the renewal application was received at least 180 days prior to expiration date. Renewal NPDES permit application under Clean Water Program are not covered by PADEP's PDG per 021-2100-001. This fact sheet is developed in accordance with 40 CFR §124.56.

Changes to existing permit: Added: Total Zinc, E. Coli, HFPO-DA, and PFBS.

Sludge use and disposal description and location(s): Aerobically digested and dewatered sludge cake send to landfill.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Approve	Deny	Signatures	Date
√		Reza H. Chowdhury, E.I.T. / Project Manager	May 8, 2024
X		Pravin Patel Pravin C. Patel, P.E. / Environmental Engineer Manager	05/08/2024

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	2.25
Latitude	40º 13' 0.97"	Longitude	-75º 9' 30"
Quad Name	Ambler	Quad Code	1744
Wastewater Description:	Sewage Effluent		
Receiving Waters	Park Creek (WWF, MF)	Stream Code	02661
NHD Com ID	25473924	RMI	1.04
Drainage Area	10.7 mi^2	Yield (cfs/mi^2)	0.07
Q_{7-10} Flow (cfs)	0.75	Q_{7-10} Basis	Please see below
Elevation (ft)	221.34	Slope (ft/ft)	
Watershed No.	2-F	Chapter 93 Class.	WWF, MF
Existing Use	**WWF**	Existing Use Qualifier	Ch.93
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, NUTRIENTS, PATHOGENS, POLYCHLORINATED BIPHENYLS (PCBS), SILTATION		
Source(s) of Impairment	MUNICIPAL POINT SOURCE DISCHARGES, SOURCE UNKNOWN, SOURCE UNKNOWN, URBAN RUNOFF/STORM SEWERS, URBAN RUNOFF/STORM SEWERS		
TMDL Status	Final	Name	Neshaminy Creek

Background/Ambient Data		Data Source
pH (SU)	7.8	WQN0169, median, July-Sep 1973-1987
Temperature (°C)	22	WQN0169, median, July-Sep 1973-1987
Hardness (mg/L)	191	Application data
Other:		

Nearest Downstream Public Water Supply Intake		Aqua PA Main System, Norristown	
PWS Waters	Neshaminy Creek	Flow at Intake (cfs)	
PWS RMI	9.36	Distance from Outfall (mi)	24.91

Changes Since Last Permit Issuance: None. A third treatment train is being evaluated. The third train was planned as part of previous design but will need permitting and installation.

Streamflow:

The nearest USGS StreamGages were considered for streamflow data collection. The nearest StreamGage is 01464907 which has records for a very short period (1998-2001) and the data couldn't be fetched from publication (1). Next StreamGage is 01464984 which also has a short record (1985-1992) and data not available. The next StreamGage is 01495000 which has a much longer record period (1884-1934), but the data is too old to use. Therefore, the data from last permit's fact sheet was analyzed. Last permit used StreamGage 01465500, located on Neshaminy Creek at Langhorne. The yield at this gage was calculated as 0.07 cfs/mi^2. The USGS's web based watershed delineation tool StreamStats (accessible at https://streamstats.usgs.gov/ss/, accessed on February 22, 2024) was utilized to determine the drainage area at discharge point. The drainage area at Outfall 001 was found to be 10.7 mi^2.

Q_{7-10} at Outfall 001: 10.7*0.07 or 0.749 cfs.
Default Q_{1-10}:Q_{30-10} of 0.64 and default Q_{30-10}:Q_{7-10} of 1.36 (per 391-2000-007) will be used for modeling.

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

Stormwater Outfalls:
The permit application lists six stormwater-only outfalls of which one outfall (006) represents the remaining (002 through 005). The current permit has monitoring requirements for Outfall 006 which will be carried over. In addition to that, applicable benchmark values will be added in Part C of the permit.

OUTFALL NO.	LATITUDE			LONGITUDE			RECEIVING WATERS		
	Deg	Min	Sec	Deg	Min	Sec	Name	Ch. 93 Class.	Drainage Area (ft^2)
002	40	13	00	-75	09	30	Park Creek	WWF-MF	110,207
003	40	13	00	-75	09	30	Park Creek	WWF-MF	108,900
004	40	13	00	-75	09	30	Park Creek	WWF-MF	94,961
005	40	13	00	-75	09	30	Park Creek	WWF-MF	28,750
006	40	13	01	-75	09	30	Park Creek	WWF-MF	221,285

PWS Intake:
The nearest downstream public water supply is Aqua PA Main System on Neshaminy Creek at RMI 9.36. Its approximately 24.91 miles downstream of Outfall 001. Discharge from this facility is expected not to impact the PWS intake.

Wastewater Characteristics:
The 90th percentile pH of 7.2 was calculated from daily DMR during dry months July through September for the year 2023. The application data indicated an average Total Hardness of 182 mg/l out of 24 samples. The application indicated an average discharge temperature of 57.74^{0}F or 14.43^{0}C.

Background data:
The nearest WQN station is 0169 on Neshaminy Creek. The median temperature is 22.0^{0}C and median pH is 7.8 S.U. The median was calculated for dry months (July-September) for the years 1973-1987 from the WQN station. The average hardness is 191 mg/l, per the application.

Neshaminy Creek Watershed TMDL:
Neshaminy Creek Watershed TMDL was finalized on April 9, 2003 for nutrients and sedimentation, nutrient portion of which was withdrawn on January 31, 2008.

Antidegradation (93.4):
The effluent limits for this discharge have been developed to ensure that existing in-stream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. The receiving streams are designated as Warm Water Fishes (WWF) and Migratory Fishes (MF.) No High-Quality stream or Exceptional Value water is impacted by this discharge; therefore, no Antidegradation Analysis is performed for the discharge.

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

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	006	Design Flow (MGD)	0
Latitude	40º 13' 1"	Longitude	-75º 9' 30"
Quad Name	Ambler	Quad Code	1744
Wastewater Description:	Stormwater		
Receiving Waters	Park Creek (WWF, MF)	Stream Code	02661
NHD Com ID	25473924	RMI	

Changes Since Last Permit Issuance: None

Treatment Facility Summary				

Treatment Facility Name: Park Creek STP

WQM Permit No.	Issuance Date
4612409	12/24/2012

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration with Solids Removal	Ultraviolet	2.25

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
2.79	10510	Not Overloaded	Aerobic Digestion	Landfill

Treatment Plant Description

Horsham Water & Sewer Authority (HWSA/permittee) owns and operates a Sewage Treatment Plant (STP) named Park Creek STP (facility), located in 1010 Park Ridge Road, Horsham, PA 19044. The facility is a major STP with an average annual flow of 2.25 MGD, hydraulic design capacity of 2.79 MGD, and organic loading capacity of 10,510 lbs. BOD5/day. The facility discharges treated effluent and stormwater from the STP area into Park Creek in state watershed 2-F.

The application indicated the following treatment units: Influent → screen/grinder chamber → Influent PS → EQ tank → Flow EQ PS → Split in 3 trains (2 existing, 1 proposed), each train consisting → Pre-anoxic, anaerobic, anoxic, oxic zones → Secondary clarification → all trains combined → Flocculation tank → disc filtration → UV disinfection → effluent monitoring chamber → Outfall.

The biosolids flow path: WAS from secondary clarifier (unit 1) to Aerobic digester 1, from units 2 & 3 to Aerobic Digester 2, scum pit collects all scums from secondary clarifiers and sends to Aerobic digester 1 → Aerobic digester 1 to Decant chamber 1, Aerobic digester 2 to Decant chamber 2 → comingles → polymer feed → centrifuge → dewatered sludge cake to landfill.

The facility uses the following wastewater treatment chemicals:

Chemical Name	Purpose	Maximum Usage Rate	Units
Aluminum Sulfate for Centrate	Phosphorous Removal	11	GPD
Aluminim Sulfate for CE	Phosphorous Removal	120	GPD
Polymer for CE	Phosphorous Removal	17.4	GPD

The facility receives wastewater from the following tributary municipalities:

TRIBUTARY INFORMATION				
		Type of Sewer System		
Municipalities Served	Flow Contribution (%)	Separate (%)	Combined (%)	Population
Warrington Township	0.05	100		5
Upper Dublin Township	0.46	100		50
Horsham Township	99.49	100		15,864

There's no categorical or significant industrial or commercial facilities within its service area, per the application.

Compliance History

DMR Data for Outfall 001 (from January 1, 2023 to December 31, 2023)

Parameter	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23
Flow (MGD) Average Monthly	1.454	0.891	0.924	0.932	0.928	0.998	0.907	1.064	1.109	1.284	1.238	1.515
Flow (MGD) Weekly Average	1.808	1.035	1.012	1.165	0.988	1.096	1.099	1.576	1.223	1.376	1.437	2.002
pH (S.U.) IMIN	6.9	7.0	7.0	7.0	6.9	7.0	6.7	6.9	6.9	6.7	6.8	6.6
pH (S.U.) IMAX	7.4	7.2	7.4	7.3	7.4	7.3	7.2	7.2	7.2	7.1	7.1	7.2
DO (mg/L) IMIN	8.1	7.8	7.6	6.8	7.1	7.4	7.9	8.1	7.1	8.4	8.8	8.6
CBOD5 (lbs/day) Average Monthly	< 52	< 20	< 17	< 17	< 16	< 18	< 16	< 22	< 23	< 25	< 23	< 25
CBOD5 (lbs/day) Weekly Average	112	24	< 18	< 24	< 19	< 20	< 20	< 34	29	< 29	< 31	< 31
CBOD5 (mg/L) Average Monthly	< 4	< 3	< 2	< 2	< 2	< 2	< 2	< 2	< 3	< 2	< 2	< 2
CBOD5 (mg/L) Raw Sewage Influent Average Monthly	128	242	169	162	166	157	165	158	169	189.5	188	172
CBOD5 (mg/L) Weekly Average	8	3	2	< 2	3	< 2	< 2	< 3	< 4	< 3	< 3	2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	1987	1957	1537	1628	1423	1737	1299	1614	1685	2748	2630	2331
BOD5 (mg/L) Raw Sewage Influent Average Monthly	155	263	195	205	188	201	179	181	200	255	250	201
TSS (lbs/day) Average Monthly	< 30	< 13	< 21	< 14	< 19	< 24	< 20	< 23	< 24	< 15	< 17	< 21
TSS (lbs/day) Weekly Average	< 59	< 27	50	22	52	34	36	34	< 50	19	23	35
TSS (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 1	< 2	< 2
TSS (mg/L) Raw Sewage Influent Average Monthly	141	225	204	201	203	191	195	202	222	195	207	201
TSS (mg/L) Weekly Average	< 3	< 4	5	3	6	4	4	4	< 5	2	3	3
Fecal Coliform (No./100 ml) Geometric Mean	< 2	< 2	< 5	< 3	< 3	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Fecal Coliform (No./100 ml) IMAX	< 2	< 2	43	204	15	3	3	< 2	< 2	7	< 2	< 2
UV Transmittance (%) Daily Minimum	69.2	66.1	63.2	70.3	69.5	75.2	67.4	68.1	68.6	71.4	67.7	69.8
Nitrate-Nitrite (lbs/day) Average Monthly	< 69	< 50	< 43.0	< 40.0	< 36.0	< 40.0	< 32	< 47	< 47	< 63	< 61	< 70
Nitrate-Nitrite (mg/L) Average Monthly	< 5.2	< 6.7	< 5.4	< 4.9	< 4.8	< 4.6	< 4.3	< 5	< 5.6	5.9	< 5.8	< 5.8
Total Nitrogen (lbs/day) Average Monthly	< 77	< 56	< 49	< 46	< 41	< 48	< 40	< 54	< 56	< 74	< 71	< 78
Total Nitrogen (mg/L) Average Monthly	< 5.8	< 7.4	< 6.2	< 5.6	< 5.4	< 5.5	< 5.3	< 5.8	< 6.6	< 6.8	< 6.7	< 6.5
Ammonia (lbs/day) Average Monthly	< 0.5	< 0.3	< 0.3	< 0.4	< 0.3	< 0.6	< 1.3	< 0.4	< 0.3	< 0.8	< 0.4	< 0.5
Ammonia (mg/L) Average Monthly	< 0.04	< 0.04	< 0.04	< 0.05	< 0.04	< 0.1	< 0.1	< 0.04	< 0.04	< 0.07	< 0.04	< 0.04
Total Phosphorus (lbs/day) Average Monthly	5.3	1.6	2.6	2.3	2.4	2.3	1.6	1.3	1.5	1.6	1.6	1.3
Total Phosphorus (mg/L) Average Monthly	0.4	0.2	0.3	0.3	0.3	0.3	0.2	< 0.1	0.2	0.15	0.2	0.1
Total Copper (lbs/day) Average Monthly	< 0.09	0.08	< 0.09	< 0.07	< 0.07	< 0.07	< 0.07	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Copper (lbs/day) Daily Maximum	0.1	0.08	< 0.1	0.08	< 0.08	< 0.07	< 0.07	< 0.2	< 0.1	0.1	< 0.1	< 0.1
Total Copper (mg/L) Average Monthly	< 0.01	0.011	< 0.01	< 0.011	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.01	0.011	< 0.01	0.012	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Total Hardness (mg/L) Average Monthly	182	190	183	176	173	175	193	153	183	175	163	183
Total Hardness (mg/L) Daily Maximum	185	192	189	177	174	176	194	159	185	183	166	191
PFOA (ug/L) Average Monthly	0.008	0.009	0.015	0.008	0.012	0.012	< 0.006	0.015	< 0.015	0.009	0.009	0.014
PFOA (ug/L) Raw Sewage Influent Average Quarterly	0.005			< 0.02			< 0.02			0.008		
PFOA (ug/L) Daily Maximum	0.008	0.011	0.019	0.008	0.012	0.013	0.010	0.016	< 0.020	0.01	0.010	0.016
PFOA (ug/L) Raw Sewage Influent Daily Maximum	0.005			< 0.02			< 0.02			0.008		

PFOS (ug/L) Average Monthly	0.005	0.004	0.007	0.005	0.008	0.007	< 0.004	0.008	< 0.011	0.005	0.006	0.007
PFOS (ug/L) Raw Sewage Influent Average Quarterly	0.008			0.022			0.031			0.017		
PFOS (ug/L) Daily Maximum	0.005	0.005	0.008	0.005	0.008	0.008	0.005	0.008	< 0.020	0.005	0.006	0.007
PFOS (ug/L) Raw Sewage Influent Daily Maximum	0.008			0.022			0.031			0.017		
Total PFOA and PFOS (ug/L) Average Monthly	0.013	0.014	0.021	0.013	0.019	0.018	< 0.009	0.023	< 0.026	0.014	0.015	0.021
Total PFOA and PFOS (ug/L) Raw Sewage Influent Average Quarterly	0.013			< 0.042			< 0.051			0.025		
Total PFOA and PFOS (ug/L) Daily Maximum	0.013	0.016	0.027	0.013	0.019	0.021	0.015	0.024	< 0.040	0.015	0.016	0.023
Total PFOA and PFOS (ug/L) Raw Sewage Influent Daily Maximum	0.013			< 0.042			< 0.051			0.025		
Chronic WET - Ceriodaphnia Survival (TUc) Daily Maximum	GG			GG			GG			1.2		
Chronic WET - Ceriodaphnia Reproduction (TUc) Daily Maximum	GG			GG			GG			1.2		
Chronic WET - Pimephales Survival (TUc) Daily Maximum	GG			GG			GG			1.2		
Chronic WET - Pimephales Growth (TUc) Daily Maximum	GG			GG			GG			1.2		

Comments: There's no DMR exceedances in last 12 months.

Inspection reports

07/20/2023: CEI conducted. No violation noted. Some algae growth was observed at the outfall. The discharge appeared clear.

12/28/21: CEI conducted. No violation noted. Receiving stream was clear 10 m downstream of Outfall 001. No solids or floatable scum on the surface.

10/29/21: RTPT conducted. No violation noted.

06/23/21: INCDT inspection conducted in response to an SSO due to an overflow of decanting return line. Approximately 200-300 gallons of sewage flowed to the stormwater basin to the stormwater collection system and was discharged to the storm water basin. The telescopic valve is lowered to 1.0 inch from 1.5 inch.

12/30/2020: CEI conducted. No violation noted.

08/27/2020: CEI conducted. No violation noted.

05/04/2020: RTPT conducted. No violation noted.

03/12/2019: CEI conducted. No violation noted.

Existing Limits

For Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5) Nov 1 - Apr 30	375	563	XXX	20	30 Wkly Avg	40	2/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) May 1 - Oct 31	187	281	XXX	10	15 Wkly Avg	20	2/week	24-Hr Composite
Carbonaceous Biochemical Oxygen Demand (CBOD5) Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Suspended Solids	563	844	XXX	30	45 Wkly Avg	60	2/week	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000*	2/week	Grab
UV transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
Nitrate-Nitrite as N Nov 1 - Jun 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N Jul 1 - Oct 31	167.0	XXX	XXX	8.9	XXX	17.8	2/week	24-Hr Composite
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	75.0	XXX	XXX	4.0	XXX	8	2/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Ammonia-Nitrogen May 1 - Oct 31	39.4	XXX	XXX	2.1	XXX	4.2	2/week	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	22.2	XXX	XXX	1.2	XXX	2.4	2/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	11.1	XXX	XXX	0.6	XXX	1.2	2/week	24-Hr Composite
Copper, Total	Report	Report Daily Max	XXX	Report	Report	XXX	1/month	24-Hr Composite
Hardness, Total (as CaCO3)	XXX	XXX	XXX	Report	Report	XXX	1/month	24-Hr Composite
PFOA (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
PFOA (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	24-Hr Composite
PFOS (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report	Report	XXX	1/quarter	24-Hr Composite
PFOS (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	24-Hr Composite
Total PFOA and PFOS (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report	Report	XXX	1/quarter	Calculation
Total PFOA and PFOS (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	Calculation
Toxicity, Chronic - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Toxicity, Chronic - Pimephales Growth (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite

For Outfall 006:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Iron, Dissolved	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 2.25
Latitude 40º 13' 0.97" **Longitude** -75º 9' 30"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

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

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

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass-based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

Model input data

The following data will be used for modeling, as needed:

- Discharge pH 7.2 (90^{th} percentile, July-Sep 2023, daily eDMR data)
- Discharge Temperature 14.43°C (Application data)
- Discharge Hardness 182 mg/l (Application data)
- Stream pH 7.8 (WQN#0169, median Jul-Sep 1973-1987)
- Stream Temperature 22.0°C (WQN#0169, median Jul-Sep 1973-1987)
- Stream Hardness 191 mg/l (Application data)

The following two nodes were used in modeling:

Node 1: At the outfall 001 on Park Creek (02661)
Elevation: 221.34 ft (National Map-Advanced Viewer, 02/022/2024)
Drainage Area: 10.7 mi^2 (StreamStat Version 3.0, 02/22/2024)
River Mile Index: 1.04 (PA DEP eMapPA)
Low Flow Yield: 0.07 cfs/mi^2
Q_{7-10}: 0.749 cfs
Discharge Flow: 2.25 MGD

Node 2: At confluence with Little Neshaminy Creek
Elevation: 210.5 ft (National Map-Advanced Viewer, 02/022/2024)
Drainage Area: 23.5 mi^2 (StreamStat Version 3.0, 02/022/2024)

River Mile Index:	0.0 (PA DEP eMapPA)
Low Flow Yield:	0.07 cfs/mi^2
Discharge Flow:	0.0 MGD

WQM 7.0 Model

WQM 7.0 version 1.11 is a water quality model designed to assist DEP to determine appropriate effluent limits for $CBOD_5$, NH_3-N and DO. The model simulates two basic processes. In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N 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 $CBOD_5$ and NH_3N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model was utilized for this permit renewal by using Q_{7-10} and current background water quality levels of the stream.

NH_3-N

WQM 7.0 suggested NH_3-N limit of 2.1 mg/l as monthly average and 4.2 mg/l as IMAX limit during summer to protect water quality standards. The limits are the same as existing permit and will be carried over. The calculated mass-based limits (summer 2.1*8.34*2.25 or 39.4 lbs./day, winter 4*8.34*2.25 or 75 lbs./day) are the same as existing permit and will be carried over as well.

CBOD5

WQM 7.0 suggests CBOD5 limit of 10.0 mg/l as AML during summer season which is the same as existing limit. Existing AML, MDL, and IMAX for both summer and winter seasons will be carried over, along with their respective mass limits.

DO

WQM 7.0 suggests minimum DO of 5.0 mg/l which is the model input and same as existing limit. Existing limit will be carried over.

General Discussion on Toxics Management Spreadsheet (TMS)

Based on the available data, PADEP utilizes Toxics Management Spreadsheet (TMS) to (1) evaluate reasonable potential for toxic pollutants to cause or contribute to an excursion above the water quality standards and (2) develop WQBELs for those such toxic pollutants (i.e., 40 CFR § 122.44(d)(1)(i)). It is noteworthy that some of these pollutants that may be reported as "non-detect", but still exceeded the criteria, were determined to be candidates for modeling because the method detection levels used to analyze those pollutants were higher than target QLs and/or the most stringent Chapter 93 criteria. The model then recommended the appropriate action for the Pollutants of Concerns based on the following logic as stated in PADEP's SOP titled *"Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (DEP SOP No.: BCW-PMT-037, Revised May 20, 2021)"*:

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

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

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

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

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

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

Major sewage facilities are required to sample for pollutants group 1-5, at a minimum, and 6 and/or 7, if applicable. TMDL parameters, as applicable, are also required to be sampled if they aren't covered in any pollutant groups or by Part A of the permit. Pollutants groups 2-7 are modeled through TMS. The facility is required to provide at least three sample results of the effluent from outfall(s) discharging processed wastewater. The permittee submitted at least three sample results of all pollutants in groups 1-5. Maximum sample results of a given pollutant is the input of the model if the sample size is less than 10. For pollutants with sample size ≥ 10, PADEP utilizes TOXCONC to calculate Average Monthly Effluent Concentration (AMEC) and Coefficient of Variation (CoV) to refine the model input. The statistical methodologies used in this spreadsheet are taken from EPA's *TSD for Water Quality-based Toxics Control, Appendix E* and are consistent with PADEP's technical guidance 391-2000-024. The pollutants are modeled through TMS and output from the TMS is provided below:

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Zinc	Report	Report	Report	Report	Report	µg/L	200	AFC	Discharge Conc > 10% WQBEL (no RP)

Each of the parameters are discussed below:

Total Copper:
The permittee conducted a site specific WER study on 2014. The WER was 2.8 and resulting CFC was 51 ug/l and AFC was 82 ug/l. These values were plugged into the TMS and resulted in no monitoring or limits requirements. If the permittee wants the benefit of site-specific relaxation, they should conduct another site-specific study during the permit term and submit the results with next renewal. The permit will be renewed with monitoring only in Part A and a new BLM study in Part C, since the site-specific study is more than 10 years old.

Total Zinc:
TMS model suggests monitoring requirements for Total Zinc from a model input value of 30 ug/l. A quarterly monitoring will be added.

Nitrate-Nitrite-Nitrogen:
Current permit has 8.9 mg/l as AML, 17.8 mg/l as IMAX, and 167 lbs./day as AML during summer season, and a reporting requirement for winter season with a frequency of 2/week. These existing limits and monitoring requirements will be carried over.

Total Phosphorus:
Due to the impairment status of the receiving stream, a Total Phosphorus limit was placed in the permit. The current permit has 0.6 mg/l as AML, 1.2 IMAX, and 11.1 lbs./day as AML for summer months. Winter limits were calculated as 2X of summer limits. Current limits will be continued until a revised TMDL is developed for nutrients.

Fecal Coliform:
The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. Delaware River Basin Commission's (DRBC's) Water Quality Regulations at Section 4.30.4.A requires that during winter season from October through April, the instantaneous maximum concentration of fecal coliform organisms shall not be greater than 1,000 per 100 milliliters in more than 10 percent of the samples tested. Therefore, the summer limit is governed by DEP's regulation while winter limit is governed by DRBC's regulation. These are existing requirements and will be carried over in this renewal.

E. Coli:

Pa Code 25 § 92a. 61 requires monitoring of E. Coli. DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends monthly E. Coli monitoring for major sewage dischargers. This requirement will be applied from this permit term.

pH:
The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 §§ 95.2(1), 92a.47) which are existing limits and will be carried over.

Total Suspended Solids (TSS):
There is no water quality criterion for TSS. The existing limits of 30 mg/L average monthly, 45 mg/l average weekly, and 60 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly and weekly average limits are calculated to be 563 lbs./day and 844 lbs./day respectively, which are the same as were in existing permit and will be carried over.

UV Disinfection:
PADEP's SOP BCW-PMT-033 recommends UV parameter monitoring where UV is used as a method of disinfection, with the same frequency as would be if Chlorine is used for disinfection. The current permit has UV Transmittance in % reporting requirement which will be carried over in this renewal.

Total Nitrogen:
PADEP's SOP BCW-PMT-033 recommends monitoring for Total Nitrogen for facilities with design flow more than 2000-GPD, which is also supported by Pa Code 25 Ch. 92a.61. Current monitoring requirement will be continued.

Total Hardness:
Existing Total Hardness monitoring will be continued to evaluate toxicity of Total Copper and/or other hardness-based pollutants.

PFOA, PFOS, HFPO-DA and PFBS:
The current permit has influent and effluent monitoring requirements for PFOA and PFOS. The last 12 months sample results show most of the months the results came as detected which triggers continuous monitoring for PFOA and PFOS, and new quarterly monitoring for HFPO-DA and PFBS with a footnote.

Monitoring Frequency and Sample Types:
Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Flow and Influent BOD_5 and TSS Monitoring Requirement:
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD_5 and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94.

Anti-Backsliding
Anti-backsliding prohibition is justified in sections where an exception is justified for the affected pollutant(s). For remaining pollutants, this prohibition isn't applicable since the proposed limits are at least as stringent as were in current permit.

Development of Effluent Limitations

Outfall No.	006	**Design Flow (MGD)**	0
Latitude	40º 13' 1.15"	**Longitude**	-75º 9' 39.19"
Wastewater Description:	Stormwater		

As stated in page 3 of this report, the facility has multiple stormwater only outfalls, of which Outfall 002 is representative. Existing monitoring requirements will be carried over for this outfall, in addition to any benchmark as appropriate.

Whole Effluent Toxicity (WET)

For Outfall , ☐ **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**

The dilution series used for the tests was: 100%, 91%, 82%, 41%, and 21%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 82%.

Summary of Four Most Recent Test Results

(NOTE – Enter results into one table, depending on which data analysis method was used).

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
1/11/20212	100%	100%	>100%	100%	100%	>100%	Pass
2/22/2021	100%	100%	>100%	100%	100%	>100%	Pass
2/4/2020	100%	100%	>100%	100%	100%	>100%	Pass
2/26/2019	100%	100%	>100%	100%	100%	>100%	Pass

***** *A "passing" result is that which is greater than or equal to the TIWC 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:

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

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

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

[(2.25 MGD x 1.547) / ((0.749 cfs x 1) + (2.25 MGD x 1.547))] x 100 = **82.29%**

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:

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

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

TIWCa = IWCa / 0.3 = **%**

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

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

[(2.25 MGD x 1.547) / ((0.749 cfs x 1) + (2.25 MGD x 1.547))] x 100 = **82.29%**

3. Determine Dilution Series

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

Dilution Series = 100%, 92%, 83%, 42%, and 21%.

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).

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

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	375	563	XXX	20	30 Wkly Avg	40	2/week	24-Hr Composite
CBOD5 Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
CBOD5 May 1 - Oct 31	187	281	XXX	10	15 Wkly Avg	20	2/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	563	844	XXX	30	45 Wkly Avg	60	2/week	24-Hr Composite
TSS Raw Sewage Influent	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report	XXX	1/month	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
Nitrate-Nitrite Nov 1 - Jun 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite Jul 1 - Oct 31	167.0	XXX	XXX	8.9	XXX	17.8	2/week	24-Hr Composite

Outfall 001, Continued (from 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	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia Nov 1 - Apr 30	75.0	XXX	XXX	4.0	XXX	8	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	39.4	XXX	XXX	2.1	XXX	4.2	2/week	24-Hr Composite
Total Phosphorus Nov 1 - Mar 31	22.2	XXX	XXX	1.2	XXX	2.4	2/week	24-Hr Composite
Total Phosphorus Apr 1 - Oct 31	11.1	XXX	XXX	0.6	XXX	1.2	2/week	24-Hr Composite
Total Copper	Report	Report Daily Max	XXX	Report	Report	XXX	1/month	24-Hr Composite
Zinc, Total (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
Total Hardness	XXX	XXX	XXX	Report	Report	XXX	1/month	24-Hr Composite
PFOA (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	24-Hr Composite
PFOA (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
PFOS (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	24-Hr Composite
PFOS (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
Total PFOA and PFOS (ug/L) Raw Sewage Influent	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	Calculation
Total PFOA and PFOS (ug/L)	XXX	XXX	XXX	Report	Report	XXX	2/month	Calculation
PFBS (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
HFPO-DA (ug/L)	XXX	XXX	XXX	Report Avg Qrtly	Report	XXX	1/quarter	24-Hr Composite
Chronic WET - Ceriodaphnia Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Chronic WET - Ceriodaphnia Reproduction (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite

Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Weekly Average	Daily Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Chronic WET - Pimephales Survival (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite
Chronic WET - Pimephales Growth (TUc)	XXX	XXX	XXX	Report Daily Max	XXX	XXX	See Permit	24-Hr Composite

Compliance Sampling Location: At Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 006, Effective Period: Permit Effective Date through Permit Expiration Date.

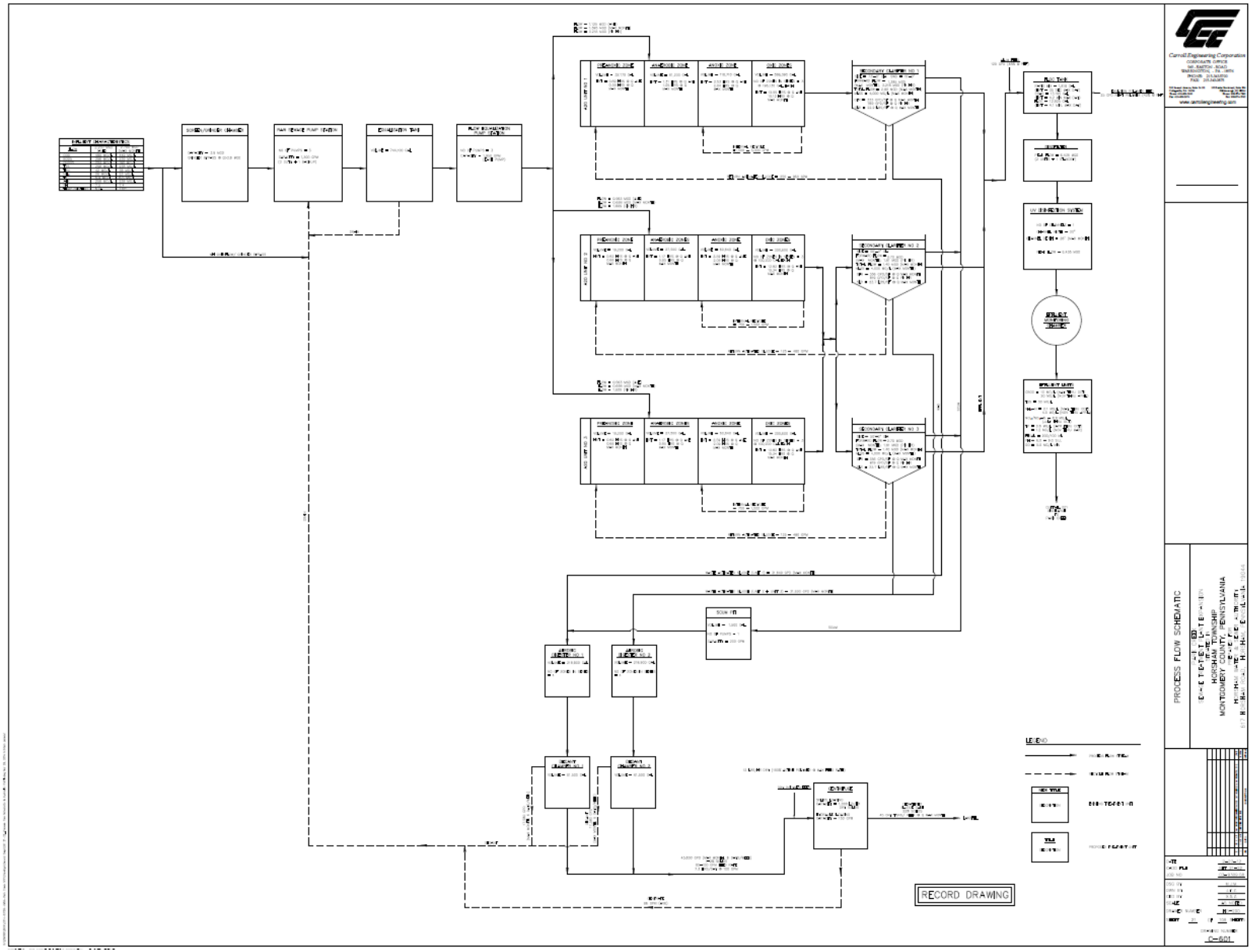
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Annual Average	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
CBOD5	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
COD	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
TSS	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Fecal Coliform (No./100 ml)	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
TKN	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Phosphorus	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Dissolved Iron	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 006

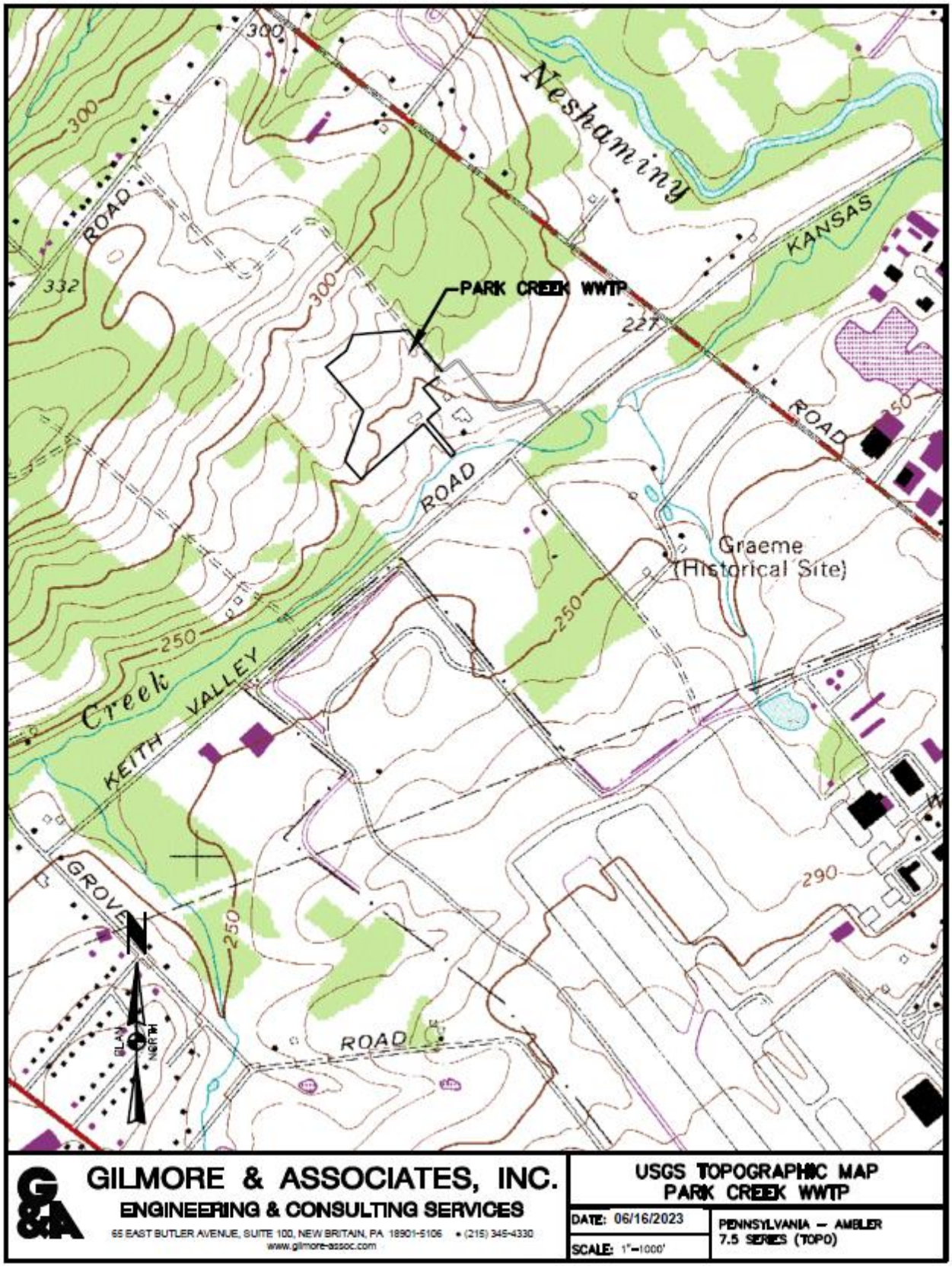
Other Comments:

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☒	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Process flow diagram



Locational Map



StreamStats at Outfall 001

PA0051985 at Outfall 001

Region ID: PA
Workspace ID: PA20240222200438456000
Clicked Point (Latitude, Longitude): 40.21727, -75.15846
Time: 2024-02-22 15:05:03 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	1.6822	degrees
DRNAREA	Area that drains to a point on a stream	10.7	square miles
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	34.024	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	10.7	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	1.6822	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	34.024	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.688	ft^3/s
30 Day 2 Year Low Flow	1.18	ft^3/s
7 Day 10 Year Low Flow	0.235	ft^3/s
30 Day 10 Year Low Flow	0.42	ft^3/s
90 Day 10 Year Low Flow	1.1	ft^3/s

Low-Flow Statistics Citations

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

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats at Node 2

PA0051985 at Node 2

Region ID: PA
Workspace ID: PA20240222200652640000
Clicked Point (Latitude, Longitude): 40.22332, -75.14451
Time: 2024-02-22 15:08:18 -0500

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	1.6979	degrees
DRNAREA	Area that drains to a point on a stream	23.5	square miles
ROCKDEP	Depth to rock	4.2	feet
URBAN	Percentage of basin with urban development	27.1621	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	23.5	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	1.6979	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.2	feet	4.13	5.21
URBAN	Percent Urban	27.1621	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

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

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.25	ft^3/s
30 Day 2 Year Low Flow	2.16	ft^3/s
7 Day 10 Year Low Flow	0.424	ft^3/s
30 Day 10 Year Low Flow	0.759	ft^3/s
90 Day 10 Year Low Flow	2	ft^3/s

Low-Flow Statistics Citations

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

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

WQM 7.0

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
02F	2661	PARK CREEK	1.040	221.34	10.70	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.070	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.00	7.80	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
Park Creek STP	PA0051985	2.2500	2.2500	2.2500	0.000	14.00	7.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.10	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
02F	2661	PARK CREEK	0.000	210.50	23.50	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.070	0.00	0.00	0.000	0.000	0.0	0.00	0.00	22.00	7.80	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

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

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
02F	2661	PARK CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.040	0.75	0.00	0.75	3.4808	0.00197	.637	25.65	40.26	0.26	0.245	15.42	7.26
Q1-10 Flow												
1.040	0.48	0.00	0.48	3.4808	0.00197	NA	NA	NA	0.25	0.255	14.97	7.24
Q30-10 Flow												
1.040	1.02	0.00	1.02	3.4808	0.00197	NA	NA	NA	0.27	0.237	15.81	7.28

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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
02F	2661	PARK CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.040	Park Creek STP	18.81	4.2	18.81	4.2	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
1.040	Park Creek STP	2.15	2.1	2.15	2.1	0	0

Dissolved Oxygen Allocations

		CBOD5		NH3-N		Dissolved Oxygen			
RMI	Discharge Name	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Critical Reach	Percent Reduction
1.04	Park Creek STP	10	10	2.1	2.1	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
02F	2661	PARK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.040	2.250	15.417	7.262
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
25.646	0.637	40.262	0.259
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
8.58	1.428	1.73	0.492
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.574	4.357	Tsivoglou	5
Reach Travel Time (days)			
0.245			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	8.34	1.71	5.59
0.049	8.11	1.69	5.62
0.074	7.88	1.67	5.66
0.098	7.66	1.65	5.70
0.123	7.45	1.63	5.74
0.147	7.24	1.61	5.80
0.172	7.04	1.59	5.85
0.196	6.84	1.57	5.91
0.221	6.65	1.55	5.97
0.245	6.46	1.53	6.04

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
02F	2661	PARK CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
1.040	Park Creek STP	PA0051985	2.250	CBOD5	10		
				NH3-N	2.1	4.2	
				Dissolved Oxygen			5

Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: Park Creek STP NPDES Permit No.: PA0051985 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
2.25	182	7.2						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		30									
	Total Antimony	µg/L		0.3									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		54									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	200									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.3									
	Total Copper	µg/L											
	Free Cyanide	µg/L		1									
	Total Cyanide	µg/L		9									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L	<	20									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		18									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		2.3									
	Total Phenols (Phenolics) (PWS)	µg/L	<	20000									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.3									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		30									
	Total Molybdenum	µg/L	<	3									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.5										
	Chlorobenzene	µg/L		0.5										
	Chlorodibromomethane	µg/L	<	0.5										
	Chloroethane	µg/L	<	0.5										
	2-Chloroethyl Vinyl Ether	µg/L	<	5										
	Chloroform	µg/L		0.8										
	Dichlorobromomethane	µg/L	<	0.5										
	1,1-Dichloroethane	µg/L	<	0.5										
	1,2-Dichloroethane	µg/L	<	0.5										
	1,1-Dichloroethylene	µg/L	<	0.5										
	1,2-Dichloropropane	µg/L	<	0.5										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	5										
	Ethylbenzene	µg/L	<	0.5										
	Methyl Bromide	µg/L	<	0.5										
	Methyl Chloride	µg/L	<	0.5										
	Methylene Chloride	µg/L	<	0.5										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5										
	Tetrachloroethylene	µg/L	<	0.5										
	Toluene	µg/L	<	0.5										
	1,2-trans-Dichloroethylene	µg/L	<	0.5										
	1,1,1-Trichloroethane	µg/L	<	0.5										
	1,1,2-Trichloroethane	µg/L	<	0.5										
	Trichloroethylene	µg/L	<	0.5										
	Vinyl Chloride	µg/L	<	0.5										
Group 4	2-Chlorophenol	µg/L	<	10										
	2,4-Dichlorophenol	µg/L	<	10										
	2,4-Dimethylphenol	µg/L	<	10										
	4,6-Dinitro-o-Cresol	µg/L	<	10										
	2,4-Dinitrophenol	µg/L	<	10										
	2-Nitrophenol	µg/L	<	10										
	4-Nitrophenol	µg/L	<	10										
	p-Chloro-m-Cresol	µg/L	<	10										
	Pentachlorophenol	µg/L	<	10										
	Phenol	µg/L	<	10										
	2,4,6-Trichlorophenol	µg/L	<	10										
Group 5	Acenaphthene	µg/L	<	2.5										
	Acenaphthylene	µg/L	<	2.5										
	Anthracene	µg/L	<	2.5										
	Benzidine	µg/L	<	50										
	Benzo(a)Anthracene	µg/L	<	2.5										
	Benzo(a)Pyrene	µg/L	<	2.5										
	3,4-Benzofluoranthene	µg/L	<	2.5										
	Benzo(ghi)Perylene	µg/L	<	2.5										
	Benzo(k)Fluoranthene	µg/L	<	2.5										
	Bis(2-Chloroethoxy)Methane	µg/L	<	5										
	Bis(2-Chloroethyl)Ether	µg/L	<	5										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5										
	4-Bromophenyl Phenyl Ether	µg/L	<	5										
	Butyl Benzyl Phthalate	µg/L	<	5										
	2-Chloronaphthalene	µg/L	<	5										
	4-Chlorophenyl Phenyl Ether	µg/L	<	5										
	Chrysene	µg/L	<	2.5										
	Dibenzo(a,h)Anthrancene	µg/L	<											
	1,2-Dichlorobenzene	µg/L	<	0.5										
	1,3-Dichlorobenzene	µg/L	<	0.5										
	1,4-Dichlorobenzene	µg/L	<	0.5										
	3,3-Dichlorobenzidine	µg/L	<	5										
	Diethyl Phthalate	µg/L	<	5										
	Dimethyl Phthalate	µg/L	<	5										
	Di-n-Butyl Phthalate	µg/L	<	5										
	2,4-Dinitrotoluene	µg/L	<	5										

	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L	<	5										
	1,2-Diphenylhydrazine	µg/L	<	5										
	Fluoranthene	µg/L	<	2.5										
	Fluorene	µg/L	<	2.5										
	Hexachlorobenzene	µg/L	<	5										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5										
	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
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												
	Park Creek Copper	µg/L		12				0.136						

Stream / Surface Water Information

Park Creek STP, NPDES Permit No. PA0051985, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Park Creek

No. Reaches to Model: 1

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

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	002661	1.04	221.34	10.7			Yes
End of Reach 1	002661	0	210.5	23.5			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.04	0.07										191	7.8		
End of Reach 1	0	0.07													

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	1.04														
End of Reach 1	0														

Model Results

Park Creek STP, NPDES Permit No. PA0051985, Outfall 001

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

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ *AFC* CCT (min): 1.251 PMF: 1 Analysis Hardness (mg/l): 183.59 Analysis pH: 7.26

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	911	
Total Antimony	0	0		0	1,100	1,100	1,337	
Total Arsenic	0	0		0	340	340	413	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	25,519	
Total Boron	0	0		0	8,100	8,100	9,843	
Total Cadmium	0	0		0	3.634	3.96	4.81	Chem Translator of 0.919 applied
Hexavalent Chromium	0	0		0	16	16.3	19.8	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	115	
Free Cyanide	0	0		0	22	22.0	26.7	
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	124.294	177	215	Chem Translator of 0.702 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.0	Chem Translator of 0.85 applied
Total Nickel	0	0		0	782.868	784	953	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	9.146	10.8	13.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	79.0	
Total Zinc	0	0		0	196.075	200	244	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.65	
Acrylonitrile	0	0		0	650	650	790	
Benzene	0	0		0	640	640	778	
Bromoform	0	0		0	1,800	1,800	2,187	
Carbon Tetrachloride	0	0		0	2,800	2,800	3,403	
Chlorobenzene	0	0		0	1,200	1,200	1,458	

Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	21,873	
Chloroform	0	0		0	1,900	1,900	2,309	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	18,228	
1,1-Dichloroethylene	0	0		0	7,500	7,500	9,114	
1,2-Dichloropropane	0	0		0	11,000	11,000	13,367	
1,3-Dichloropropylene	0	0		0	310	310	377	
Ethylbenzene	0	0		0	2,900	2,900	3,524	
Methyl Bromide	0	0		0	550	550	668	
Methyl Chloride	0	0		0	28,000	28,000	34,025	
Methylene Chloride	0	0		0	12,000	12,000	14,582	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,215	
Tetrachloroethylene	0	0		0	700	700	851	
Toluene	0	0		0	1,700	1,700	2,066	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	8,263	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,646	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	4,132	
Trichloroethylene	0	0		0	2,300	2,300	2,795	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	681	
2,4-Dichlorophenol	0	0		0	1,700	1,700	2,066	
2,4-Dimethylphenol	0	0		0	660	660	802	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	97.2	
2,4-Dinitrophenol	0	0		0	660	660	802	
2-Nitrophenol	0	0		0	8,000	8,000	9,721	
4-Nitrophenol	0	0		0	2,300	2,300	2,795	
p-Chloro-m-Cresol	0	0		0	160	160	194	
Pentachlorophenol	0	0		0	11.349	11.3	13.8	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	559	
Acenaphthene	0	0		0	83	83.0	101	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	365	
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.61	
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	36,456	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	5,468	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	328	
Butyl Benzyl Phthalate	0	0		0	140	140	170	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	996	
1,3-Dichlorobenzene	0	0		0	350	350	425	
1,4-Dichlorobenzene	0	0		0	730	730	887	

3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,861	
Dimethyl Phthalate	0	0		0	2,500	2,500	3,038	
Di-n-Butyl Phthalate	0	0		0	110	110	134	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,944	
2,6-Dinitrotoluene	0	0		0	990	990	1,203	
1,2-Diphenylhydrazine	0	0		0	15	15.0	18.2	
Fluoranthene	0	0		0	200	200	243	
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	12.2	
Hexachlorocyclopentadiene	0	0		0	5	5.0	6.08	
Hexachloroethane	0	0		0	60	60.0	72.9	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	12,152	
Naphthalene	0	0		0	140	140	170	
Nitrobenzene	0	0		0	4,000	4,000	4,861	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	20,658	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	365	
Phenanthrene	0	0		0	5	5.0	6.08	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	158	
Park Creek Copper	0	0		0	82	82.0	99.6	

☑ *CFC* CCT (min): 1.251 PMF: 1 Analysis Hardness (mg/l): 183.59 Analysis pH: 7.26

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	267	
Total Arsenic	0	0		0	150	150	182	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,982	
Total Boron	0	0		0	1,600	1,600	1,944	
Total Cadmium	0	0		0	0.375	0.42	0.52	Chem Translator of 0.884 applied
Hexavalent Chromium	0	0		0	10	10.4	12.6	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	23.1	
Free Cyanide	0	0		0	5.2	5.2	6.32	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,823	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	4.844	6.9	8.38	Chem Translator of 0.702 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	86.952	87.2	106	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	6.06	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	15.8	
Total Zinc	0	0		0	197.679	200	244	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.65	
Acrylonitrile	0	0		0	130	130	158	
Benzene	0	0		0	130	130	158	
Bromoform	0	0		0	370	370	450	
Carbon Tetrachloride	0	0		0	560	560	681	
Chlorobenzene	0	0		0	240	240	292	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	4,253	
Chloroform	0	0		0	390	390	474	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,767	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,823	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,673	
1,3-Dichloropropylene	0	0		0	61	61.0	74.1	
Ethylbenzene	0	0		0	580	580	705	
Methyl Bromide	0	0		0	110	110	134	
Methyl Chloride	0	0		0	5,500	5,500	6,684	
Methylene Chloride	0	0		0	2,400	2,400	2,916	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	255	
Tetrachloroethylene	0	0		0	140	140	170	
Toluene	0	0		0	330	330	401	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,701	
1,1,1-Trichloroethane	0	0		0	610	610	741	
1,1,2-Trichloroethane	0	0		0	680	680	826	
Trichloroethylene	0	0		0	450	450	547	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	134	
2,4-Dichlorophenol	0	0		0	340	340	413	
2,4-Dimethylphenol	0	0		0	130	130	158	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	19.4	
2,4-Dinitrophenol	0	0		0	130	130	158	
2-Nitrophenol	0	0		0	1,600	1,600	1,944	
4-Nitrophenol	0	0		0	470	470	571	
p-Chloro-m-Cresol	0	0		0	500	500	608	
Pentachlorophenol	0	0		0	8.707	8.71	10.6	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	111	
Acenaphthene	0	0		0	17	17.0	20.7	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	71.7	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.12	
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	7,291	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	1,106	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	65.6	
Butyl Benzyl Phthalate	0	0		0	35	35.0	42.5	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	194	
1,3-Dichlorobenzene	0	0		0	69	69.0	83.8	
1,4-Dichlorobenzene	0	0		0	150	150	182	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	972	
Dimethyl Phthalate	0	0		0	500	500	608	
Di-n-Butyl Phthalate	0	0		0	21	21.0	25.5	
2,4-Dinitrotoluene	0	0		0	320	320	389	
2,6-Dinitrotoluene	0	0		0	200	200	243	
1,2-Diphenylhydrazine	0	0		0	3	3.0	3.65	
Fluoranthene	0	0		0	40	40.0	48.6	
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	2.43	
Hexachlorocyclopentadiene	0	0		0	1	1.0	1.22	
Hexachloroethane	0	0		0	12	12.0	14.6	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	2,552	
Naphthalene	0	0		0	43	43.0	52.3	
Nitrobenzene	0	0		0	810	810	984	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	4,132	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	71.7	
Phenanthrene	0	0		0	1	1.0	1.22	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	31.6	
Park Creek Copper	0	0		0	51	51.0	62.0	

☑ ***THH*** CCT (min): 1.251 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	6.81	
Total Arsenic	0	0		0	10	10.0	12.2	

Total Barium	0	0		0	2,400	2,400	2,916	
Total Boron	0	0		0	3,100	3,100	3,767	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	4.86	
Dissolved Iron	0	0		0	300	300	365	
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	1,215	
Total Mercury	0	0		0	0.050	0.05	0.061	
Total Nickel	0	0		0	610	610	741	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.29	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	3.65	
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	122	
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	5.7	5.7	6.93	
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	40.1	
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	82.6	
Methyl Bromide	0	0		0	100	100.0	122	
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	69.3	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	122	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	12,152	
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	36.5	
2,4-Dichlorophenol	0	0		0	10	10.0	12.2	

2,4-Dimethylphenol	0	0		0	100	100.0	122	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.43	
2,4-Dinitrophenol	0	0		0	10	10.0	12.2	
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	4,861	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	85.1	
Anthracene	0	0		0	300	300	365	
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	243	
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	0.12	
2-Chloronaphthalene	0	0		0	800	800	972	
Chrysene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	1,215	
1,3-Dichlorobenzene	0	0		0	7	7.0	8.51	
1,4-Dichlorobenzene	0	0		0	300	300	365	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	729	
Dimethyl Phthalate	0	0		0	2,000	2,000	2,430	
Di-n-Butyl Phthalate	0	0		0	20	20.0	24.3	
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	24.3	
Fluorene	0	0		0	50	50.0	60.8	
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	4.86	
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	41.3	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	12.2	
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	24.3	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.085	
Park Creek Copper	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 9.265 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	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	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.16	
Benzene	0	0		0	0.58	0.58	1.54	
Bromoform	0	0		0	7	7.0	18.6	
Carbon Tetrachloride	0	0		0	0.4	0.4	1.06	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	2.13	
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	0.95	0.95	2.53	
1,2-Dichloroethane	0	0		0	9.9	9.9	26.3	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	2.39	
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.72	

Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	53.2	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.53	
Tetrachloroethylene	0	0		0	10	10.0	26.6	
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	1.46	
Trichloroethylene	0	0		0	0.6	0.6	1.59	
Vinyl Chloride	0	0		0	0.02	0.02	0.053	
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	0.08	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	3.99	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.0003	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.003	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0003	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.003	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.027	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.08	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.85	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	0.32	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.13	
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	0.13	

2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.13	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.08	
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	0.0002	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.027	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.27	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.003	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.002	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.013	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	8.77	
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	
Park Creek Copper	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 Zinc	Report	Report	Report	Report	Report	µg/L	200	AFC	Discharge Conc > 10% WQBEL (no 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 Aluminum	750	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	6.81	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	12.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	2,916	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	N/A	N/A	Discharge Conc < TQL

Total Cadmium	N/A	N/A	Discharge Conc < TQL
Hexavalent Chromium	N/A	N/A	Discharge Conc < TQL
Total Cobalt	23.1	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	4.86	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	365	µg/L	Discharge Conc < TQL
Total Iron	1,823	µg/L	Discharge Conc < TQL
Total Lead	8.38	µg/L	Discharge Conc < TQL
Total Manganese	1,215	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.061	µg/L	Discharge Conc < TQL
Total Nickel	106	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	6.06	µg/L	Discharge Conc < TQL
Total Silver	10.8	µg/L	Discharge Conc < TQL
Total Thallium	0.29	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.16	µg/L	Discharge Conc < TQL
Benzene	1.54	µg/L	Discharge Conc < TQL
Bromoform	18.6	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	1.06	µg/L	Discharge Conc < TQL
Chlorobenzene	122	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	2.13	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	4,253	µg/L	Discharge Conc < TQL
Chloroform	6.93	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	2.53	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	26.3	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	40.1	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	2.39	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	0.72	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	82.6	µg/L	Discharge Conc < TQL
Methyl Bromide	122	µg/L	Discharge Conc < TQL
Methyl Chloride	6,684	µg/L	Discharge Conc < TQL
Methylene Chloride	53.2	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	0.53	µg/L	Discharge Conc < TQL
Tetrachloroethylene	26.6	µg/L	Discharge Conc < TQL
Toluene	69.3	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	122	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	741	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	1.46	µg/L	Discharge Conc < TQL
Trichloroethylene	1.59	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.053	µg/L	Discharge Conc < TQL

2-Chlorophenol	36.5	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	12.2	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	122	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.43	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	12.2	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,944	µg/L	Discharge Conc < TQL
4-Nitrophenol	571	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.08	µg/L	Discharge Conc < TQL
Phenol	4,861	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	3.99	µg/L	Discharge Conc < TQL
Acenaphthene	20.7	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	365	µg/L	Discharge Conc < TQL
Benzidine	0.0003	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.003	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0003	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.003	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.027	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.08	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	243	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.85	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	65.6	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.12	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	972	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.32	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	194	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	8.51	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	182	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.13	µg/L	Discharge Conc < TQL
Diethyl Phthalate	729	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	608	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	24.3	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.13	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.13	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.08	µg/L	Discharge Conc < TQL
Fluoranthene	24.3	µg/L	Discharge Conc < TQL
Fluorene	60.8	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0002	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.027	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.22	µg/L	Discharge Conc < TQL

Hexachloroethane	0.27	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.003	µg/L	Discharge Conc < TQL
Isophorone	41.3	µg/L	Discharge Conc < TQL
Naphthalene	52.3	µg/L	Discharge Conc < TQL
Nitrobenzene	12.2	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.002	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.013	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	8.77	µg/L	Discharge Conc < TQL
Phenanthrene	1.22	µg/L	Discharge Conc < TQL
Pyrene	24.3	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.085	µg/L	Discharge Conc < TQL
Park Creek Copper	62.0	µg/L	Discharge Conc ≤ 25% WQBEL

Whole Effluent Toxicity Test (WETT)

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 1/18/2022

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	10
4	9	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4

T-Test Result	6.7314
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 1/18/2022

Replicate No.	Control	TIWC
1	0.374	0.393
2	0.372	0.344
3	0.321	0.332
4	0.308	0.341
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.344	0.353
Std Dev.	0.034	0.027
# Replicates	4	4

T-Test Result	5.0381
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 1/18/2022

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:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 1/18/2022

Replicate No.	Control	TIWC
1	31	38
2	20	24
3	33	45
4	29	42
5	43	34
6	41	39
7	38	36
8	44	48
9	47	46
10	27	45
11		
12		
13		
14		
15		
Mean	35.300	39.700
Std Dev.	8.680	7.196
# Replicates	10	10
T-Test Result	4.3096	
Deg. of Freedom	17	
Critical T Value	0.8633	
Pass or Fail	PASS	

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Test Completion Date:

Replicate No.	Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 2/9/2021

Replicate No.	Control	TIWC
1	10	10
2	9	9
3	9	9
4	7	6
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	8.750	8.500
Std Dev.	1.258	1.732
# Replicates	4	4

T-Test Result: 2.1727
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 11/20/2019

Replicate No.	Control	TIWC
1	0.34	0.359
2	0.328	0.281
3	0.409	0.352
4	0.182	0.264
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.315	0.314
Std Dev.	0.095	0.049
# Replicates	4	4

T-Test Result: 1.8029
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 2/9/2021

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**

Test Completion Date

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

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

Test Completion Date

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Test Completion Date: 2/9/2021

Replicate No.	Control	TIWC
1	30	37
2	28	39
3	37	25
4	31	33
5	36	34
6	42	36
7	40	34
8	37	36
9	33	28
10	33	35
11		
12		
13		
14		
15		
Mean	34.700	33.700
Std Dev.	4.473	4.218
# Replicates	10	10

T-Test Result: 4.5034
Deg. of Freedom: 16
Critical T Value: 0.8647
Pass or Fail: **PASS**

Test Completion Date

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

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

Test Completion Date

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Replicate No.	Test Completion Date: 3/5/2019 Control	TIWC
1	10	9
2	10	10
3	9	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4
T-Test Result	6.7314	
Deg. of Freedom	5	
Critical T Value	0.7267	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Replicate No.	Test Completion Date Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Replicate No.	Test Completion Date Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Replicate No.	Test Completion Date: 3/5/2019 Control	TIWC
1	0.277	0.273
2	0.293	0.268
3	0.245	0.276
4	0.327	0.279
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.286	0.274
Std Dev.	0.034	0.005
# Replicates	4	4
T-Test Result	4.6039	
Deg. of Freedom	4	
Critical T Value	0.7407	
Pass or Fail	PASS	

Replicate No.	Test Completion Date: Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Replicate No.	Test Completion Date Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.000	0.000
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

Replicate No.	Test Completion Date Control	TIWC
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean		
Std Dev.		
# Replicates		
T-Test Result		
Deg. of Freedom		
Critical T Value		
Pass or Fail		

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Replicate No.	Test Completion Date: 3/4/2019 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**

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

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

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

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

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Horsham Water & Sewer

Permit No.: PA0051985

Replicate No.	Test Completion Date: 3/4/2019 Control	TIWC
1	29	29
2	35	35
3	14	29
4	28	29
5	36	39
6	33	32
7	26	12
8	34	30
9	13	20
10	31	35
11		
12		
13		
14		
15		
Mean	27.900	29.000
Std Dev.	8.225	7.832
# Replicates	10	10

T-Test Result 2.5614
Deg. of Freedom 16
Critical T Value 0.8647
Pass or Fail: **PASS**

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

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

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

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

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name:

Permit No.:

Replicate No.	Test Completion Date: 2/11/2020 Control	TIWC
1	10	10
2	10	10
3	10	10
4	9	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.750	9.750
Std Dev.	0.500	0.500
# Replicates	4	4

T-Test Result: 6.7314
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

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

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

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.83
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name:

Permit No.:

Replicate No.	Test Completion Date: 2/11/2020 Control	TIWC
1	0.3	0.29
2	0.392	0.387
3	0.407	0.333
4	0.351	0.41
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.363	0.355
Std Dev.	0.048	0.054
# Replicates	4	4

T-Test Result: 2.5619
Deg. of Freedom: 5
Critical T Value: 0.7267
Pass or Fail: PASS

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

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

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name:

Permit No.:

Test Completion Date: 2/11/2020

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	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:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.83
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name:

Permit No.:

Test Completion Date: 2/11/2020

Replicate No.	Control	TIWC
1	28	34
2	26	29
3	15	33
4	36	34
5	26	30
6	29	34
7	26	32
8	30	28
9	29	39
10	27	21
11		
12		
13		
14		
15		
Mean	27.200	31.400
Std Dev.	5.224	4.812
# Replicates	10	10

T-Test Result: 5.6057
Deg. of Freedom: 17
Critical T Value: 0.8633
Pass or Fail: PASS

Test Completion Date:

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

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

Test Completion Date:

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

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

Test Completion Date:

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

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