pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0080314**
Facility Type	**Municipal**	APS ID	**337201**
Major / Minor	**Major**	Authorization ID	**1464237**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Hampden Township**	Facility Name	**Hampden Township Roth Lane WWTP**
Applicant Address	209 S Sporting Hill Road	Facility Address	4200 Roth Lane
	Mechanicsburg, PA 17050-3060		Mechanicsburg, PA 17050-2181
Applicant Contact	Keith Metts	Facility Contact	Jeff Klahre
Applicant Phone	(717) 761-0119	Facility Phone	(717) 761-0119
Client ID	117309	Site ID	254816
Ch 94 Load Status	Not Overloaded	Municipality	Hampden Township
Connection Status	No Limitations	County	Cumberland
Date Application Received	December 6, 2023	EPA Waived?	No
Date Application Accepted	December 27, 2023	If No, Reason	Major Facility, Significant CB Discharge
Purpose of Application	.NPDES Permit Renewal.		

Summary of Review

Hampden Township has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of the NPDES permit. The permit was last reissued on June 19, 2019 and became effective on July 1, 2019. The permit will expire on June 30, 2024.

Based on the review, it is recommended that the permit be drafted.

Public Participation

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

Approve	Deny	Signatures	Date
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	June 28, 2024
X		Maria D. Bebenek Daniel W. Martin, P.E. / Environmental Engineer Manager	July 16, 2024
X		Maria D. Bebenek Maria D. Bebenek, P.E. / Program Manager	July 16, 2024

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	5.69
Latitude	40º 16' 28.00"	Longitude	-76º 58' 34.00"
Quad Name	Harrisburg West	Quad Code	1630
Wastewater Description:	Sewage Effluent		
Receiving Waters	Sears Run (WWF)	Stream Code	10210
NHD Com ID	56403361	RMI	1.44
Drainage Area	4.25 sq.mi	Yield (cfs/mi^2)	0.147
Q_{7-10} Flow (cfs)	0.626	Q_{7-10} Basis	USGS gage no. 0157000
Elevation (ft)	371	Slope (ft/ft)	
Watershed No.	7-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Steelton Municipal Waterworks		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	~3,490
PWS RMI	68.98	Distance from Outfall (mi)	15.2

Drainage Area
The discharge is to Sears Run at RMI 1.44. A drainage area upstream of the point of discharge is estimated to be 4.25 sq.mi. according to USGS StreamStats available at https://streamstats.usgs.gov/ss/.

Streamflow
USGS StreamStats produced a Q7-10 flow of 0.108cfs. However, the estimated drainage area was lower than a minimum required value to be used in regression equations to calculate the Q7-10. As a result, this Q7-10 may not be entirely accurate. Alternatively, the nearest USGS gage station (i.e., gage no. 01570000 on Conodoguinet Creek near Hogestown, PA) is used to calculate the Q7-10. This station is located approximately 8 miles upstream of the confluence of Sears Run and Conodoguinet Creek (total of approximately 10 miles from the point of discharge to the gage station). The Q7-10 flow at the point of discharge is then calculated as follows:

$$\text{Low Flow Yield} = Q7\text{-}10_{gage} / \text{Drainage Area}_{gage} = 69.3 \text{ cfs} / 470 \text{ sq.mi.} = 0.147 \text{ cfs/sq.mi.}$$
$$Q7\text{-}10_{dsicharge} = \text{Low Flow Yield} * \text{Drainage Area}_{discharge} = 0.147 \text{ cfs/sq.mi.} * 4.25 \text{ sq.mi.} = 0.625 \text{ cfs}$$
$$Q1\text{-}10/Q7\text{-}10 = 63.1 \text{ cfs} / 69.3 \text{ cfs} = 0.91:1$$
$$Q30\text{-}10/Q7\text{-}10 = 78.3 \text{ cfs} / 69.3 \text{ cfs} = 1.13:1$$

Sears Run
Sears Run is not currently identified in 25 Pa Code §93.9o as a tributary of Conodoguinet Creek. However, according to 25 Pa Code §93.9o, all unnamed tributaries of Conodoguinet Creek from PA997 Roxbury to Mouth are designated as warm water and migratory fishes. Conodoguinet Creek is also designated as warm water and migratory fishes. No special protection water(s) is therefore impacted by this discharge. No Class A Wild Trout Fishery is also impacted by this discharge. DEP's 2024 integrated water quality report indicates that the discharge is located in a stream segment listed as attaining use(s).

Public Water Supply
The fact sheet prepared during the last permit renewal documented that the nearest downstream public water supply is Steelton Municipal Waterworks on the Susquehanna River at Steelton at RMI 68.98 about 15.2 miles downstream of the discharge. It is noteworthy that the intake is located on the opposite bank of the Susquehanna River from the mouth of the Conodoguinet Creek. Given its distance to the intake, the discharge is not expected to impact the water supply.

Treatment Facility Summary

Treatment Facility Name: Hampden Township Roth Lane STP

WQM Permit No.	Issuance Date
2116409	03/20/2017
2180402	06/07/1999, 06/30/2003, 06/01/2004, 02/01/2005, 01/22/2008, 11/26/2008, 03/19/2012
2110408	03/01/2011
2109409	01/26/2010
2109401	04/17/2009
2107404	09/28/2007
2105406	04/12/2006
2191403	11/14/2001
2199403	05/24/1999

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Activated Sludge With Solids Removal	Ultraviolet	5.69

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
8.83	9197	Not Overloaded	Aerobic Digestion	Land Application

Hampden operates a wastewater treatment facility located 4200 Roth Lane, Mechanicsburg, PA 17055 serving areas of Hampden Township (77%), Camp Hill Borough (22%), Silver Spring Township (0.5%), and East Pennsboro Township (0.5%). All sewer systems are 100% separated. The facility which is rated for 5.69 MGD (annul average design flow) and 8.83 MGD (hydraulic design capacity) utilizes an activated sludge treatment process with tertiary filtration. The treatment process, according to the application, is as follows:

Screening → Grit/Grease Removal → Aerations (2) → Secondary Clarifiers (3) → Denitrification Filters (4) → UV Disinfection → Outfall 001 to Sears Run

Aluminum Sulfate (Alum) is used for phosphorous removal, Ferrous Sulfate is added at certain influent pump stations for odor control/phosphorous removal, polymer is added for thickener and centrifuge conditioning, magnesium hydroxide is added for alkalinity supplementation for digesters. The facility also has methanol for carbon source for denitrification; yet it is currently not in use. Lime is added for pathogen & vector attraction reduction for biosolids.

For sludge treatment, the facility utilizes an aerated sludge holding tank, a gravity belt thickener and aerobic digesters (2). Digested solids are then dewatered on a centrifuge prior to land application (PAG083568, last issued on 03/08/2017). A list of farms receiving biosolids from this facility is provided in the application.

The facility also discharges stormwater from the site into Sears Run via six (6) outfalls. These outfalls are:

Outfall No.	Stream	Latitude	Longitude	Description
002	Sears Run	40°16'31"	76°58'35"	Control Building Parking Lot
003	Sears Run	40°16'32"	76°58'36"	Grit Dumpster Area
004	UNT Sears Run	40°16'33"	76°58'36"	Gravel Area
005	Sears Run	40°16'34"	76°58'38"	Sludge Holding Tank Area
006	Sears Run	40°16'35"	76°58'36"	Maintenance Garage Field Area
007	Sears Run	40°16'36"	76°58'36"	Biosolids Storage Pad & Field Area

Currently, the facility is not implementing an approved pretreatment program administered by US EPA. Although the design flow is greater than 5.0 MGD, US EPA previously agreed to not requiring the pretreatment requirements as there is no indirect users that warranted the pretreatment program. Hampden is still having no significant industrial user. U.S. EPA confirmed that Hampden is not required to develop the pretreatment program.

Compliance History

Summary of DMRs:	A summary of 12-month DMR data is presented on the next page.
Summary of Inspections:	12/21/2023: DEP conducted a routine inspection and noted that no significant violations were identified at the time of inspection. 02/28/2023: DEP conducted a routine inspection and noted that no significant violations were identified at the time of inspection. 01/18/2022: DEP conducted a routine inspection and noted that no significant violations were identified at the time of inspection.
Other Comments:	DEP's database shows that the facility has a number of permit violations identified since the last permit reissuance. These violations were as show below. The database also shows that there is no open violation associated with this permittee or facility.

Date	Description	Parameter	Results	Limits	Units	SBC
4/15/2020	Unauthorized Discharges					
4/30/2020	Late DMR Submission					
4/15/2020	Unauthorized Discharges					
6/1/2020	Unauthorized Discharges					
10/26/2020	Unauthorized Discharges					
2/18/2021	Unauthorized Discharges					
2/18/2021	Unauthorized Discharges					
7/21/2021	Violation of permit condition	Fecal Coliform	1800	1000	No./100 ml	Instantaneous Maximum
10/21/2021	Unauthorized Discharges					
10/6/2021	Unauthorized Discharges					
2/24/2022	Violation of permit condition	Fecal Coliform	> 20000	10000	No./100 ml	Instantaneous Maximum
5/9/2022	Unauthorized Discharges					
6/20/2022	Violation of permit condition					
8/9/2022	Unauthorized Discharges					
1/6/2023	Unauthorized Discharges					
3/2/2023	Unauthorized Discharges					
3/22/2023	Unauthorized Discharges					
11/7/2023	Unauthorized Discharges					
12/8/2023	Unauthorized Discharges					
4/26/2024	Other					

Effluent Data

DMR Data for Outfall 001 (from May 1, 2023 to April 30, 2024)

Parameter	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23
Flow (MGD) Average Monthly	5.38	4.22	3.75	5.69	3.55	2.66	2.85	3.16	2.91	3.85	2.81	3.51
Flow (MGD) Daily Maximum	16.96	7.25	4.75	13.28	7.53	4.23	3.46	6.23	3.27	6.67	3.50	8.36
pH (S.U.) Instantaneous Minimum	7.3	7.3	7.4	7.3	7.4	7.1	6.6	7.5	6.7	7.5	7.5	7.4
pH (S.U.) Instantaneous Maximum	7.7	7.6	7.6	7.7	7.7	7.7	7.8	7.7	7.7	8.2	7.7	7.8
DO (mg/L) Instantaneous Minimum	6.2	8.2	7.0	5.7	7.7	8.1	8.0	7.6	7.7	6.1	7.7	6.8
CBOD5 (lbs/day) Average Monthly	< 194.25	< 70.96	< 76.87	< 194.66	< 102.70	< 53.59	< 48.33	< 57.53	< 48.11	< 74.73	< 49.32	< 88.70
CBOD5 (lbs/day) Weekly Average	< 397.85	< 95.80	< 119.73	< 430.47	< 143.62	< 80.73	< 52.73	< 76.28	< 49.43	< 99.11	< 52.30	124.09
CBOD5 (mg/L) Average Monthly	< 2.79	< 2.01	< 2.41	< 2.93	< 3.15	< 2.35	< 2.05	< 2.06	< 2.00	< 2.41	< 2.15	< 2.91
CBOD5 (mg/L) Weekly Average	< 4.07	< 2.13	< 3.53	< 4.50	< 4.27	< 2.87	< 2.10	< 2.23	< 2.00	< 3.77	< 2.33	4.67
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	5695	5579	5504	5659	6299	6050	5287	5412	5461	5418	6065	6653
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	7280	6352	6816	10219	11013	8254	6726	6666	6667	6731	7534	9502
BOD5 (mg/L) Raw Sewage Influent Average Monthly	138	166	178	129	219	283	225	203	227	175	264	233
TSS (lbs/day) Average Monthly	< 275.73	< 42.04	< 43.11	< 297.73	< 52.00	< 26.95	< 24.33	< 32.28	< 25.46	< 60.25	< 37.07	< 54.90
TSS (lbs/day) Raw Sewage Influent Average Monthly	6842	5535	5291	5428	5543	5412	5111	5969	5691	6024	5657	5718
TSS (lbs/day) Raw Sewage Influent Daily Maximum	16406	6652	5723	13618	7435	8705	6337	8704	7726	10569	7494	10318

Parameter	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23
TSS (lbs/day) Weekly Average	< 655.02	59.70	< 51.38	< 819.22	< 83.88	< 40.05	28.62	38.14	< 27.89	115.19	43.30	< 122.50
TSS (mg/L) Average Monthly	< 3.12	< 1.19	< 1.38	< 3.64	< 1.60	< 1.18	< 1.03	< 1.18	< 1.06	< 1.87	< 1.59	< 1.56
TSS (mg/L) Raw Sewage Influent Average Monthly	146	163	171	116	191	247	218	223	236	191	247	197
TSS (mg/L) Weekly Average	< 5.90	1.53	< 1.60	< 8.16	< 1.87	< 1.47	1.13	1.53	< 1.13	3.00	1.93	< 2.03
Fecal Coliform (No./100 ml) Geometric Mean	< 11	11	44	< 3	< 8	30	< 13	32	58	< 19	27	< 5
Fecal Coliform (No./100 ml) Instantaneous Maximum	2000	96	95	26	43	172	55	232	189	64	78	15
UV Intensity (mW/cm²) Daily Minimum	18.42	18.73	19.05	19.34	19.66	19.97	20.28	20.61	20.91	21.02	19.80	21.00
Nitrate-Nitrite (mg/L) Average Monthly	< 1.97	< 2.21	< 2.18	< 2.74	< 1.96	< 2.25	< 2.75	< 1.88	< 2.01	< 2.11	< 1.48	< 2.64
Nitrate-Nitrite (lbs) Total Monthly	< 3659	< 2543	< 1919	< 5029	< 1887	< 1403	< 2004	< 1751	< 1479	< 2109	< 993	< 2807
Total Nitrogen (mg/L) Average Monthly	< 4.06	< 3.32	< 3.53	< 4.60	< 5.00	< 3.52	< 3.47	< 3.46	< 3.01	< 3.05	< 2.91	< 3.94
Total Nitrogen (lbs) Effluent Net Total Monthly	< 7286	< 3772	< 3092	< 8545	< 5031	< 2194	< 2552	< 3172	< 2213	< 3047	< 1994	< 4084
Total Nitrogen (lbs) Total Monthly	< 7286	< 3772	< 3092	< 8545	< 5031	< 2194	< 2552	< 3172	< 2213	< 3047	< 1994	< 4084
Total Nitrogen (lbs) Effluent Net Total Annual								< 36109				
Total Nitrogen (lbs) Total Annual								< 36109				
Ammonia (lbs/day) Average Monthly	< 38.21	< 4.87	< 8.36	< 29.21	< 50.36	< 8.73	< 2.97	< 15.71	< 2.41	< 3.21	< 7.18	< 8.91
Ammonia (mg/L) Average Monthly	< 0.78	< 0.13	< 0.27	< 0.52	< 1.50	< 0.32	< 0.12	< 0.51	< 0.10	< 0.10	< 0.29	< 0.25
Ammonia (lbs) Total Monthly	< 1146	< 151	< 243	< 905	< 1561	< 262	< 92	< 471	< 75	< 99	< 215	< 276
Ammonia (lbs) Total Annual								< 5348				

Parameter	APR-24	MAR-24	FEB-24	JAN-24	DEC-23	NOV-23	OCT-23	SEP-23	AUG-23	JUL-23	JUN-23	MAY-23
TKN (mg/L) Average Monthly	< 2.09	< 1.11	1.35	< 1.86	3.04	1.27	1.41	1.58	< 1.00	0.94	< 1.44	< 1.30
TKN (lbs) Total Monthly	< 3627	< 1228	1174	< 3516	3143	791	1002	1422	< 734	937	< 1000	< 1277
Total Phosphorus (lbs/day) Average Monthly	22.57	19.24	25.07	20.39	26.06	15.97	21.20	27.69	21.66	26.87	30.64	33.31
Total Phosphorus (mg/L) Average Monthly	0.44	0.57	0.81	0.38	0.77	0.69	0.89	1.03	0.90	0.85	1.32	1.19
Total Phosphorus (lbs) Effluent Net Total Monthly	677	597	727	632	808	479	657	831	672	833	919	1033
Total Phosphorus (lbs) Total Monthly	677	597	727	632	808	479	657	831	672	833	919	1033
Total Phosphorus (lbs) Effluent Net Total Annual								8405				
Total Phosphorus (lbs) Total Annual								8405				
Free Cyanide (lbs/day) Average Monthly	< 0.04859	< 0.02110	< 0.03905	< 0.04749	0.07398	< 0.02777	< 0.04157	< 0.0461	< 0.01212	0.06425	< 0.04099	< 0.05361
Free Cyanide (lbs/day) Daily Maximum	0.17942	0.02462	0.06248	0.14246	0.11836	0.04444	0.07127	0.07903	< 0.01212	0.06425	0.07027	0.11698
Free Cyanide (mg/L) Average Monthly	< 0.00108	< 0.00060	< 0.00125	< 0.00100	0.00250	< 0.00125	< 0.00175	< 0.00175	< 0.00050	0.00200	< 0.00175	< 0.00183
Free Cyanide (mg/L) Daily Maximum	0.004	0.00070	0.00200	0.00300	0.00400	0.002	0.00300	0.003	< 0.00050	0.00200	0.00300	0.00400
Total Thallium (lbs/day) Average Monthly	< 0.00262	< 0.00176	0.00203	< 0.00277	0.00429	< 0.00111	< 0.00119	< 0.00132	< 0.00121	< 0.00161	< 0.00117	< 0.00146
Total Thallium (lbs/day) Daily Maximum	0.00449	< 0.00176	0.00219	0.00475	0.00592	< 0.00111	< 0.00119	< 0.00132	< 0.00121	< 0.00161	< 0.00117	< 0.00146
Total Thallium (mg/L) Average Monthly	< 0.00006	< 0.00005	0.00007	< 0.00006	0.00015	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Total Thallium (mg/L) Daily Maximum	0.0001	< 0.00005	0.00007	0.00010	0.00020	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the current permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
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)	711	1044 Wkly Avg	XXX	15.0	22.0	40	3/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Total Suspended Solids	1423	2135 Wkly Avg	XXX	30.0	45.0	81	3/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	3/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	3/week	Grab
Ultraviolet light intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Ammonia-Nitrogen Nov 1 - Apr 30	213	XXX	XXX	4.5	XXX	12	3/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	71	XXX	XXX	1.5	XXX	4	3/week	24-Hr Composite
Total Phosphorus	70.7	XXX	XXX	2.0	XXX	5.4	3/week	24-Hr Composite
Cyanide, Free	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	24-Hr Composite
Thallium, Total	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Net Total Nitrogen (3)	Report	117696	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus (3)	Report	14441	XXX	XXX	XXX	XXX	1/month	Calculation

- Connection of 125 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection.

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** 5.69
Latitude 40º 16' 28.00" **Longitude** -76º 58' 34.00"
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)

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen (DO)
WQM 7.0 version 1.0b is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's guidance no. 391-2000-007 provides the technical methods contained in WQM 7.0 for conducting wasteload allocation and for determining recommended NPDES effluent limits for point source discharges. A multi-discharge analysis is necessary as there is one upstream point source discharger, Diller Transfer Station & Landfill (PA0082953). This upstream facility is an industrial discharger treating leachate and groundwater generated from the closed landfill prior to discharges into Sears Run. The model showed that all existing limits for CBOD5 and NH3-N are still protective of water quality. No change is therefore recommended.

Toxics
A reasonable potential analysis has been performed using DEP's Toxic Management Spreadsheet (TMS). Also, DEP's TOXCON spreadsheet was used to generate statistical average effluent value for Free Cyanide and Total Thallium as DEP now has ample data available from the existing monitoring-only requirements for these parameters. TMS output shows that the existing monitoring requirements for Free Cyanide and Total Thallium are no longer needed. Therefore, these requirements will be removed from the permit. TMS output however recommends new routine monitoring-only requirements for Total Zinc and Total Boron based on maximum effluent concentrations reported in the application.

Whole Effluent Toxicity Testing
Hampden is required under 40 CFR §122.21(h)(5)(ii)(A) to conduct WETT and submit the results to DEP. See WETT section of this fact sheet for more details on the results submitted by Hampden.

Best Professional Judgment (BPJ) Limitations

Dissolved Oxygen
The existing minimum DO effluent limit is the current warm water fishery water quality criterion for DO listed in 25 Pa Code §93.7(a). It is recommended that this limit be maintained in the permit to ensure the protection of water quality standards. This approach is consistent with DEP's current Standard Operating Procedure (SOP) no. BPNPSM-PMT-033 and has been applied to other point source dischargers throughout the state.

Total Phosphorus
The existing permit contains average monthly and instantaneous maximum (IMAX) effluent limits of 2.0 mg/L and 5.4 mg/L, respectively. Historically a TP effluent limit of 2.0 mg/L was established in the permit when DEP generally determines that the facility is expected to contribute 0.25% or more of the total point source phosphorus loading at the point of impact (page 17 of DEP's technical guidance no. 391-2000-018). DEP previously documented that the discharge contributes more than 0.25% and phosphorus controls were therefore needed. There is no reason to relax or remove these effluent limits; therefore, continuation of existing effluent limits is still appropriate in accordance with 40 CFR §122.44(l)(1).

Instantaneous Maximum Effluent Limitations (IMAX)
The existing permit specifies IMAX of 40 mg/L for CBOD5, 81 mg/L for TSS, 4.3 mg/L (summer) & 13 mg/L (winter) for NH3-N and 5.4 mg/L for Total Phosphorus. It appears these limits were previously developed using a multiplier of 2.7. In general, IMAX are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). However, alternative multiplier can often be applied using the long-term monitoring data on a case-by-case basis according to DEP's technical guidance no. 361-0100-003. IMAX are designed majorly to serve as basic reference points for comparing effluent grab samples during compliance inspections according to DEP's technical guidance no. 362-0400-001. As a result, it appears DEP previously agreed to use a multiplier of 2.7 to calculate IMAX based on the statistical analysis, DEP. There is no reason to modify this multiplier; therefore, all instantaneous maximum effluent limits will continue to be calculated using a multiplier of 2.7.

Additional Considerations

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Influent BOD & TSS Monitoring
As a result of negotiation with EPA, the existing influent monitoring reporting requirement for TSS and BOD5 will be maintained in the draft permit. This requirement has been consistently assigned to all municipal wastewater treatment facilities.

Ultraviolet (UV) Monitoring
DEP's Standard Operating Procedure (SOP no. BPNPSM-PMT-033) recommends a routine monitoring of Ultraviolet (UV) transmittance or intensity when the facility is utilizing an UV disinfection system in lieu of chlorination. This is a reasonable approach and has been assigned to other facilities equipped with similar technology. Accordingly, existing UV monitoring requirement will remain in the permit.

Part A & Part C Tertiary Filter Bypass Conditions
During the plant upgrade in 2012, Hampden added denitrification filters that can treat up to the maximum monthly flow of 8.83 MGD. As a result, Hampden was permitted, as along as achieving compliance effluent limits, to bypass these filters when the flow exceeds 8.83 MGD. The existing permit contains the conditions in Part A and C that are associated with this bypass. These conditions will remain unchanged in the permit.

Total Dissolved Solids (TDS)
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges <u>and upon issuance or reissuance of an individual NPDES permit</u>:

-Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

-Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

-Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

Hampden reported maximum concentrations of 522 mg/L for TDS, < 0.2 mg/L for bromide, and < 0.001 mg/L for 1,4-dioxane. Accordingly, the requirement to monitor for these pollutants is not necessary.

Stormwater Requirements
Stormwater discharges from any POTWs (SIC Code 4952) described in 40 CFR § 122.26(b)(14)(ix) require coverage under an NPDES permit. As mentioned on page 3 of this fact sheet, there are currently six (6) stormwater outfalls collecting stormwater drained from the property. These outfalls are as follows:

Outfall No.	Stream	Latitude	Longitude	Description
002	Sears Run	40°16'31"	76°58'35"	Control Building Parking Lot
003	Sears Run	40°16'32"	76°58'36"	Grit Dumpster Area
004	UNT Sears Run	40°16'33"	76°58'36"	Gravel Area
005	Sears Run	40°16'34"	76°58'38"	Sludge Holding Tank Area
006	Sears Run	40°16'35"	76°58'36"	Maintenance Garage Field Area
007	Sears Run	40°16'36"	76°58'36"	Biosolids Storage Pad & Field Area

In general, DEP's standard Part C stormwater requirements and site-specific best management practices (BMPs) are included in the permit for those POTWs. The following standard BMPs for POTWs will be included in Part C of the draft permit:

1. Manage sludge in accordance with all applicable permit requirements.

2. Store chemicals in secure areas on impervious surfaces away from storm drains.

3. For new facilities and upgrades, design wastewater treatment facilities to avoid, to the maximum extent practicable, stormwater commingling with sanitary wastewater, sewage sludge, and biosolids.

4. Efficiently use pesticides for weed control; where practicable, use the least toxic herbicide that will achieve pest management objectives. Do not apply during windy conditions.

5. Do not wash parts or equipment over impervious surfaces that wash into storm drains.

6. Implement infiltration techniques, including infiltration basins, trenches, dry wells, porous pavement, etc., wherever practicable.

Mass Loading Limitations
All effluent mass loading limits will be based on the formula: design flow x concentration limit x conversion factor of 8.34, except for Total Phosphorus. The existing 70.7 lbs/day mass load effluent limit is actually the BPJ effluent limit based on the Roth Lane NPDES load of 41.7 lbs/day and addition of 29 lbs/day added from Pinebrook Plant. This existing effluent limit will remain unchanged in the permit in accordance with 40 CFR §122.44(l)(1).

E. Coli Monitoring Requirement
DEP's SOP no. BCW-PMT-033 recommends a routine monitoring for E. Coli in all new and reissued sewage permits. As a result, a monthly monitoring requirement for E. Coli will be included in the permit given the facility's design flow is greater than 1.0 MGD.

Chesapeake Bay TMDL
In August 2019, DEP finalized Phase 3 Chesapeake Bay Watershed Implementation Plan to provide the plans in place by 2025 to further achieve the nutrient and sediment reduction targets that would ultimately meet U.S EPA's expectations for the Chesapeake Bay TMDL. The Chesapeake Bay TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus and sediment across the Bay jurisdictions and sets pollution limits necessary to meet water quality standards. The Phase 3 WIP is an update to the Pennsylvania's Chesapeake Bay TMDL Strategy (2004), the Chesapeake WIP Phase I (2011) and Phase 2 WIP (2012). The more details on the TMDL are available at www.dep.pa.gov.

A Supplement to the Phase 3 WIP which was last updated on December 17, 2019 provides an update on Chesapeake Bay TMDL implementation activities for point sources and DEP's current implementation strategy for wastewater. According to this document, Hampden Township is a phase 1 significant discharger located within the Chesapeake Bay watershed. The following Cap Loads (annual net nutrient mass effluent limitations) specified in the current Supplement to the Phase 3 WIP will be included in the draft permit:

NPDES Permit No.	Phase	Facility	Latest Permit Issuance Date	Permit Expiration Date	Cap Load Compliance Start Date	TN Cap Load (lbs/yr)	TN Offsets Included in Cap Load (lbs/yr)	TP Cap Load (lbs/yr)	TN Delivery Ratio	TP Delivery Ratio
PA0080314	1	Hampden Township Sewer Authority	06/20/2016	03/31/2018	10/1/2014	117,696	-	14,441	0.951	0.436

The permit currently contains the following offset condition:

> *The permittee is authorized to use 3,125 lbs/year as Total Nitrogen (TN) Offsets toward compliance with the Annual Net TN mass load limitations (Cap Loads), in accordance with Part C of this permit. These Offsets may be applied throughout the Compliance Year or during the Truing Period. The application of offsets must be reported to DEP as described in Part C. The Offsets are authorized for the following pollutant load reduction activities:*
>
> - *Connection of 125 on-lot sewage disposal systems to the public sewer system after January 1, 2003, in which 25 lbs/year of TN offsets are granted per connection.*

This condition as well as aforementioned TN and TP Cap Loads is still applicable and therefore will remain in the permit.

Monitoring Frequency
During the last permit term, the permit was amended to reduce the monitoring frequency from 1/day to 3/week. US EPA's technical guidance, *Interim Guidance for Performance-Based Reductions of NPDES permit monitoring frequencies*, was used in the analysis to reduce these monitoring frequencies. Since the last permit reissuance, the facility has had only one (1) effluent violation and file records show that the facility has been well maintained. Consequently, existing monitoring frequencies should remain in the permit.

Antidegradation Requirements
All effluent limitations and monitoring requirements have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected.

Anti-backsliding Requirements
Unless stated otherwise in this fact sheet, all permit requirements proposed in this fact sheet are at least as stringent as those specified in the existing permit.

Whole Effluent Toxicity (WET)

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

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

The dilution series used for the tests was: 100%, 97%, 93%, 47%, and 23%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 93%.

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

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
June 2020	100	100		100	100		Yes
July 2021	100	100		100	100		Yes
July 2022	100	100		100	100		Yes
July 2023	100	100		100	100		Yes

***** *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: DEP's WET Analysis Spreadsheet is also complete and included as an attachment to this fact sheet.

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

Acute Partial Mix Factor (PMFa): **1.0** Chronic Partial Mix Factor (PMFc): **1.0**

1. Determine IWC – Acute (IWCa):

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

[(5.69 MGD x 1.547) / ((0.625 cfs x 1) + (5.69 MGD x 1.547))] x 100 = **93%**

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

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

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

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

[(5.69 MGD x 1.547) / ((0.625 cfs x 1) + (5.69 MGD x 1.547))] x 100 = **93%**

3. Determine Dilution Series

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

Dilution Series = 100%, 97%, 93%, 47%, and 23%.

WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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

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

N/A

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

N/A

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
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	711	1044 Wkly Avg	XXX	15.0	22.0	40	3/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
TSS	1423	2135 Wkly Avg	XXX	30.0	45.0	81	3/week	24-Hr Composite
TSS Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	3/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	3/week	Grab
UV Intensity (mW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculation
Total Nitrogen (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation

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	Daily Maximum	Daily Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Ammonia Nov 1 - Apr 30	213	XXX	XXX	4.5	XXX	12	3/week	24-Hr Composite
Ammonia May 1 - Oct 31	71	XXX	XXX	1.5	XXX	4	3/week	24-Hr Composite
Ammonia (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
TKN	XXX	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
TKN (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Phosphorus	70.7	XXX	XXX	2.0	XXX	5.4	3/week	24-Hr Composite
Total Phosphorus (lbs)	Report Total Mo	XXX	XXX	XXX	XXX	XXX	1/month	Calculation
Total Zinc	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	24-Hr Composite
Total Boron	Report	Report	XXX	Report	Report Daily Max	XXX	2/month	24-Hr Composite
E. Coli (no. / 100 mL)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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

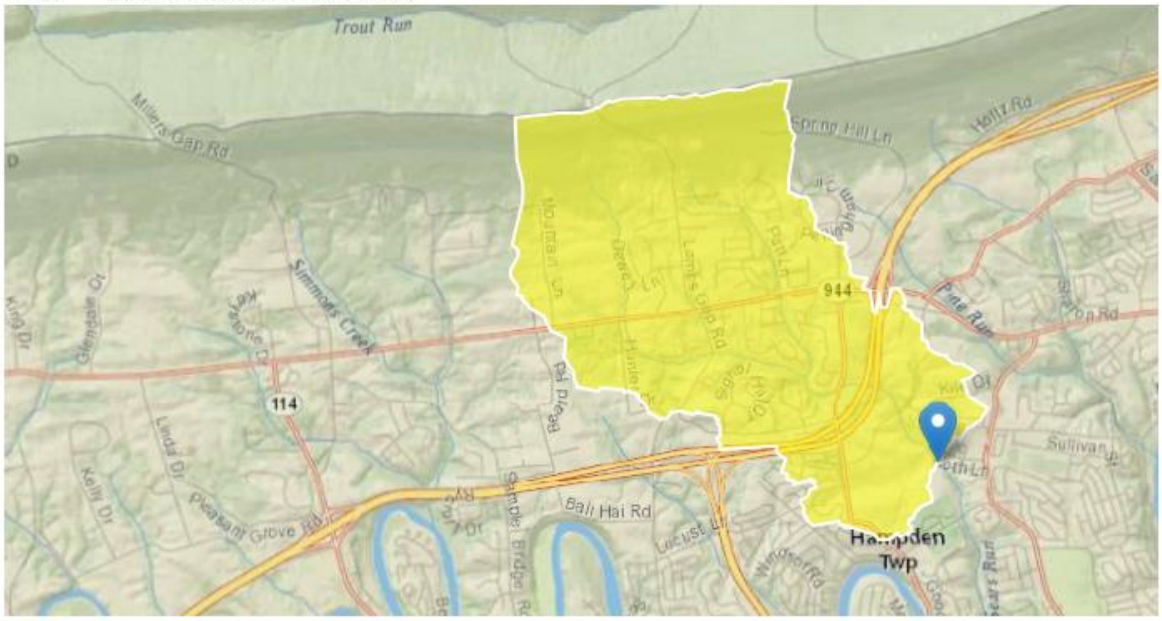
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	3/week	24-Hr Composite
Net Total Nitrogen (3)	Report	117696	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus (3)	Report	14441	XXX	XXX	XXX	XXX	1/month	Calculation

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:

Attachment

StreamStats Report

Region ID: PA
Workspace ID: PA20240625231743295000
Clicked Point (Latitude, Longitude): 40.27440, -76.97588
Time: 2024-06-25 19:18:03 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	12.58	percent
DRNAREA	Area that drains to a point on a stream	4.25	square miles
PRECIP	Mean Annual Precipitation	41	inches
ROCKDEP	Depth to rock	3.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.46	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.25	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	1.46	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.4	feet	3.32	5.65
CARBON	Percent Carbonate	12.58	percent	0	99

Low-Flow Statistics Disclaimers [Low Flow Region 2]

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 2]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.336	ft^3/s
30 Day 2 Year Low Flow	0.503	ft^3/s
7 Day 10 Year Low Flow	0.108	ft^3/s
30 Day 10 Year Low Flow	0.173	ft^3/s
90 Day 10 Year Low Flow	0.326	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/)

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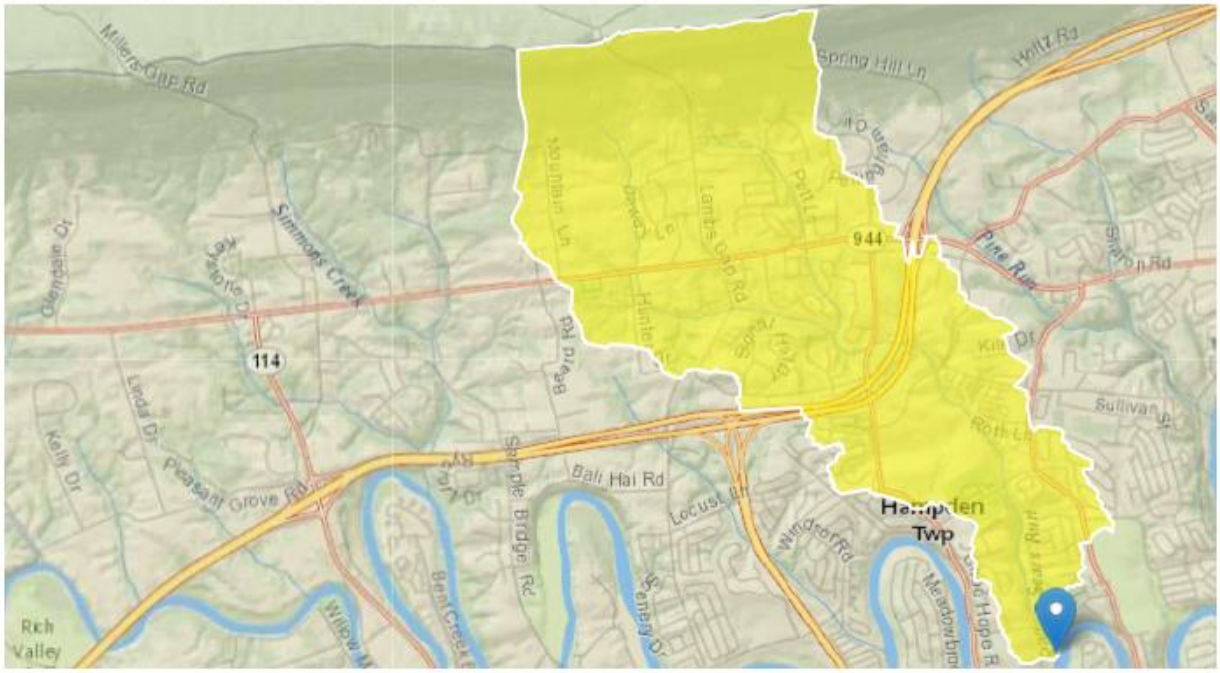
Application Version: 4.21.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

StreamStats Report

Region ID: PA
Workspace ID: PA20240625232008716000
Clicked Point (Latitude, Longitude): 40.25626, -76.96760
Time: 2024-06-25 19:20:29 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	10.7	percent
DRNAREA	Area that drains to a point on a stream	4.99	square miles
PRECIP	Mean Annual Precipitation	41	inches
ROCKDEP	Depth to rock	3.4	feet
STRDEN	Stream Density -- total length of streams divided by drainage area	1.61	miles per square mile

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.99	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	41	inches	35	50.4
STRDEN	Stream Density	1.61	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	3.4	feet	3.32	5.65
CARBON	Percent Carbonate	10.7	percent	0	99

Low-Flow Statistics Flow Report [Low Flow Region 2]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	0.357	ft^3/s	38	38
30 Day 2 Year Low Flow	0.54	ft^3/s	33	33
7 Day 10 Year Low Flow	0.114	ft^3/s	51	51
30 Day 10 Year Low Flow	0.184	ft^3/s	46	46
90 Day 10 Year Low Flow	0.348	ft^3/s	36	36

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/)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.21.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

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
07B	10210	SEARS RUN	**4.130**	431.00	0.85	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	0.147	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Diller Landfill	PA0082953	0.0100	0.0100	0.0100	0.000	22.00	8.30

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	4.90	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
07B	10210	SEARS RUN	**2.480**	393.00	2.99	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	0.147	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07B	10210	SEARS RUN	**1.440**	371.00	4.25	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	0.147	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Hampden STP	PA0080314	5.6900	5.6900	5.6900	0.000	20.00	7.50

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	15.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	1.50	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
07B	10210	SEARS RUN	**0.000**	333.00	4.99	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	0.147	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	0.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07B	10210	SEARS RUN

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												
4.130	0.12	0.00	0.12	.0155	0.00436	.375	5.22	13.91	0.07	1.406	24.67	7.05
2.480	0.44	0.00	0.44	.0155	0.00401	.449	9.72	21.63	0.10	0.609	24.90	7.01
1.440	0.62	0.00	0.62	8.8179	0.00500	.693	25.37	36.61	0.54	0.164	20.33	7.44
Q1-10 Flow												
4.130	0.11	0.00	0.11	.0155	0.00436	NA	NA	NA	0.07	1.473	24.64	7.05
2.480	0.40	0.00	0.40	.0155	0.00401	NA	NA	NA	0.10	0.641	24.89	7.02
1.440	0.57	0.00	0.57	8.8179	0.00500	NA	NA	NA	0.54	0.164	20.31	7.45
Q30-10 Flow												
4.130	0.14	0.00	0.14	.0155	0.00436	NA	NA	NA	0.08	1.323	24.70	7.04
2.480	0.50	0.00	0.50	.0155	0.00401	NA	NA	NA	0.11	0.570	24.91	7.01
1.440	0.71	0.00	0.71	8.8179	0.00500	NA	NA	NA	0.54	0.163	20.37	7.44

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	0.91	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.13	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
07B	10210	SEARS RUN

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
4.130	Diller Landfill	10.88	9.8	10.88	9.8	0	0
2.480		NA	NA	11.02	NA	NA	NA
1.440	Hampden STP	9.74	3	9.73	3	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
4.130	Diller Landfill	1.37	4.9	1.37	4.9	0	0
2.480		NA	NA	1.37	NA	NA	NA
1.440	Hampden STP	1.44	1.5	1.43	1.5	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
4.13	Diller Landfill	25	25	4.9	4.9	5	5	0	0
2.48		NA	NA	NA	NA	NA	NA	NA	NA
1.44	Hampden STP	15	15	1.5	1.5	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07B	10210	SEARS RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.130	0.010	24.669	7.048
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.220	0.375	13.914	0.072
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.53	0.470	0.54	1.003
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.886	25.441	Owens	5
Reach Travel Time (days)			
1.406			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.141	4.18	0.47	7.58
0.281	3.85	0.41	7.58
0.422	3.55	0.35	7.58
0.562	3.27	0.31	7.58
0.703	3.01	0.27	7.58
0.844	2.77	0.23	7.58
0.984	2.56	0.20	7.58
1.125	2.36	0.17	7.58
1.266	2.17	0.15	7.58
1.406	2.00	0.13	7.58

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.480	0.010	24.898	7.014
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
9.715	0.449	21.634	0.104
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.00	0.000	0.04	1.020
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.039	23.572	Owens	5
Reach Travel Time (days)			
0.609			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.061	2.00	0.04	7.55
0.122	2.00	0.04	7.55
0.183	2.00	0.03	7.55
0.244	2.00	0.03	7.55
0.305	2.00	0.03	7.55
0.366	2.00	0.03	7.55
0.427	2.00	0.03	7.55
0.488	2.00	0.02	7.55
0.548	2.00	0.02	7.55
0.609	2.00	0.02	7.55

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07B	10210	SEARS RUN

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)
4.130	Diller Landfill	PA0082953	0.010	CBOD5	25		
				NH3-N	4.9	9.8	
				Dissolved Oxygen			5

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)
1.440	Hampden STP	PA0080314	5.690	CBOD5	15		
				NH3-N	1.5	3	
				Dissolved Oxygen			5

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Hampden Township** NPDES Permit No.: **PA0080314** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **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
5.69	242	7						

					0 if left blank	0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		522									
	Chloride (PWS)	mg/L		160									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		51									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L		62									
	Total Antimony	µg/L		0.4									
	Total Arsenic	µg/L		0.6									
	Total Barium	µg/L		24									
	Total Beryllium	µg/L	<	0.1									
	Total Boron	µg/L		219									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		0.2									
	Hexavalent Chromium	µg/L	<	0.1									
	Total Cobalt	µg/L		0.4									
	Total Copper	µg/L	<	2									
	Free Cyanide	µg/L		0.0065382			1.0671						
	Total Cyanide	µg/L		0.01									
	Dissolved Iron	µg/L		0.00003									
	Total Iron	µg/L		37									
	Total Lead	µg/L		0.3									
	Total Manganese	µg/L		29									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		9									
	Total Phenols (Phenolics) (PWS)	µg/L		7									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.2									
	Total Thallium	µg/L		0.0001047			2.4349						
	Total Zinc	µg/L		41									
	Total Molybdenum	µg/L		1									
	Acrolein	µg/L	<	0.5									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.3									
	Benzene	µg/L	<	0.4									
	Bromoform	µg/L	<	0.4									
	Carbon Tetrachloride	µg/L	<	0.4									

Group 3	Chlorobenzene	µg/L	<	0.5										
	Chlorodibromomethane	µg/L	<	0.4										
	Chloroethane	µg/L	<	0.06										
	2-Chloroethyl Vinyl Ether	µg/L	<	0.3										
	Chloroform	µg/L	<	0.3										
	Dichlorobromomethane	µg/L	<	0.4										
	1,1-Dichloroethane	µg/L	<	0.4										
	1,2-Dichloroethane	µg/L	<	0.3										
	1,1-Dichloroethylene	µg/L	<	0.2										
	1,2-Dichloropropane	µg/L	<	0.3										
	1,3-Dichloropropylene	µg/L	<	0.5										
	1,4-Dioxane	µg/L	<	0.1										
	Ethylbenzene	µg/L	<	0.2										
	Methyl Bromide	µg/L	<	0.4										
	Methyl Chloride	µg/L	<	0.5										
	Methylene Chloride	µg/L	<	0.4										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5										
	Tetrachloroethylene	µg/L	<	0.3										
	Toluene	µg/L	<	0.3										
	1,2-trans-Dichloroethylene	µg/L	<	0.4										
	1,1,1-Trichlorcethane	µg/L	<	0.3										
	1,1,2-Trichlorcethane	µg/L	<	0.3										
	Trichloroethylene	µg/L	<	0.4										
	Vinyl Chloride	µg/L	<	0.3										
Group 4	2-Chlorophenol	µg/L	<	0.2										
	2,4-Dichlorophenol	µg/L	<	0.2										
	2,4-Dimethylphenol	µg/L	<	0.4										
	4,6-Dinitro-o-Cresol	µg/L	<	1.1										
	2,4-Dinitrophenol	µg/L	<	1.8										
	2-Nitrophenol	µg/L	<	0.2										
	4-Nitrophenol	µg/L	<	1.3										
	p-Chloro-m-Cresol	µg/L	<	0.2										
	Pentachlorophenol	µg/L	<	0.5										
	Phenol	µg/L	<	0.2										
	2,4,6-Trichlorophenol	µg/L		0.3										
Group 5	Acenaphthene	µg/L	<	0.3										
	Acenaphthylene	µg/L	<	0.3										
	Anthracene	µg/L	<	0.3										
	Benzidine	µg/L	<	0.6										
	Benzo(a)Anthracene	µg/L	<	0.3										
	Benzo(a)Pyrene	µg/L	<	0.32										
	3,4-Benzofluoranthene	µg/L	<	0.29										
	Benzo(ghi)Perylene	µg/L	<	0.4										
	Benzo(k)Fluoranthene	µg/L	<	0.3										
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.2										
	Bis(2-Chloroethyl)Ether	µg/L	<	0.3										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.3										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	1.5										
	4-Bromophenyl Phenyl Ether	µg/L	<	0.4										
	Butyl Benzyl Phthalate	µg/L	<	1										
	2-Chloronaphthalene	µg/L	<	0.3										
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.3										
	Chrysene	µg/L	<	0.5										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.4										
	1,2-Dichlorobenzene	µg/L	<	0.09										
	1,3-Dichlorobenzene	µg/L	<	0.2										
	1,4-Dichlorobenzene	µg/L	<	0.08										
	3,3-Dichlorobenzidine	µg/L	<	0.7										
	Diethyl Phthalate	µg/L	<	0.8										
	Dimethyl Phthalate	µg/L	<	0.5										
	Di-n-Butyl Phthalate	µg/L		2.6										
	2,4-Dinitrotoluene	µg/L	<	0.4										
	2,6-Dinitrotoluene	µg/L	<	0.4										
	Di-n-Octyl Phthalate	µg/L		1.6										

	1,2-Diphenylhydrazine	µg/L	<	0.5										
	Fluoranthene	µg/L	<	0.6										
	Fluorene	µg/L	<	0.3										
	Hexachlorobenzene	µg/L	<	0.4										
	Hexachlorobutadiene	µg/L	<	0.3										
	Hexachlorocyclopentadiene	µg/L	<	0.4										
	Hexachloroethane	µg/L	<	0.4										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.5										
	Isophorone	µg/L	<	0.2										
	Naphthalene	µg/L	<	0.2										
	Nitrobenzene	µg/L	<	0.2										
	n-Nitrosodimethylamine	µg/L	<	0.2										
	n-Nitrosodi-n-Propylamine	µg/L	<	0.4										
	n-Nitrosodiphenylamine	µg/L	<	0.3										
	Phenanthrene	µg/L	<	0.4										
	Pyrene	µg/L	<	0.6										
	1,2,4-Trichlorobenzene	µg/L	<	0.3										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Hampden Township, NPDES Permit No. PA0080314, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Sears Run**

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	010210	1.44	371	4.25			Yes
End of Reach 1	010210	0	333	4.99			Yes

Q_{7-10}

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	1.44	0.147										235	7		
End of Reach 1	0	0.147													

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	1.44														
End of Reach 1	0														

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Hampden Township, NPDES Permit No. PA0080314, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.095 PMF: 1 Analysis Hardness (mg/l): 241.54 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	803	
Total Antimony	0	0		0	1,100	1,100	1,178	
Total Arsenic	0	0		0	340	340	364	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	22,490	
Total Boron	0	0		0	8,100	8,100	8,675	
Total Cadmium	0	0		0	4.743	5.23	5.6	Chem Translator of 0.907 applied
Total Chromium (III)	0	0		0	1173.159	3,713	3,976	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	17.4	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	102	
Total Copper	0	0		0	30.847	32.1	34.4	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	23.6	
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	166.209	251	269	Chem Translator of 0.663 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.76	Chem Translator of 0.85 applied
Total Nickel	0	0		0	987.342	989	1,060	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	14.660	17.2	18.5	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	69.6	
Total Zinc	0	0		0	247.375	253	271	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	3.21	
Acrylonitrile	0	0		0	650	650	696	
Benzene	0	0		0	640	640	685	

Bromoform	0	0		0	1,800	1,800	1,928		
Carbon Tetrachloride	0	0		0	2,800	2,800	2,999		
Chlorobenzene	0	0		0	1,200	1,200	1,285		
Chlorodibromomethane	0	0		0	N/A	N/A	N/A		
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	19,278		
Chloroform	0	0		0	1,900	1,900	2,035		
Dichlorobromomethane	0	0		0	N/A	N/A	N/A		
1,2-Dichloroethane	0	0		0	15,000	15,000	16,065		
1,1-Dichloroethylene	0	0		0	7,500	7,500	8,032		
1,2-Dichloropropane	0	0		0	11,000	11,000	11,781		
1,3-Dichloropropylene	0	0		0	310	310	332		
Ethylbenzene	0	0		0	2,900	2,900	3,106		
Methyl Bromide	0	0		0	550	550	589		
Methyl Chloride	0	0		0	28,000	28,000	29,987		
Methylene Chloride	0	0		0	12,000	12,000	12,852		
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	1,071		
Tetrachloroethylene	0	0		0	700	700	750		
Toluene	0	0		0	1,700	1,700	1,821		
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	7,283		
1,1,1-Trichloroethane	0	0		0	3,000	3,000	3,213		
1,1,2-Trichloroethane	0	0		0	3,400	3,400	3,641		
Trichloroethylene	0	0		0	2,300	2,300	2,463		
Vinyl Chloride	0	0		0	N/A	N/A	N/A		
2-Chlorophenol	0	0		0	560	560	600		
2,4-Dichlorophenol	0	0		0	1,700	1,700	1,821		
2,4-Dimethylphenol	0	0		0	660	660	707		
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	85.7		
2,4-Dinitrophenol	0	0		0	660	660	707		
2-Nitrophenol	0	0		0	8,000	8,000	8,568		
4-Nitrophenol	0	0		0	2,300	2,300	2,463		
p-Chloro-m-Cresol	0	0		0	160	160	171		
Pentachlorophenol	0	0		0	8.723	8.72	9.34		
Phenol	0	0		0	N/A	N/A	N/A		
2,4,6-Trichlorophenol	0	0		0	460	460	493		
Acenaphthene	0	0		0	83	83.0	88.9		
Anthracene	0	0		0	N/A	N/A	N/A		
Benzidine	0	0		0	300	300	321		
Benzo(a)Anthracene	0	0		0	0.5	0.5	0.54		
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	32,129		
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A		
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	4,819		
4-Bromophenyl Phenyl Ether	0	0		0	270	270	289		
Butyl Benzyl Phthalate	0	0		0	140	140	150		
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A		
Chrysene	0	0		0	N/A	N/A	N/A		
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A		

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1,2-Dichlorobenzene	0	0		0	820	820	878	
1,3-Dichlorobenzene	0	0		0	350	350	375	
1,4-Dichlorobenzene	0	0		0	730	730	782	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	4,284	
Dimethyl Phthalate	0	0		0	2,500	2,500	2,677	
Di-n-Butyl Phthalate	0	0		0	110	110	118	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	1,714	
2,6-Dinitrotoluene	0	0		0	990	990	1,060	
1,2-Diphenylhydrazine	0	0		0	15	15.0	16.1	
Fluoranthene	0	0		0	200	200	214	
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	10.7	
Hexachlorocyclopentadiene	0	0		0	5	5.0	5.35	
Hexachloroethane	0	0		0	60	60.0	64.3	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	10,710	
Naphthalene	0	0		0	140	140	150	
Nitrobenzene	0	0		0	4,000	4,000	4,284	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	18,207	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	321	
Phenanthrene	0	0		0	5	5.0	5.35	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	139	

☑ ***CFC*** CCT (min): 0.095 PMF: 1 Analysis Hardness (mg/l): 241.54 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	236	
Total Arsenic	0	0		0	150	150	161	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,391	
Total Boron	0	0		0	1,600	1,600	1,714	
Total Cadmium	0	0		0	0.454	0.52	0.56	Chem Translator of 0.872 applied
Total Chromium (III)	0	0		0	152.604	177	190	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	11.1	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	20.3	
Total Copper	0	0		0	19.027	19.8	21.2	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	5.57	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,606	WQC = 30 day average; PMF = 1

Total Lead	0	0		0	6.477	9.78	10.5	Chem Translator of 0.663 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.97	Chem Translator of 0.85 applied
Total Nickel	0	0		0	109.663	110	118	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	5.34	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	13.9	
Total Zinc	0	0		0	249.399	253	271	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	3.21	
Acrylonitrile	0	0		0	130	130	139	
Benzene	0	0		0	130	130	139	
Bromoform	0	0		0	370	370	396	
Carbon Tetrachloride	0	0		0	560	560	600	
Chlorobenzene	0	0		0	240	240	257	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	3,748	
Chloroform	0	0		0	390	390	418	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	3,320	
1,1-Dichloroethylene	0	0		0	1,500	1,500	1,606	
1,2-Dichloropropane	0	0		0	2,200	2,200	2,356	
1,3-Dichloropropylene	0	0		0	61	61.0	65.3	
Ethylbenzene	0	0		0	580	580	621	
Methyl Bromide	0	0		0	110	110	118	
Methyl Chloride	0	0		0	5,500	5,500	5,890	
Methylene Chloride	0	0		0	2,400	2,400	2,570	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	225	
Tetrachloroethylene	0	0		0	140	140	150	
Toluene	0	0		0	330	330	353	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	1,499	
1,1,1-Trichloroethane	0	0		0	610	610	653	
1,1,2-Trichloroethane	0	0		0	680	680	728	
Trichloroethylene	0	0		0	450	450	482	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	118	
2,4-Dichlorophenol	0	0		0	340	340	364	
2,4-Dimethylphenol	0	0		0	130	130	139	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	17.1	
2,4-Dinitrophenol	0	0		0	130	130	139	
2-Nitrophenol	0	0		0	1,600	1,600	1,714	
4-Nitrophenol	0	0		0	470	470	503	
p-Chloro-m-Cresol	0	0		0	500	500	535	
Pentachlorophenol	0	0		0	6.693	6.69	7.17	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	97.5	
Acenaphthene	0	0		0	17	17.0	18.2	

Anthracene	0	0			0	N/A	N/A	N/A	
Benzidine	0	0			0	59	59.0	63.2	
Benzo(a)Anthracene	0	0			0	0.1	0.1	0.11	
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	6,426	
Bis(2-Chloroisopropyl)Ether	0	0			0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0			0	910	910	975	
4-Bromophenyl Phenyl Ether	0	0			0	54	54.0	57.8	
Butyl Benzyl Phthalate	0	0			0	35	35.0	37.5	
2-Chloronaphthalene	0	0			0	N/A	N/A	N/A	
Chrysene	0	0			0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0			0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0			0	160	160	171	
1,3-Dichlorobenzene	0	0			0	69	69.0	73.9	
1,4-Dichlorobenzene	0	0			0	150	150	161	
3,3-Dichlorobenzidine	0	0			0	N/A	N/A	N/A	
Diethyl Phthalate	0	0			0	800	800	857	
Dimethyl Phthalate	0	0			0	500	500	535	
Di-n-Butyl Phthalate	0	0			0	21	21.0	22.5	
2,4-Dinitrotoluene	0	0			0	320	320	343	
2,6-Dinitrotoluene	0	0			0	200	200	214	
1,2-Diphenylhydrazine	0	0			0	3	3.0	3.21	
Fluoranthene	0	0			0	40	40.0	42.8	
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	2.14	
Hexachlorocyclopentadiene	0	0			0	1	1.0	1.07	
Hexachloroethane	0	0			0	12	12.0	12.9	
Indeno(1,2,3-cd)Pyrene	0	0			0	N/A	N/A	N/A	
Isophorone	0	0			0	2,100	2,100	2,249	
Naphthalene	0	0			0	43	43.0	46.1	
Nitrobenzene	0	0			0	810	810	867	
n-Nitrosodimethylamine	0	0			0	3,400	3,400	3,641	
n-Nitrosodi-n-Propylamine	0	0			0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0			0	59	59.0	63.2	
Phenanthrene	0	0			0	1	1.0	1.07	
Pyrene	0	0			0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0			0	26	26.0	27.8	

☐ ***THH*** CCT (min): 0.095 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	

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Chloride (PWS)	0	0		0	250,000	250,000	N/A		
Sulfate (PWS)	0	0		0	250,000	250,000	N/A		
Total Aluminum	0	0		0	N/A	N/A	N/A		
Total Antimony	0	0		0	5.6	5.6	6.0		
Total Arsenic	0	0		0	10	10.0	10.7		
Total Barium	0	0		0	2,400	2,400	2,570		
Total Boron	0	0		0	3,100	3,100	3,320		
Total Cadmium	0	0		0	N/A	N/A	N/A		
Total Chromium (III)	0	0		0	N/A	N/A	N/A		
Hexavalent Chromium	0	0		0	N/A	N/A	N/A		
Total Cobalt	0	0		0	N/A	N/A	N/A		
Total Copper	0	0		0	N/A	N/A	N/A		
Free Cyanide	0	0		0	4	4.0	4.28		
Dissolved Iron	0	0		0	300	300	321		
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	1,071		
Total Mercury	0	0		0	0.050	0.05	0.054		
Total Nickel	0	0		0	610	610	653		
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	0.26		
Total Zinc	0	0		0	N/A	N/A	N/A		
Acrolein	0	0		0	3	3.0	3.21		
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	107		
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	6.1		
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	35.3		
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	72.8		
Methyl Bromide	0	0		0	100	100.0	107		
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	61.0		
1,2-trans-Dichloroethylene	0	0		0	100	100.0	107		
1,1,1-Trichloroethane	0	0		0	10,000	10,000	10,710		

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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	32.1			
2,4-Dichlorophenol	0	0		0	10	10.0	10.7			
2,4-Dimethylphenol	0	0		0	100	100.0	107			
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	2.14			
2,4-Dinitrophenol	0	0		0	10	10.0	10.7			
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	4,284			
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A			
Acenaphthene	0	0		0	70	70.0	75.0			
Anthracene	0	0		0	300	300	321			
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	214			
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	0.11			
2-Chloronaphthalene	0	0		0	800	800	857			
Chrysene	0	0		0	N/A	N/A	N/A			
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A			
1,2-Dichlorobenzene	0	0		0	1,000	1,000	1,071			
1,3-Dichlorobenzene	0	0		0	7	7.0	7.5			
1,4-Dichlorobenzene	0	0		0	300	300	321			
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A			
Diethyl Phthalate	0	0		0	600	600	643			
Dimethyl Phthalate	0	0		0	2,000	2,000	2,142			
Di-n-Butyl Phthalate	0	0		0	20	20.0	21.4			
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	21.4			
Fluorene	0	0		0	50	50.0	53.5			
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	4.28			
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	36.4			

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Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	10.7	
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	21.4	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.075	

CRL CCT (min): 2.171 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	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	0.094	
Benzene	0	0		0	0.58	0.58	0.9	
Bromoform	0	0		0	7	7.0	10.9	
Carbon Tetrachloride	0	0		0	0.4	0.4	0.62	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	1.25	
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	1.48			
1,2-Dichloroethane	0	0		0	9.9	9.9	15.4			
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A			
1,2-Dichloropropane	0	0		0	0.9	0.9	1.4			
1,3-Dichloropropylene	0	0		0	0.27	0.27	0.42			
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	31.2			
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	0.31			
Tetrachloroethylene	0	0		0	10	10.0	15.6			
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	0.86			
Trichloroethylene	0	0		0	0.6	0.6	0.94			
Vinyl Chloride	0	0		0	0.02	0.02	0.031			
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	0.047			
Phenol	0	0		0	N/A	N/A	N/A			
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	2.34			
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	0.0002			
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.002			
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.0002			
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.002			
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.016			
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.047			
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A			
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	0.5			
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	0.19			
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.0002			
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			

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3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.078	
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	0.078	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.078	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.047	
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	0.0001	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.016	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	0.16	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.002	
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	0.001	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.008	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	5.15	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Boron	Report	Report	Report	Report	Report	µg/L	1,714	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	253	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	Units	Comments

Pollutant	WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	750	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	6.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	10.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	2,570	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Cadmium	0.66	µg/L	Discharge Conc < TQL
Total Chromium (III)	190	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	11.1	µg/L	Discharge Conc < TQL
Total Cobalt	20.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	21.2	µg/L	Discharge Conc < TQL
Free Cyanide	4.28	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	321	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,806	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	10.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	1,071	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.054	µg/L	Discharge Conc < TQL
Total Nickel	118	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	5.34	µg/L	Discharge Conc < TQL
Total Silver	17.2	µg/L	Discharge Conc < TQL
Total Thallium	0.26	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	3.0	µg/L	Discharge Conc < TQL
Acrylonitrile	0.094	µg/L	Discharge Conc < TQL
Benzene	0.9	µg/L	Discharge Conc < TQL
Bromoform	10.9	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	0.62	µg/L	Discharge Conc < TQL
Chlorobenzene	107	µg/L	Discharge Conc < TQL
Chlorodibromomethane	1.25	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	3,748	µg/L	Discharge Conc < TQL
Chloroform	6.1	µg/L	Discharge Conc < TQL
Dichlorobromomethane	1.48	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	15.4	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	35.3	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	1.4	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	0.42	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	72.8	µg/L	Discharge Conc < TQL
Methyl Bromide	107	µg/L	Discharge Conc ≤ 10% WQBEL

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Methyl Chloride	5,890	µg/L	Discharge Conc < TQL
Methylene Chloride	31.2	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	0.31	µg/L	Discharge Conc < TQL
Tetrachloroethylene	15.6	µg/L	Discharge Conc < TQL
Toluene	61.0	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	107	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	653	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	0.86	µg/L	Discharge Conc < TQL
Trichloroethylene	0.94	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.031	µg/L	Discharge Conc < TQL
2-Chlorophenol	32.1	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	10.7	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	107	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	2.14	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	10.7	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,714	µg/L	Discharge Conc < TQL
4-Nitrophenol	503	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	160	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.047	µg/L	Discharge Conc < TQL
Phenol	4,284	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	2.34	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	18.2	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	321	µg/L	Discharge Conc < TQL
Benzidine	0.0002	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.002	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.0002	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.002	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.016	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.047	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	214	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.5	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	57.8	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.11	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	857	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.19	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.0002	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	171	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	7.5	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	161	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.078	µg/L	Discharge Conc < TQL
Diethyl Phthalate	643	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	535	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	21.4	µg/L	Discharge Conc ≤ 25% WQBEL

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2,4-Dinitrotoluene	0.078	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.078	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.047	µg/L	Discharge Conc < TQL
Fluoranthene	21.4	µg/L	Discharge Conc < TQL
Fluorene	53.5	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.0001	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.016	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1.07	µg/L	Discharge Conc < TQL
Hexachloroethane	0.16	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.002	µg/L	Discharge Conc < TQL
Isophorone	36.4	µg/L	Discharge Conc < TQL
Naphthalene	46.1	µg/L	Discharge Conc < TQL
Nitrobenzene	10.7	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.001	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.008	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	5.15	µg/L	Discharge Conc < TQL
Phenanthrene	1.07	µg/L	Discharge Conc < TQL
Pyrene	21.4	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.075	µg/L	Discharge Conc < TQL

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DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Survival
TIWC (decimal)	0.93
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Hampden Township

Permit No.: PA0080314

Test Completion Date: 6/16/2020

Replicate No.	Control	TIWC
1	10	10
2	10	7
3	10	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.000
Std Dev.	0.000	1.414
# Replicates	4	4

T-Test Result	2.0838
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 7/6/2021

Replicate No.	Control	TIWC
1	9	10
2	10	10
3	9	10
4	10	9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	9.500	9.750
Std Dev.	0.577	0.500
# Replicates	4	4

T-Test Result	6.9275
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 7/19/2022

Replicate No.	Control	TIWC
1	10	9
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	9.750
Std Dev.	0.000	0.500
# Replicates	4	4

T-Test Result	7.6643
Deg. of Freedom	3
Critical T Value	0.7649
Pass or Fail	PASS

Test Completion Date: 7/18/2023

Replicate No.	Control	TIWC
1	10	10
2	10	10
3	10	10
4	10	10
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	10.000	10.000
Std Dev.	0.000	0.000
# Replicates	4	4

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Pimephales
Endpoint	Growth
TIWC (decimal)	0.93
No. Per Replicate	10
TST b value	0.75
TST alpha value	0.25

Facility Name: Hampden Township

Permit No.: PA0080314

Test Completion Date: 6/16/2020

Replicate No.	Control	TIWC
1	0.351	0.355
2	0.405	0.259
3	0.356	0.368
4	0.362	0.367
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.369	0.337
Std Dev.	0.025	0.053
# Replicates	4	4

T-Test Result	2.1865
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

Test Completion Date: 7/16/2021

Replicate No.	Control	TIWC
1	0.323	0.407
2	0.393	0.398
3	0.326	0.413
4	0.334	0.337
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.344	0.389
Std Dev.	0.033	0.035
# Replicates	4	4

T-Test Result	6.0952
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 7/19/2022

Replicate No.	Control	TIWC
1	0.295	0.258
2	0.274	0.292
3	0.264	0.287
4	0.262	0.297
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.274	0.284
Std Dev.	0.015	0.017
# Replicates	4	4

T-Test Result	7.5057
Deg. of Freedom	5
Critical T Value	0.7267
Pass or Fail	PASS

Test Completion Date: 7/18/2023

Replicate No.	Control	TIWC
1	0.318	0.369
2	0.313	0.314
3	0.323	0.322
4	0.298	0.302
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
Mean	0.313	0.327
Std Dev.	0.011	0.029
# Replicates	4	4

T-Test Result	6.0448
Deg. of Freedom	4
Critical T Value	0.7407
Pass or Fail	PASS

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Survival
TIWC (decimal)	0.93
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Hampden Township

Permit No.: PA0080314

Test Completion Date: 6/16/2020

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: 7/5/2021

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: 7/18/2022

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: 7/18/2023

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

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

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

Type of Test	Chronic
Species Tested	Ceriodaphnia
Endpoint	Reproduction
TIWC (decimal)	0.93
No. Per Replicate	1
TST b value	0.75
TST alpha value	0.2

Facility Name: Hampden Township

Permit No.: PA0080314

Test Completion Date: 6/16/2020

Replicate No.	Control	TIWC
1	48	46
2	34	34
3	42	37
4	32	36
5	40	34
6	44	38
7	30	39
8	37	42
9	29	40
10	42	37
11		
12		
13		
14		
15		
Mean	37.800	38.300
Std Dev.	6.408	3.683
# Replicates	10	10

T-Test Result	5.1962
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 7/5/2021

Replicate No.	Control	TIWC
1	28	32
2	37	20
3	33	24
4	14	31
5	31	33
6	33	32
7	19	33
8	30	35
9	38	27
10	30	38
11		
12		
13		
14		
15		
Mean	29.300	30.500
Std Dev.	7.514	5.359
# Replicates	10	10

T-Test Result	3.4665
Deg. of Freedom	17
Critical T Value	0.8633
Pass or Fail	PASS

Test Completion Date: 7/18/2022

Replicate No.	Control	TIWC
1	38	34
2	37	36
3	35	35
4	38	37
5	37	38
6	38	37
7	38	40
8	35	40
9	36	37
10	37	37
11		
12		
13		
14		
15		
Mean	36.900	37.100
Std Dev.	1.197	1.912
# Replicates	10	10

T-Test Result	14.1100
Deg. of Freedom	14
Critical T Value	0.8681
Pass or Fail	PASS

Test Completion Date: 7/18/2023

Replicate No.	Control	TIWC
1	42	44
2	39	40
3	47	46
4	38	44
5	35	38
6	41	45
7	38	40
8	42	32
9	34	39
10	46	41
11		
12		
13		
14		
15		
Mean	40.200	40.900
Std Dev.	4.264	4.149
# Replicates	10	10

T-Test Result	6.4900
Deg. of Freedom	16
Critical T Value	0.8647
Pass or Fail	PASS

WET Summary and Evaluation

Facility Name	Hampden Township
Permit No.	PA0080314
Design Flow (MGD)	5.69
Q_{7-10} Flow (cfs)	0.625
PMF_a	1
PMF_c	1

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/16/20	7/6/21	7/19/22	7/18/23
Pimephales	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/16/20	7/16/21	7/19/22	7/18/23
Pimephales	Growth	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/16/20	7/5/21	7/18/22	7/18/23
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

		Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
Species	**Endpoint**	6/16/20	7/5/21	7/18/22	7/18/23
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Reasonable Potential? NO

Permit Recommendations

Test Type	**Chronic**
TIWC	**93** % Effluent
Dilution Series	**23, 47, 93, 97, 100** % Effluent
Permit Limit	**None**
Permit Limit Species	

	Facility:	Hampden Township							
	NPDES #:	PA0080314							
	Outfall No:	001							
	n (Samples/Month):	4							
	Reviewer/Permit Engineer:	Jinsu Kim							
Parameter Name	Free Cyanide	Total Thallium							
Units	µg/L	µg/L							
Detection Limit									
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*								
07/01/2019	0.002	0.0003							
08/01/2019	0.001	0.0003							
09/01/2019	< 0.00200	< 0.00010							
10/01/2019	0.002	0.00004							
11/01/2019	0.003	< 0.00008							
12/01/2019	< 0.00100	< 0.00005							
01/01/2020	< 0.00600	< 0.00003							
02/01/2020	< 0.00200	< 0.00003							
03/01/2020	0.002	< 0.00003							
04/01/2020	0.003	< 0.00010							
05/01/2020	0.005	< 0.00003							
06/01/2020	< 0.00300	< 0.00006							
07/01/2020	0.003	< 0.00030							
08/01/2020	0.002	< 0.00020							
09/01/2020	0.002	< 0.00003							
10/01/2020	0.023	< 0.00010							
11/01/2020	< 0.00100	< 0.00030							
11/01/2020	< 0.00100	< 0.00030							
12/01/2020	0.004	0.0001							
01/01/2021	0.004	< 0.00003							
02/01/2021	0.003	< 0.00003							
03/01/2021	< 0.00300	< 0.00004							
04/01/2021	< 0.00400	< 0.00003							
05/01/2021	< 0.00200	< 0.00003							
06/01/2021	< 0.00050	< 0.00300							
07/01/2021	0.003	< 0.00009							
08/01/2021	< 0.00400	< 0.00004							
09/01/2021	< 0.00300	< 0.00006							
10/01/2021	< 0.00200	< 0.00003							
11/01/2021	< 0.00100	< 0.00003							
12/01/2021	0.004	0.00006							
01/01/2022	0.004	< 0.00005							
02/01/2022	0.004	< 0.00005							
03/01/2022	0.002	< 0.00005							
04/01/2022	< 0.00050	< 0.00005							
05/01/2022	< 0.00050	< 0.00005							
06/01/2022	0.003	0.00005							
07/01/2022	< 0.00050	0.0001							
08/01/2022	0.003	0.0001							
09/01/2022	0.004	< 0.00005							
10/01/2022	< 0.00050	< 0.00005							
11/01/2022	0.01	< 0.00005							
12/01/2022	0.005	0.00005							
01/01/2023	0.007	< 0.00005							
02/01/2023	0.005	< 0.00005							
03/01/2023	0.003	< 0.00005							
04/01/2023	0.007	< 0.00005							
05/01/2023	0.004	< 0.00005							
06/01/2023	0.003	< 0.00005							

Parameter Name	Free Cyanide	Total Thallium							
Units	µg/L	µg/L							
Detection Limit									
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*								
07/01/2023	0.002	< 0.00005							
08/01/2023	< 0.00050	< 0.00005							
09/01/2023	0.003	< 0.00005							
10/01/2023	0.003	< 0.00005							
11/01/2023	0.002	< 0.00005							
12/01/2023	0.004	0.0002							
01/01/2024	0.003	0.0001							
02/01/2024	0.002	0.00007							
03/01/2024	0.0007	< 0.00005							
04/01/2024	0.004	0.0001							

		Reviewer/Permit Engineer:	Jinsu Kim
Facility:	Hampden Township		
NPDES #:	PA0080314		
Outfall No:	001		
n (Samples/Month):	4		

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Free Cyanide (µg/L)	Delta-Lognormal	1.0671271	0.0065382
Total Thallium (µg/L)	Delta-Lognormal	2.4348895	0.0001047