

Application Type Renewal  
Facility Type Municipal  
Major / Minor Major

## NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application No. PA0037940  
APS ID 744252  
Authorization ID 1372115

### Applicant and Facility Information

Applicant Name <u>Center Township Sanitary Authority</u>	Facility Name <u>Elkhorn Run STP</u>
Applicant Address <u>224 Center Grange Road</u> <u>Aliquippa, PA 15001-1421</u>	Facility Address <u>996 Biskup Lane</u> <u>Monaca, PA 15061-2937</u>
Applicant Contact <u>Frank Vescio</u>	Facility Contact <u>Robert Martini</u>
Applicant Phone <u>(724) 774-0326</u>	Facility Phone <u>(724) 774-0326</u>
Client ID <u>119136</u>	Site ID <u>102381</u>
Ch 94 Load Status <u>Not Overloaded</u>	Municipality <u>Center Township</u>
Connection Status <u>No Limitations</u>	County <u>Beaver</u>
Date Application Received <u>October 1, 2021</u>	EPA Waived? <u>No</u>
Date Application Accepted <u>October 8, 2021</u>	If No, Reason <u>Major Facility</u>
Purpose of Application <u>Renewal of NPDES application for discharge of treated sewage</u>	

### Summary of Review

#### Introduction

The applicant has applied for the renewal of existing NPDES Permit No. PA0027430. The permit expired on March 31, 2022 and is currently under administrative extension.

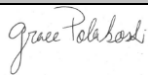
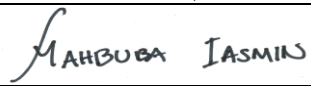
#### Facility Overview

Sewage from this plant is treated with a mechanical bar screen, contact stabilization, and clarifiers. The resulting effluent is disinfected with chlorine and discharges to the Ohio River which is designated as Warm Water Fishery (WWF) per 25 Pa. Chapter 93 Designated Use and located in State Watershed 20-G. Stormwater Outfalls 011 and 012 will again be permitted for the discharge of uncontaminated stormwater runoff from the areas in and around the treatment plant. Part C. VI, Requirements Applicable to Stormwater Outfalls, has been added to the permit. The outfalls at this facility are listed below.

Outfall Number	Outfall Name	Outfall Type
001	—	Treated Sewage
011	—	Stormwater
012	—	Stormwater

#### Summary of the Whole Effluent Toxicity (WET) Tests

For the permit renewal, Center Township Sanitary Authority performed 4 WET Tests at a TIWC of 2% and a dilution series of 1%, 2%, 30%, 60%, and 100%. Based on the WET Test Evaluation (Attachment A), Reasonable Potential (RP) was not

Approve	Deny	Signatures	Date
X		 Grace Polakoski, E.I.T. / Environmental Engineering Specialist	November 18, 2022
x		 Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	February 8, 2023

## Elkhorn Run STP

**Summary of Review**

established therefore no WET limits will be included in this permit. For the next permit cycle, the chronic WET Tests should be performed at a TIWC of 2% and a dilution series of 1%, 2%, 30%, 60%, and 100%.

**Anti-Backsliding**

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(I) Reissued permits. (1) Except as provided in paragraph (I)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

**The facility is not seeking to revise the previously permitted effluent limits.**

Below is a summary of changes that have been made to this permit:

- Rerate of the plant from 2 MGD to 2.5 MGD
- Change of all instances of 8-hour composite samples to 24-hour composite samples
- *E. Coli* monitoring was imposed
- A WQBEL for Total Mercury was imposed
- Average monthly mass loading limits for ammonia-nitrogen were imposed
- More stringent limits for Total Residual Chlorine were imposed

Sludge use and disposal description and location(s): Joseph Brunner Landfill (211 Brunner Road Zelienople, PA 16063)

**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.

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Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	2.5
Latitude	40° 40' 23"	Longitude	-80° 15' 29"
Quad Name	Beaver	Quad Code	1303
Wastewater Description: Sewage Effluent			
Receiving Waters	Ohio River (WWF)	Stream Code	32317
NHD Com ID	99379124	RMI	958.1
Drainage Area	19600 sq mi	Yield (cfs/mi²)	0.245
Q <sub>7-10</sub> Flow (cfs)	4800	Q <sub>7-10</sub> Basis	US Army Corps of Engineers
Elevation (ft)	680	Slope (ft/ft)	
Watershed No.	20-G	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	ORSANCO Pollution Control Standards
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Pathogens, Dioxins, PCBs		
Source(s) of Impairment			
TMDL Status		Name	
Background/Ambient Data		Data Source	
pH (SU)	6.4(MIN)/ 7.4 (MAX)		NPDES Renewal Application
Temperature (°F)	68		NPDES Renewal Application
Hardness (mg/L)	170		NPDES Renewal Application
Other:			
Nearest Downstream Public Water Supply Intake		Center Twp Water Authority	
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	4.63

Changes Since Last Permit Issuance: N/A

Other Comments: USGS StreamStats (Attachment B) was used to find the drainage area of the discharge point. Because the Ohio River is controlled by a series of locks and dams, data from the US Army Corps of Engineers (Attachment C) was used for the Q<sub>7-10</sub> flow.

## Elkhorn Run STP

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Elkhorn Run STP				
WQM Permit No.	Issuance Date	Purpose		
0468401 A-2	Under DEP Review	Hydraulic re-rate of the STP from 2.0 MGD to 2.5 MGD		
0421408	12/10/2021	Sewer replacement and upsizing to accommodate future development, replacement of 20 manholes		
0420401	12/08/2020	Upgrade/expansion of the Upper Moon Run Interceptor to prevent surcharging and prepare for additional development		
0420400	07/30/2020	Construction of a new pump station and force main		
368S010 A-3	02/08/2019	Improvements to the Markey's Run Interceptor to prepare for additional development		
0418406	12/11/2018	New gravity sanitary sewer collection system to serve the Bluffs at Glade Path Development		
368S010 A-2	10/04/2018	Improvements to the Markey's Run Interceptor		
0490403 A-5	04/02/2018	Replacement of the comminutor at Elkhorn Run STP with a mechanical bar screen		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Activated Sludge	Gas Chlorine	2.5
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
2.5	3400	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: Annual Average Flow and Hydraulic Capacity are now listed as 2.5 MGD according to the re-rate request

Other Comments: N/A

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940

## Elkhorn Run STP

## Compliance History

**Facility:** Elkhorn Run STP**NPDES Permit No.:** PA0037940**Compliance Review Period:** 11/2017 – 11/2022**Inspection Summary:**

INSP ID	INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC
<a href="#">3459221</a>	11/17/2022	Compliance Evaluation	Viol(s) Noted & Immediately Corrected
<a href="#">3368438</a>	05/26/2022	Compliance Evaluation	Viol(s) Noted & Immediately Corrected
<a href="#">3146237</a>	02/10/2021	Compliance Evaluation	No Violations Noted
2950793	10/23/2019	Compliance Evaluation	No Violations Noted
<a href="#">2822691</a>	10/25/2018	Compliance Evaluation	No Violations Noted

**Violation Summary:**

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE	VIOLATION COMMENT
956734	05/26/2022	92A.47(C)	NPDES - Illegal discharge to waters of the Commonwealth from a sanitary sewer overflow (SSO)	07/05/2022	Dec 2021, Feb 2022, April 2022 Moon run. Reported on DMRs and resolved. Long term repair is in the planning approval process.

**Open Violations by Client ID:**

No Clean Water open violations for Client ID 11936

**Enforcement Summary:**

No enforcements

**DMR Violation Summary:**

No DMR violations

**Compliance Status:**

Permittee in compliance

**Completed by:** John Murphy**Completed date:** 11/18/2022

DMR Data for Outfall 001 (from September 1, 2020 to August 31, 2021)

Parameter	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20
Flow (MGD) Average Monthly	1.0	1.01	0.94	1.1	0.90	1.42	1.32	1.19	1.33	0.84	0.77	0.83
Flow (MGD) Daily Maximum	6.0	6.0	6.0	6.0	4.5	6.0	4.1	5.5	6.0	4.0	3.9	4.7
pH (S.U.) Minimum	6.9	6.8	6.7	7.1	6.8	6.7	6.7	6.4	6.7	6.9	6.7	6.8
pH (S.U.) Maximum	7.5	7.4	7.3	7.5	7.8	7.3	7.2	7.1	7.4	7.3	7.3	7.3
DO (mg/L) Minimum	6.7	6.6	6.4	7.1	6.8	7.1	7.1	7.1	7.1	7.0	7.2	7.1
TRC (mg/L) Average Monthly	0.34	0.36	0.29	0.38	0.34	0.33	0.32	0.35	0.32	0.33	0.3	0.37
TRC (mg/L) Instantaneous Maximum	0.64	0.62	0.50	0.65	0.61	0.65	0.68	0.77	0.59	0.63	0.71	0.63
CBOD5 (lbs/day) Average Monthly	76.0	70.3	61.1	66.0	68.4	67.8	47.0	70.3	58.3	38.4	35.1	52.6
CBOD5 (lbs/day) Weekly Average	142.5	141.5	96.0	80.0	88.5	95.0	71.0	165.0	78.5	54.0	43.5	72.5
CBOD5 (mg/L) Average Monthly	8.3	6.4	7.9	7.1	9.7	6.3	5.3	6.6	5.1	5.4	6.0	7.6
CBOD5 (mg/L) Weekly Average	10.5	6.5	10.5	10.5	13.0	8.5	8.0	8.5	6.0	7.5	7.0	9.0
BOD5 (lbs/day) Raw Sewage Influent   Average Monthly	1024.4	1199.5	838.8	938.4	815.4	1262.1	1163.0	1355.8	1257.6	758.3	710.5	766.8
BOD5 (lbs/day) Raw Sewage Influent   Weekly Average	2129.5	2632.0	1204.0	1080.0	958.0	3014.0	3353.0	2796.5	1709.5	910.0	845.0	1018.5
BOD5 (mg/L) Raw Sewage Influent   Average Monthly	106.1	105.5	109.1	101.6	116.2	106.6	105.8	126.8	109.5	106.1	122.4	110.6
BOD5 (mg/L) Raw Sewage Influent   Weekly Average	130.0	126.0	134.0	110.5	130.0	117.0	117.5	152.5	118.5	118.5	146.5	136.5
TSS (lbs/day) Average Monthly	117.0	136.1	101.8	90.3	69.2	76.7	104.1	107.7	100.5	43.0	73.5	66.7

**NPDES Permit Fact Sheet  
Elkhorn Run STP**

**NPDES Permit No. PA0037940**

TSS (lbs/day) Raw Sewage Influent   Average Monthly	1064.6	1158.3	1026.9	856.5	710.7	1043.7	989.1	940.2	1233.3	628.5	1055.9	1146.2
TSS (lbs/day) Raw Sewage Influent   Weekly Average	2107.0	2383.5	1407.5	898.0	945.5	2813.0	2568.0	1802.0	1919.0	808.0	1352.5	2191.0
TSS (lbs/day) Weekly Average	233.5	261.5	144.0	133.5	88.5	167.0	178.0	227.0	168.5	50.5	93.5	103.5
TSS (mg/L) Average Monthly	12.4	12.8	13.2	10.0	9.8	7.1	11.3	10.0	8.3	6.1	12.8	9.3
TSS (mg/L) Raw Sewage Influent   Average Monthly	112.3	103.8	133.0	93.8	100.9	88.2	94.0	90.9	101.8	88.0	180.5	157.2
TSS (mg/L) Raw Sewage Influent   Weekly Average	149.0	135.0	200.0	119.0	139.0	101.0	110.0	97.0	126.0	95.0	253.0	207.0
TSS (mg/L) Weekly Average	16.0	20.0	20.5	17.5	13.0	10.5	16.0	12.0	11.0	7.0	17.5	12.5
Fecal Coliform (No./100 ml) Geometric Mean	71.83	99.58	102.72	107.73	126.7	150.35	255.71	280.9	62.6	30.27	47.7	84.32
Fecal Coliform (No./100 ml) Instantaneous Maximum	237.0	311.0	186.0	166.0	413.0	517.0	623.0	711.0	164	78.0	69	208
Total Nitrogen (mg/L) Daily Maximum			31.8			16.01			5.47			12.95
Ammonia (mg/L) Average Monthly	13.9	16.1	16.0	17.7	15.9	4.0	4.2	5.5	5.1	2.6	3.0	7.4
Total Phosphorus (mg/L) Daily Maximum			0.96			2.38			0.68			0.36

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## Development of Effluent Limitations

Outfall No.	001	Design Flow (MGD)	2.5
Latitude	40° 40' 23"	Longitude	-80° 15' 29"
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
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
	Report	Average Weekly	-	92a.27, 92a.61
	Max Daily			
CBOD <sub>5</sub>	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 (TSS)	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
Total Residual Chlorine (TRC)	0.5	Average Monthly	-	92a.48(b)(2)
	25	Average Monthly	-	92a.61
Ammonia-Nitrogen (NH <sub>3</sub> -N)	50	IMAX	-	92a.61
Dissolved Oxygen (DO)	4.0	Instantaneous Minimum	-	93.6, 92a.61
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total N	Report	Average Monthly	-	92a.61
Total P	Report	Average Monthly	-	92a.61
Fecal Coliform (No./100mL) (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (No./100mL) (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
E. Coli (No./100mL)	Report	IMAX	-	92a.61

**Water Quality-Based Limitations****WQM7.0**

WQM7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD<sub>5</sub>"), ammonia-nitrogen, and dissolved oxygen for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the dissolved oxygen module, the model simulates the mixing and consumption of dissolved oxygen in the stream due to the degradation of CBOD<sub>5</sub> and ammonia-nitrogen and compares calculated instream dissolved oxygen concentrations to dissolved oxygen water quality criteria. WQM7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

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



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increase ammonia toxicity and the maximum concentration of dissolved oxygen in water is lower at higher temperatures. The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period.

The model inputs used to model the discharge from Elkhorn Run STP are shown below:

<b>Stream Parameters</b>			
<b>Reach 1</b>		<b>Reach 2</b>	
Stream Code	32317	Stream Code	32317
RMI	958.1	RMI	957.1
Elevation (ft)	680	Elevation (ft)	679
Drainage Area (mi <sup>2</sup> )	1960	Drainage Area (mi <sup>2</sup> )	19800
Q <sub>7-10</sub> Flow (cfs)	4800	Q <sub>7-10</sub> Flow (cfs)	4800

<b>Facility/Design Parameters</b>	
Discharge Flow (MGD)	2.5
LFY (cfs/mi <sup>2</sup> ) [for use in summer modeling]	0.245
2*LFY (cfs/mi <sup>2</sup> ) [for use in winter modeling]	0.490

<b>Summer Modeling Inputs</b>			
<b>Tributary</b>		<b>Discharge</b>	
Temperature (°C)	25	Temperature (°C)	20
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	8.24	DO (mg/L)	4
CBOD <sub>5</sub> (mg/L)	2	CBOD <sub>5</sub> (mg/L)	25
NH <sub>3</sub> -N (mg/L)	0	NH <sub>3</sub> -N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5
<b>Winter Modeling Inputs</b>			
<b>Tributary</b>		<b>Discharge</b>	
Temperature (°C)	5	Temperature (°C)	15
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	12.51	DO (mg/L)	4
CBOD <sub>5</sub> (mg/L)	2	CBOD <sub>5</sub> (mg/L)	25
NH <sub>3</sub> -N (mg/L)	0	NH <sub>3</sub> -N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5

The modeling results show technology-based effluent limitations are appropriate for CBOD<sub>5</sub>. The weekly average value of 37.5 mg/L for CBOD<sub>5</sub> is more stringent than the TBEL of 40 mg/L so 37.5 mg/L will be reimposed during this permit cycle to comply with antibacksliding regulations. Per DEP SOP "Establishing Effluent Limitations for Individual Sewage Permits" (Rev. March 34, 2021, BCW-PMT-033), when WQM7.0 indicates that a summer limit of 25 mg/L for ammonia nitrogen is acceptable, a year-round monitoring requirement for ammonia-nitrogen will be established, at a minimum. The modeling results can be found in Attachment D.

<b>Parameter</b>	<b>Limit (mg/l)</b>	<b>SBC</b>	<b>Model</b>
Dissolved Oxygen	4	Minimum	WQM7.0
Ammonia Nitrogen	25	Average Monthly	WQM7.0

## Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC\_CALC created with Microsoft Excel for Windows. TRC\_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria

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that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site-specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. TRC\_CALC recommends an average monthly limit of 0.018 mg/L and an IMAX limit of 0.059 mg/L (Attachment E). Elkhorn Run STP will not be able to immediately comply with these more restrictive TRC limits therefore they will be given a compliance schedule of one year. For the first 12 months after the permit is effective, Elkhorn Run STP will be required to meet their previous TRC limit. On the beginning of the 13<sup>th</sup> month from the Permit Effective Date, Elkhorn Run STP will be expected to meet the new TRC limit discussed above.

**Toxics Management Spreadsheet (TMS)**

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

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

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

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

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

There is a disparity in Mercury quantitation limits required by Ohio River Valley Water Sanitation Commission (ORSANCO) and by the DEP. The DEP’s NPDES permit application instructions require Total Mercury testing to a sensitivity of 0.2 µg/L (or 200 ng/L). ORSANCO’s 2019 Publication “Pollution Control Standards for Discharges to the Ohio River” states that the total mercury concentration may not exceed 12.0 ng/L (or 0.012 µg/L). Since ORSANCO regulations are stricter with respect to total mercury, they supersede DEP requirements in this case. This requires DEP to act under 25 Pa. Code § 92a.21(d) and request that the applicant use a testing method that can achieve the stricter regulations. As such, the DEP requested additional sampling (results found in Attachment F). There were 10 or more additional samples so the values were entered into the TOXCONC spreadsheet to determine the average monthly effluent concentration per DEP SOP “Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for

## Elkhorn Run STP

Toxic Pollutants in NPDES Permits for Existing Dischargers” (BCW-PMT-037). The TOXCONC results can be found in Attachment G.

A “Reasonable Potential Analysis” was performed using the TMS using effluent concentrations as reported in the NPDES Renewal application received by the DEP on October 1, 2021 and the additional total mercury sampling received by the DEP on January 17, 2022. The TMS results can be found in Attachment H. The permittee was informed of potential WQBELs via Pre-Draft Letter on February 1, 2022 (Attachment I). The Pre-Draft Survey was returned to the DEP on March 2, 2022 (Attachment J). The permittee elected to resample for total mercury and the additional sample results were received by the DEP on June 8, 2022 (Attachment K). The additional samples were added into TOXCONC to give a new AMEC value (Attachment L). This new AMEC was used to update the TMS run, and the updated TMS results can be found in Attachment M.

The following WQBELs were recommended for this facility:

Parameter	Average Monthly (ng/L)	Maximum Daily (ng/L)	IMAX (ng/L)
Total Mercury	12.0	18.7	30.3

**Best Professional Judgment (BPJ) Limitations**

In accordance with the WQM7.0 modeling results, the standard in 25 PA Code Chapter 93, and best professional judgment, a Dissolved Oxygen minimum limitation of 4.0 mg/L will be implemented.

**ORSANCO Pollution Control Standards**

The Ohio River Valley Water Sanitation Commission (ORSANCO) sets water quality standards for the Ohio River. Since Elkhorn Run STP is a direct discharger to the Ohio River, the DEP will implement ORSANCO’s water quality standards pursuant to 25 Pa. Code § 93.2(b).

Water quality standards set by ORSANCO in the 2019 revision of “Pollution Control Standards for Discharges to the Ohio River” can be found in the table below. ORSANCO standards for TSS and CBOD<sub>5</sub> are the same as the ones required by 25 Pa. Code § 92a.47(a). ORSANCO standards for *E. Coli* and Fecal Coliform differ from what is required by the PA Code.

Parameter	Average Monthly	Weekly Average
TSS (mg/L)	30	45
CBOD <sub>5</sub> (mg/L)	25	40
Fecal Coliform (No./100 mL)	2,000 (geometric mean)	—
<i>E. Coli</i> (No./100 mL) Apr. 1 – Oct. 31	130 (90-day geometric mean)	240 (in 25% of samples)

According to the 2019 Revision of ORSANCO’s “Pollution Control Standards for Discharges to the Ohio River,” the maximum allowable level for *E. Coli* for contact recreation from April – October is a monthly average 130/100 mL (90-day geometric mean) and a weekly average of 240/100 mL. The 90-day geometric mean must be based on not less than 5 samples per month. The weekly average limit also means that 240/100 mL may not be exceeded in more than 25% of the samples taken. The average monthly limit for fecal coliform bacteria is 2,000 CFU/100 mL (geometric mean), based on not less than 5 samples per month.

In a correlation equation developed by the Ohio EPA, concentrations of *E. Coli* and Fecal Coliform bacteria can be interchanged. The equation is as follows:

$$E. Coli = 0.403(Fecal Coliform)^{1.028}$$

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

## Elkhorn Run STP

Using the equation to convert the ORSANCO *E. Coli* water quality limits to fecal coliform values, it is apparent that DEP fecal coliform standards, imposed as TBELs per DEP SOP "Establishing Effluent Limitations for Individual Sewage Permits" (SOP No. BCW-PMT-033), are more stringent.

	ORSANCO <i>E. Coli</i> Limits (No./100 mL)	ORSANCO Fecal Coliform Equivalent (No./100 mL)	PA Code Fecal Coliform Limits (No./100 mL)
Average Monthly	130	275.62	200

**Mass Loading Limitations**

Per Department SOP "Establishing Effluent Limitations for Individual Sewage Permits" (BCW-PMT-033), mass loading limits will be established for POTWs for CBOD<sub>5</sub>, TSS, and ammonia nitrogen. Average monthly mass loading limits will be established for CBOD<sub>5</sub>, TSS, and ammonia nitrogen. Average weekly mass loading limits will be established for CBOD<sub>5</sub> and TSS. Mass loading limits will be calculated according to the formula below:

$$\text{average annual design flow (MGD)} \times \text{concentration limit} \left( \frac{\text{mg}}{\text{L}} \right) \times 8.34 \text{ (conversion factor)}$$

$$= \text{mass loading limit} \left( \frac{\text{lbs}}{\text{day}} \right)$$

The following mass loading limitations were calculated:

Parameter	Average Monthly (lbs/day)	Average Weekly (lbs/day)
CBOD <sub>5</sub>	520	780
TSS	625	935
Ammonia Nitrogen	520	—

The above mass loading limitations for CBOD<sub>5</sub> and TSS are much less stringent than those found in the previous permit due to the request for a hydraulic re-rate from 2.0 MGD to 2.5 MGD. To comply with anti-backsliding regulations and because the permittee did not request a re-rate for their organic loading, the mass loading limitations found in the previous permit will once again be imposed during this permit cycle.

Monthly mass loading limitations for ammonia-nitrogen will be imposed during this permit cycle, even though they were not imposed during the last permit cycle.

**Additional Considerations**

Sewage discharges will include monitoring, at a minimum, for *E. coli*, in new and reissued permits, with a monitoring frequency of 1/month for design flows  $\geq 1$  MGD.

The receiving stream is not impaired for nutrients, therefore, quarterly sampling for nitrogen and phosphorus will be reimposed per 25 PA Code §92a.6.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from the Departments Technical Guidance for the Development and Specification of Effluent Limitations.

**Hydraulic Re-Rate Study**

The re-rate analysis will be addressed in WQM Permit #0468401 A-2, which is currently under Department Review.

**Proposed Effluent Limitations and Monitoring Requirements**

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

**Outfall 001**, Effective Period: **Permit Effective Date** through **End of First Year from Permit Effective Date**.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.0	1/day	Grab

Compliance Sampling Location: Outfall 001

Other Comments:

**Proposed Effluent Limitations and Monitoring Requirements**

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

**Outfall 001, Effective Period: Permit Effective Date through End of Second Year from Permit Effective Date**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Mercury, Total (ng/L)	XXX	XXX	XXX	Report	Report	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments:

**Proposed Effluent Limitations and Monitoring Requirements**

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

**Outfall 001, Effective Period: Beginning of Third Year from Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Mercury, Total (ng/L)	XXX	XXX	XXX	12.0	18.7	30.3	1/week	24-Hr Composite

Compliance Sampling Location: 001

Other Comments:

**Proposed Effluent Limitations and Monitoring Requirements**

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

**Outfall 001, Effective Period: Beginning of Second Year from Permit Effective Date through Permit Expiration Date.**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.018	XXX	0.059	1/day	Grab

Compliance Sampling Location: 001



**Proposed Effluent Limitations and Monitoring Requirements**

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	415.0	625.0	XXX	25.0	37.5	50	2/week	24-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/week	24-Hr Composite
Total Suspended Solids	500.0	750.0	XXX	30.0	45.0	60	2/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	Report	XXX	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Nov 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Oct 31	XXX	XXX	XXX	200 Geo Mean	XXX	400	2/week	Grab
<i>E. Coli</i> (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite
Ammonia-Nitrogen Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia-Nitrogen May 1 - Oct 31	520	XXX	XXX	25.0	XXX	50	2/week	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: 001

Other Comments:

**ATTACHMENT A:**  
**WET Test Evaluation**

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940**  
**Elkhorn Run STP**

**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%, 60%, 30%, 2%, and 1%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 2%.

**Summary of Four Most Recent Test Results**

TST Data Analysis

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:** all tests were passed, see summary results below

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet				
Type of Test	Chronic	Facility Name		
Species Tested	Ceriodaphnia	Center Township Sanitary Authority		
Endpoint	Survival	Permit No.		
TIWC (decimal)	0.02			
No. Per Replicate	1			
TST b value	0.75			
TST alpha value	0.2			

Test Completion Date			Test Completion Date		
Replicate	Control	TIWC	Replicate	Control	TIWC
7/31/2018					
No.			No.		
1	1	1	1	1	1
2	1	0	2	1	1
3	1	1	3	1	1
4	1	1	4	1	1
5	1	1	5	1	1
6	1	1	6	1	1
7	1	1	7	1	1
8	1	1	8	0	1
9	1	1	9	1	1
10	1	1	10	1	1
11			11		
12			12		
13			13		
14			14		
15			15		

Mean	1.000	0.900	Mean	0.900	1.000
Std Dev.	0.000	0.316	Std Dev.	0.316	0.000
# Replicates	10	10	# Replicates	10	10

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

Test Completion Date			Test Completion Date		
Replicate	Control	TIWC	Replicate	Control	TIWC
8/3/2020					
No.			No.		
1	1	1	1	1	1
2	1	1	2	1	1
3	1	1	3	1	0
4	1	1	4	1	1
5	1	1	5	1	1
6	1	1	6	1	1
7	1	1	7	1	1
8	1	1	8	1	1
9	1	1	9	1	1
10	1	1	10	1	1
11			11		
12			12		
13			13		
14			14		
15			15		

Mean	1.000	1.000	Mean	1.000	0.900
Std Dev.	0.000	0.000	Std Dev.	0.000	0.316
# Replicates	10	10	# Replicates	10	10

T-Test Result			T-Test Result	1.5000	
Deg. of Freedom			Deg. of Freedom	9	
Critical T Value			Critical T Value	0.8834	
Pass or Fail	PASS		Pass or Fail	PASS	

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet				
Type of Test	Chronic	Facility Name		
Species Tested	Ceriodaphnia	Center Township Sanitary Authority		
Endpoint	Reproduction	Permit No.		
TIWC (decimal)	0.02			
No. Per Replicate	1			
TST b value	0.75			
TST alpha value	0.2			

Test Completion Date			Test Completion Date		
Replicate	Control	TIWC	Replicate	Control	TIWC
7/24/2018					
No.			No.		
1	31	38	1	34	32
2	35	0	2	34	13
3	37	32	3	29	35
4	37	31	4	30	33
5	35	34	5	28	31
6	36	36	6	31	32
7	32	31	7	32	32
8	31	38	8	14	31
9	41	40	9	34	32
10	35	40	10	33	30
11			11		
12			12		
13			13		
14			14		
15			15		

Mean	35.000	32.000	Mean	29.900	30.100
Std Dev.	3.091	11.766	Std Dev.	5.990	6.154
# Replicates	10	10	# Replicates	10	10

T-Test Result	1.5162		T-Test Result	3.1852	
Deg. of Freedom	11		Deg. of Freedom	16	
Critical T Value	0.8755		Critical T Value	0.8647	
Pass or Fail	PASS		Pass or Fail	PASS	

Test Completion Date			Test Completion Date		
Replicate	Control	TIWC	Replicate	Control	TIWC
8/3/2020					
No.			No.		
1	31	12	1	26	26
2	30	30	2	24	29
3	27	31	3	14	16
4	29	23	4	22	26
5	34	29	5	16	5
6	29	28	6	26	24
7	35	31	7	31	31
8	33	32	8	32	14
9	33	20	9	26	28
10	31	34	10	25	24
11			11		
12			12		
13			13		
14			14		
15			15		

Mean	31.200	27.000	Mean	24.200	22.200
Std Dev.	2.530	6.749	Std Dev.	5.712	8.060
# Replicates	10	10	# Replicates	10	10

T-Test Result	1.6237		T-Test Result	1.4004	
Deg. of Freedom	12		Deg. of Freedom	15	
Critical T Value	0.8726		Critical T Value	0.8662	
Pass or Fail	PASS		Pass or Fail	PASS	

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name

Center Township Sanitary Authority

Permit No.

Test Completion Date

7/31/2018

Replicate No.	Control	TIWC
1	1	1
2	1	0.9
3	1	1
4	0.9	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.975 0.975  
Std Dev. 0.050 0.050  
# Replicates 4 4

T-Test Result 14.8898  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

Test Completion Date

7/30/2019

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

Mean 1.000 1.000  
Std Dev. 0.000 0.000  
# Replicates 4 4

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

Test Completion Date

8/4/2020

Replicate No.	Control	TIWC
1	0.6	1
2	0.9	1
3	1	0.9
4	1	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.875 0.975  
Std Dev. 0.189 0.050  
# Replicates 4 4

T-Test Result 6.7209  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

Test Completion Date

8/3/2021

Replicate No.	Control	TIWC
1	0.5	0.9
2	1	0.9
3	0.9	0.7
4	0.8	0.9
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.800 0.850  
Std Dev. 0.216 0.100  
# Replicates 4 4

T-Test Result 4.4928  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

DEP Whole Effluent Toxicity (WET) Analysis Spreadsheet

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

Facility Name

Center Township Sanitary Authority

Permit No.

Test Completion Date

7/31/2018

Replicate No.	Control	TIWC
1	0.305	0.338
2	0.299	0.304
3	0.343	0.359
4	0.3178	0.34
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.316 0.335  
Std Dev. 0.020 0.023  
# Replicates 4 4

T-Test Result 7.2236  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

Test Completion Date

7/30/2019

Replicate No.	Control	TIWC
1	0.404	0.628
2	0.519	0.479
3	0.401	0.554
4	0.49	0.502
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.454 0.541  
Std Dev. 0.060 0.068  
# Replicates 4 4

T-Test Result 5.0164  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

Test Completion Date

8/4/2020

Replicate No.	Control	TIWC
1	0.15	0.319
2	0.298	0.326
3	0.251	0.261
4	0.307	0.292
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.252 0.300  
Std Dev. 0.072 0.030  
# Replicates 4 4

T-Test Result 3.8028  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

Test Completion Date

8/3/2021

Replicate No.	Control	TIWC
1	0.258	0.331
2	0.334	0.25
3	0.25	0.239
4	0.253	0.202
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Mean 0.274 0.256  
Std Dev. 0.040 0.054  
# Replicates 4 4

T-Test Result 1.6138  
Deg. of Freedom 5  
Critical T Value 0.7267  
Pass or Fail **PASS**

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

## WET Summary and Evaluation

Facility Name Elkhorn Run STP  
 Permit No. PA0037940  
 Design Flow (MGD) 2.5  
 Q<sub>7-10</sub> Flow (cfs) 4800  
 PMF<sub>a</sub> 0.063  
 PMF<sub>c</sub> 0.435

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		7/31/18	7/30/19	8/3/20	8/2/21
Ceriodaphnia	Survival	PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		7/24/18	7/30/19	8/3/20	8/2/21
Ceriodaphnia	Reproduction	PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		7/31/18	7/30/19	8/4/20	8/3/21
Pimephales	Survival	PASS	PASS	PASS	PASS

Species	Endpoint	Test Results (Pass/Fail)			
		Test Date	Test Date	Test Date	Test Date
		7/31/18	7/30/19	8/4/20	8/3/21
Pimephales	Growth	PASS	PASS	PASS	PASS

Reasonable Potential? NO

**Permit Recommendations**

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

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

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

Acute Partial Mix Factor (PMFa): **0.063**

Chronic Partial Mix Factor (PMFc): **0.435**

#### 1. Determine IWC – Acute (IWCa):

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

$$[(2.5 \text{ MGD} \times 1.547) / ((4800 \text{ cfs} \times 0.063) + (2.5 \text{ MGD} \times 1.547))] \times 100 = \mathbf{1.26\%}$$

Is IWCa < 1%? ☐ YES ☒ NO

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

#### 2. Determine Target IWCC (If Chronic Tests Required)

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

$$[(2.5 \text{ MGD} \times 1.547) / ((4800 \text{ cfs} \times 0.435) + (2.5 \text{ MGD} \times 1.547))] \times 100 = \mathbf{0.185\%}$$

#### 3. Determine Dilution Series

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

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

### WET Limits

Has reasonable potential been determined? ☐ YES ☒ NO

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



**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT B:  
USGS STREAMSTATS**

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

# Outfall 001 StreamStats Report

Region ID: PA

Workspace ID: PA20211025193431034000

Clicked Point (Latitude, Longitude): 40.67364, -80.25629

Time: 2021-10-25 15:35:01 -0400



### Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	19600	square miles
ELEV	Mean Basin Elevation	1669	feet
PRECIP	Mean Annual Precipitation	45	inches

### Low-Flow Statistics Parameters [57.1 Percent (11200 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
----------------	----------------	-------	-------	-----------	-----------

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	19600	square miles	2.33	1720
ELEV	Mean Basin Elevation	1669	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9
Low-Flow Statistics Parameters [42.6 Percent (8340 square miles) Low Flow Region 4]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	19600	square miles	2.26	1400
ELEV	Mean Basin Elevation	1669	feet	1050	2580
Low-Flow Statistics Disclaimers [57.1 Percent (11200 square miles) Low Flow Region 3]					
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors					
Low-Flow Statistics Flow Report [57.1 Percent (11200 square miles) Low Flow Region 3]					
Statistic			Value	Unit	
7 Day 2 Year Low Flow			2830	ft^3/s	
30 Day 2 Year Low Flow			3560	ft^3/s	
7 Day 10 Year Low Flow			2010	ft^3/s	
30 Day 10 Year Low Flow			2330	ft^3/s	
90 Day 10 Year Low Flow			3110	ft^3/s	
Low-Flow Statistics Disclaimers [42.6 Percent (8340 square miles) Low Flow Region 4]					
One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors					
Low-Flow Statistics Flow Report [42.6 Percent (8340 square miles) Low Flow Region 4]					
Statistic			Value	Unit	
7 Day 2 Year Low Flow			2870	ft^3/s	
30 Day 2 Year Low Flow			3560	ft^3/s	
7 Day 10 Year Low Flow			1950	ft^3/s	
30 Day 10 Year Low Flow			2040	ft^3/s	
90 Day 10 Year Low Flow			2780	ft^3/s	

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

### Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	2840	ft <sup>3</sup> /s
30 Day 2 Year Low Flow	3550	ft <sup>3</sup> /s
7 Day 10 Year Low Flow	1980	ft <sup>3</sup> /s
30 Day 10 Year Low Flow	2200	ft <sup>3</sup> /s
90 Day 10 Year Low Flow	2960	ft <sup>3</sup> /s

### Low-Flow Statistics Citations

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

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

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

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: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT C:  
USACE Q<sub>7-10</sub> Flows of Major Rivers**

**Q7-10 Flows of Major Rivers**

Nicolas Lazzaro, P.E.  
U.S. Army Corp of Engineers  
Pittsburgh District Water Management  
December 1, 2017

UPPER OHIO BASIN LOW FLOWS		
Location		Q7, 10 Flow (cfs)
<b>Allegheny River</b>		
Franklin downstream of French Creek (RMI 123.96)		1,450
L&D 9 at Templeton (RMI 62.2; Upper Pool El. 822.2)		2,070
L&D 8 at Templeton (RMI 52.6; Upper Pool El. 800.2)		2,070
L&D 7 at Kittanning (RMI 45.7; Upper Pool El. 782.4)	Crooked Creek enters at RMI 40.11	2,070
L&D 6 at Freeport (RMI 36.3; Upper Pool El. 769.4)		2,070
L&D 5 at Freeport (RMI 30.4; Upper Pool El. 757.0)	Kiskiminetas R. enters at RMI 30.2	2,070
L&D 4 at Natrona (RMI 24.2; Upper Pool El. 745.4)		2,390
C.W. Bill Young L&D at New Kensington (RMI 14.5; Upper Pool El. 734.5)		2,390
L&D 2 at Pittsburgh (RMI 6.7, Pool El. 721.0)		2,390
<b>Monongahela River</b>		
Point Marion L&D (RMI 90.8; Upper Pool El. 797.0)	Cheat River enters at RMI 89.68 Dunkard Creek enters at RMI 87.18	420
Grays Landing L&D (RMI 82.0; Upper Pool El. 778.0)	Tenmile Creek enters at RMI 65.62	530
Maxwell L&D (RMI 61.2; Upper Pool El. 763.0)	Redstone Creek enters at RMI 54.90	530
L&D 4 at Charleroi (RMI 41.5; Upper Pool El. 743.5)		550
L&D 3 at Elizabeth (RMI 23.8; Upper Pool El. 726.9)		550
McKeesport downstream of the Youghiogheny River (RMI 15.53)		1,060
Braddock L&D (RMI 11.2; Upper Pool El. 718.7)		1,230
<b>Youghiogheny River</b>		
Youghiogheny Dam at Confluence (RMI 74.8)		390
Dam at Connellsville (RMI 46.27)		460
Sutersville downstream of Sewickley Creek (~RMI 15.0)		510
<b>Beaver River</b>		
Beaver Falls		640
<b>Ohio River</b>		
Emsworth L&D (RMI 974.8; Pool El. 710.0)	Q7,10 is halved for each side of Neville Island	4,730
Dashields L&D (RMI 967.7; Upper Pool El. 692.0)		4,730
Montgomery L&D (RMI 949.3; Upper Pool El. 682.0)		5,880
New Cumberland L&D (RMI 926.7; Upper Pool El. 664.5)		5,880
Pike Island L&D (RMI 896.8; Upper Pool El. 664.0)		5,880
Hannibal L&D (RMI 854.6; Upper Pool El. 623.0)		5,880

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT D:  
WQM7.0 MODELING RESULTS**

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

## Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
20E	32317	OHIO RIVER	958.100	680.00	19600.00	0.00000	0.00	<input checked="" type="checkbox"/>

### Stream Data

Design Cond.	LFY (cfs)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.245	4800.00	0.00	0.000	0.000	0.0	1270.00	15.00	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
Elkhorn Run STP	PA0037940	0.0000	0.0000	2.5000	0.000	20.00	7.00

### Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	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
20E	32317	OHIO RIVER	957.100	679.00	19600.00	0.00000	0.00	<input checked="" type="checkbox"/>

### Stream Data

Design Cond.	LFY (cfs)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
Q7-10	0.245	4800.00	0.00	0.000	0.000	0.0	1270.00	15.00	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	25.00	7.00

### Parameter Data

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



# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

## WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

## WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>			<u>Stream Code</u>			<u>Stream Name</u>						
20E			32317			OHIO RIVER						
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)	
<b>Q7-10 Flow</b>												
958.100	4800.00	0.00	4800.00	3.8675	0.00019	15	1270	84.67	0.25	0.242	25.00	7.00
<b>Q1-10 Flow</b>												
958.100	3072.00	0.00	3072.00	3.8675	0.00019	NA	NA	NA	0.16	0.378	24.99	7.00
<b>Q30-10 Flow</b>												
958.100	6528.00	0.00	6528.00	3.8675	0.00019	NA	NA	NA	0.34	0.178	25.00	7.00

## WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name			
20E	32317	OHIO RIVER			
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>	
958.100	2.500	24.996		7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>	
1270.000	15.000	84.667		0.252	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>	
2.02	0.012	0.02		1.028	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>	
8.240	0.126	O'Connor		5	
<u>Reach Travel Time (days)</u>	<u>Subreach Results</u>				
0.242	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>	
	0.024	2.02	0.02	7.54	
	0.048	2.02	0.02	7.54	
	0.073	2.02	0.02	7.54	
	0.097	2.02	0.02	7.54	
	0.121	2.01	0.02	7.54	
	0.145	2.01	0.02	7.54	
	0.170	2.01	0.02	7.54	
	0.194	2.01	0.02	7.54	
	0.218	2.01	0.02	7.54	
	0.242	2.01	0.02	7.54	

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

## WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
20E	32317	OHIO RIVER

### NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
958.100	Elkhorn Run STP	11.08	50	11.08	50	0	0

### NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
958.100	Elkhorn Run STP	1.37	25	1.37	25	0	0

### Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
958.10	Elkhorn Run STP	25	25	25	25	4	4	0	0

## WQM 7.0 Effluent Limits

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
20E	32317	OHIO RIVER

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
958.100	Elkhorn Run STP	PA0037940	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT E:  
TRC\_CALC Results**

## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

# TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.245	= Q stream (cfs)	0.5	= CV Daily
2.5	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		= Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.039	1.3.2.iii	WLA cfc = 0.031
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.015	5.1d	LTA_cfc = 0.018

Source	Effluent Limit Calculations
PENTOXSD TRG	5.1f AML MULT = 1.231
PENTOXSD TRG	5.1g AVG MON LIMIT (mg/l) = 0.018 AFC
	INST MAX LIMIT (mg/l) = 0.059

WLA afc	$(.019/e(-k*AFC\_tc)) + [(AFC\_Yc*Qs*.019/Qd*e(-k*AFC\_tc))... \\ ...+ Xd + (AFC\_Yc*Qs*Xs/Qd)]*(1-FOS/100)$
LTAMULT afc	$EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)$
LTA_afc	$wla\_afc*LTAMULT\_afc$
WLA_cfc	$(.011/e(-k*CFC\_tc)) + [(CFC\_Yc*Qs*.011/Qd*e(-k*CFC\_tc))... \\ ...+ Xd + (CFC\_Yc*Qs*Xs/Qd)]*(1-FOS/100)$
LTAMULT_cfc	$EXP((0.5*LN(cvd^2/no\_samples+1))-2.326*LN(cvd^2/no\_samples+1)^0.5)$
LTA_cfc	$wla\_cfc*LTAMULT\_cfc$
AML MULT	$EXP(2.326*LN((cvd^2/no\_samples+1)^0.5)-0.5*LN(cvd^2/no\_samples+1))$
AVG MON LIMIT	$MIN(BAT\_BPJ,MIN(LTA\_afc,LTA\_cfc)*AML\_MULT)$
INST MAX LIMIT	$1.5*((av\_mon\_limit/AML\_MULT)/LTAMULT\_afc)$

**ATTACHMENT F:**  
**ADDITIONAL MERCURY SAMPLING VIA EPA TEST METHOD 1631E**  
**(January 17, 2022)**

NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Managing Principals:  
Kevin A. Brett, P.E.  
Ned Mitrovich, P.E.  
Jason E. Stanton, P.E.

January 17, 2022

S. O. No. 495-025

**VIA EMAIL ONLY**  
**([grpolakosk@pa.gov](mailto:grpolakosk@pa.gov))**

Ms. Grace Polakoski  
Environmental Engineering Specialist  
Department of Environmental Protection  
Clean Water Program  
400 Waterfront Drive  
Pittsburgh, Pennsylvania 15222

**Subject: Center Township Sanitary Authority**  
**NPDES Permit No PA0037940 Renewal**

Dear Ms. Polakoski:

As discussed, enclosed herewith please find additional analyses for effluent Mercury (12 samples), that were collected and analyzed by CWM Environmental from December 1, 2021 through December 15, 2021. These analyses represent supplemental data to the NPDES Permit Renewal Application submitted by the Center Township Sanitary Authority (NPDES Permit No PA0037940) as requested by PaDEP via email on October 26, 2021.

Should you have any questions, please contact Marie S. Hartman, P.E. directly (Ext. 246).

Sincerely,



Ned Mitrovich, P.E.

NM/vcl

Attachments

cc/att: Robert Martini, Operations Supervisor - CTSA ([martini@ctsapa.us](mailto:martini@ctsapa.us))  
Marie S. Hartman, P.E., LSSE ([mhartman@lsse.com](mailto:mhartman@lsse.com))

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**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940**  
**Elkhorn Run STP**

**Center Township Sanitary Authority**  
**NPDES Permit No PA0037940 Renewal**  
**CWM Environmental Sampling Results Summary**

Effluent 24 Hour Composite Sample		
Date	Result	Notes
12/1/2021	Mercury 9.8 ng/L	Sample 1
12/2/2021	Mercury 19.0 ng/L	Sample 2
12/3/2021	Mercury 15.5 ng/L	Sample 3
12/4/2021	Mercury 14.2 ng/L	Sample 4
12/5/2021	Mercury 19.4 ng/L	Sample 5
12/7/2021	Mercury 26.9 ng/L	Sample 6
12/9/2021	Mercury 18.3 ng/L	Sample 7
12/10/2021	Mercury 44.0 ng/L	Sample 8
12/11/2021	Mercury 20.7 ng/L	Sample 9
12/12/2021	Mercury 8.7 ng/L	Sample 10
12/13/2021	Mercury 25.2 ng/L	Sample 11
12/15/2021	Mercury 5.3 ng/L	Sample 12
12/15/2021	Mercury 10.2 ng/L	Field Blank
12/15/2021	Mercury 0.6 ng/L*	Method Blank 1
12/15/2021	Mercury 0.5 ng/L**	Method Blank 2
12/15/2021	Mercury 0.5 ng/L**	Method Blank 3

\*Estimated value (above detection limit/below reporting limit)

\*\*The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**ATTACHMENT G:**  
**TOXCONC MODELING FOR MERCURY (10 samples)**



## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

### INPUT:

	Facility:	Elkhorn Run STP				
	NPDES #:	PA0037940				
	Outfall No:	001				
	n (Samples/Month):	4				
	Reviewer/Permit Engineer:	GRP				
Parameter Name	Total Mercury					
Units	other					
Detection Limit	12					
Sample Date	When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)					
12/01/21	9.8					
12/02/21	19					
12/03/21	15.5					
12/04/21	14.2					
12/05/21	19.4					
12/07/21	26.9					
12/09/21	18.3					
12/10/21	44					
12/11/21	20.7					
12/12/21	8.7					
12/13/21	25.2					
12/15/21	5.3					

### OUTPUT:

		Reviewer/Permit Engineer:	GRP
Facility:	Elkhorn Run STP		
NPDES #:	PA0037940		
Outfall No:	001		
n (Samples/Month):	4		
Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Total Mercury (other)	Lognormal	0.6106083	37.0786549

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT H:  
TMS MODELING RESULTS (Run 1)**

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Discharge Information

Instructions Discharge Stream

Facility: Elkhorn Run STP NPDES Permit No.: PA0037940 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: treated sewage

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q <sub>7-10</sub>	Q <sub>h</sub>
2.5	170	6.4						

				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												
	Chloride (PWS)	mg/L												
	Bromide	mg/L												
	Sulfate (PWS)	mg/L												
	Fluoride (PWS)	mg/L												
Group 2	Total Aluminum	µg/L		320										
	Total Antimony	µg/L		1										
	Total Arsenic	µg/L	<	1										
	Total Barium	µg/L		57										
	Total Beryllium	µg/L	<	0.3										
	Total Boron	µg/L		250										
	Total Cadmium	µg/L	<	0.4										
	Total Chromium (III)	µg/L		3										
	Hexavalent Chromium	µg/L		11										
	Total Cobalt	µg/L	<	0.7										
	Total Copper	µg/L		9										
	Free Cyanide	µg/L		22										
	Total Cyanide	µg/L		11										
	Dissolved Iron	µg/L		631										
	Total Iron	µg/L		417										
	Total Lead	µg/L		3										
	Total Manganese	µg/L		115										
	Total Mercury	ng/L		37.08										
	Total Nickel	µg/L	<	6										
	Total Phenols (Phenolics) (PWS)	µg/L		4										
	Total Selenium	µg/L	<	1										
	Total Silver	µg/L	<	1										
	Total Thallium	µg/L		3										
	Total Zinc	µg/L		48										
	Total Molybdenum	µg/L		4										
	Acrolein	µg/L	<	1.3										
	Acrylamide	µg/L	<											
	Acrylonitrile	µg/L	<	2										
	Benzene	µg/L	<	0.12										
	Bromoform	µg/L	<	0.37										

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Group 3	Carbon Tetrachloride	µg/L	<	0.23															
	Chlorobenzene	µg/L	<	0.25															
	Chlorodibromomethane	µg/L	<	0.25															
	Chloroethane	µg/L	<	0.47															
	2-Chloroethyl Vinyl Ether	µg/L	<	3.1															
	Chloroform	µg/L		1.4															
	Dichlorobromomethane	µg/L	<	0.18															
	1,1-Dichloroethane	µg/L	<	0.05															
	1,2-Dichloroethane	µg/L	<	0.12															
	1,1-Dichloroethylene	µg/L	<	0.13															
	1,2-Dichloropropane	µg/L	<	0.26															
	1,3-Dichloropropylene	µg/L	<	0.47															
	1,4-Dioxane	µg/L	<	0.34															
	Ethylbenzene	µg/L	<	0.2															
	Methyl Bromide	µg/L		0.69															
	Methyl Chloride	µg/L	<	0.33															
	Methylene Chloride	µg/L	<	0.33															
	1,1,2,2-Tetrachloroethane	µg/L	<	0.38															
	Tetrachloroethylene	µg/L	<	0.27															
Group 4	Toluene	µg/L		0.42															
	1,2-trans-Dichloroethylene	µg/L	<	0.08															
	1,1,1-Trichloroethane	µg/L	<	0.12															
	1,1,2-Trichloroethane	µg/L	<	0.13															
	Trichloroethylene	µg/L	<	0.29															
	Vinyl Chloride	µg/L	<	0.33															
	2-Chlorophenol	µg/L	<	0.38															
	2,4-Dichlorophenol	µg/L	<	0.43															
	2,4-Dimethylphenol	µg/L		0.92															
	4,6-Dinitro-o-Cresol	µg/L	<	1.2															
	2,4-Dinitrophenol	µg/L	<	2.8															
	2-Nitrophenol	µg/L	<	0.38															
Group 5	4-Nitrophenol	µg/L	<	1.3															
	p-Chloro-m-Cresol	µg/L	<	0.38															
	Pentachlorophenol	µg/L	<	1.7															
	Phenol	µg/L	<	0.25															
	2,4,6-Trichlorophenol	µg/L	<	0.46															
	Acenaphthene	µg/L	<	0.39															
	Acenaphthylene	µg/L	<	0.38															
	Anthracene	µg/L	<	0.39															
	Benzidine	µg/L	<	2.5															
	Benzo(a)Anthracene	µg/L	<	0.4															
	Benzo(a)Pyrene	µg/L	<	0.35															
	3,4-Benzofluoranthene	µg/L	<	0.39															
	Benzo(ghi)Perylene	µg/L	<	0.41															
	Benzo(k)Fluoranthene	µg/L	<	0.38															
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.43															
	Bis(2-Chloroethyl)Ether	µg/L	<	0.37															
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.43															
	Bis(2-Ethylhexyl)Phthalate	µg/L		1.6															
	4-Bromophenyl Phenyl Ether	µg/L	<	0.44															
	Butyl Benzyl Phthalate	µg/L	<	0.57															
	2-Chloronaphthalene	µg/L	<	0.39															
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.39															
	Chrysene	µg/L	<	0.41															
	Dibenzo(a,h)Anthracene	µg/L	<	0.42															
	1,2-Dichlorobenzene	µg/L	<	0.37															
	1,3-Dichlorobenzene	µg/L	<	0.43															
	1,4-Dichlorobenzene	µg/L	<	0.43															
	3,3-Dichlorobenzidine	µg/L	<	1															
	Diethyl Phthalate	µg/L	<	0.55															
	Dimethyl Phthalate	µg/L	<	0.41															
	Di-n-Butyl Phthalate	µg/L	<	0.56															
	2,4-Dinitrotoluene	µg/L	<	0.44															

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	2,6-Dinitrotoluene	µg/L	<	0.4															
	Di-n-Octyl Phthalate	µg/L	<	0.86															
	1,2-Diphenylhydrazine	µg/L	<	0.37															
	Fluoranthene	µg/L	<	0.42															
	Fluorene	µg/L	<	0.37															
	Hexachlorobenzene	µg/L	<	0.42															
	Hexachlorobutadiene	µg/L	<	0.48															
	Hexachlorocyclopentadiene	µg/L	<	0.72															
	Hexachloroethane	µg/L	<	0.36															
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.39															
	Isophorone	µg/L	<	0.42															
	Naphthalene	µg/L	<	0.39															
	Nitrobenzene	µg/L	<	0.51															
	n-Nitrosodimethylamine	µg/L	<	1.1															
	n-Nitrosodi-n-Propylamine	µg/L	<	0.41															
	n-Nitrosodiphenylamine	µg/L	<	0.48															
	Phenanthrene	µg/L	<	0.38															
	Pyrene	µg/L	<	0.41															
	1,2,4-Trichlorobenzene	µg/L	<	0.41															
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	<																
Group 7	2,3,7,8-TCDD	ng/L	<																
	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																	

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Stream / Surface Water Information

Elkhorn Run STP, NPDES Permit No. PA0037940, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: **Ohio River**

No. Reaches to Model: **1**

- ☐ Statewide Criteria  
☐ Great Lakes Criteria  
☒ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032317	958.1	680	19600	0.0001		Yes
End of Reach 1	032317	957.1	679	19800	0.0001		Yes

**Q<sub>7-10</sub>**

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	958.1	0.245				1270	15					100	7		
End of Reach 1	957.1	0.245				1270	15								

**Q<sub>h</sub>**

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	958.1														
End of Reach 1	957.1														

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Model Results

Elkhorn Run STP, NPDES Permit No. PA0037940, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All

☐ Inputs

☐ Results

☐ Limits

☒ Hydrodynamics

Q<sub>7-10</sub>

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
958.1	4,802		4,802	3.868	0.0001	15.	1270.	84.667	0.252	0.242	3799.259
957.1	4,851		4,851								

Q<sub>h</sub>

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
958.1	12261.73		12261.73	3.868	0.0001	22.653	1270.	56.062	0.426	0.143	2049.081
957.1	12371.015		12371.02								

☒ Wasteload Allocations

☒ AFC

CCT (min): 15

PMF: 0.063

Analysis Hardness (mg/l): 100.89

Analysis pH: 6.98

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	59,263	
Total Antimony	0	0		0	1,100	1,100	86,918	
Total Arsenic	0	0		0	340	340	26,866	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	1,659,352	
Total Boron	0	0		0	8,100	8,100	640,036	
Total Cadmium	0	0		0	2.031	2.15	170	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	573.894	1,816	143,504	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	1,287	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	7,507	
Total Copper	0	0		0	13.551	14.1	1,115	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	1,738	
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	65.204	82.6	6,524	Chem Translator of 0.79 applied

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Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	130	Chem Translator of 0.85 applied
Total Nickel	0	0		0	471.743	473	37,350	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.266	3.84	304	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	5,136	
Total Zinc	0	0		0	118,059	121	9,539	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	237	
Acrylonitrile	0	0		0	650	650	51,361	
Benzene	0	0		0	640	640	50,571	
Bromoform	0	0		0	1,800	1,800	142,230	
Carbon Tetrachloride	0	0		0	2,800	2,800	221,247	
Chlorobenzene	0	0		0	1,200	1,200	94,820	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	1,422,302	
Chloroform	0	0		0	1,900	1,900	150,132	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	1,185,252	
1,1-Dichloroethylene	0	0		0	7,500	7,500	592,626	
1,2-Dichloropropane	0	0		0	11,000	11,000	869,185	
1,3-Dichloropropylene	0	0		0	310	310	24,495	
Ethylbenzene	0	0		0	2,900	2,900	229,149	
Methyl Bromide	0	0		0	550	550	43,459	
Methyl Chloride	0	0		0	28,000	28,000	2,212,470	
Methylene Chloride	0	0		0	12,000	12,000	948,201	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	79,017	
Tetrachloroethylene	0	0		0	700	700	55,312	
Toluene	0	0		0	1,700	1,700	134,329	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	537,314	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	237,050	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	268,657	
Trichloroethylene	0	0		0	2,300	2,300	181,739	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	44,249	
2,4-Dichlorophenol	0	0		0	1,700	1,700	134,329	
2,4-Dimethylphenol	0	0		0	660	660	52,151	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	6,321	
2,4-Dinitrophenol	0	0		0	660	660	52,151	
2-Nitrophenol	0	0		0	8,000	8,000	632,134	
4-Nitrophenol	0	0		0	2,300	2,300	181,739	
p-Chloro-m-Cresol	0	0		0	160	160	12,643	
Pentachlorophenol	0	0		0	8.583	8.58	678	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	36,348	
Acenaphthene	0	0		0	83	83.0	6,558	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	23,705	



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Benzo(a)Anthracene	0	0		0	0.5	0.5	39.5	
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	2,370,503	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	355,576	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	21,335	
Butyl Benzyl Phthalate	0	0		0	140	140	11,062	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	64,794	
1,3-Dichlorobenzene	0	0		0	350	350	27,656	
1,4-Dichlorobenzene	0	0		0	730	730	57,682	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	316,067	
Dimethyl Phthalate	0	0		0	2,500	2,500	197,542	
Di-n-Butyl Phthalate	0	0		0	110	110	8,692	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	126,427	
2,6-Dinitrotoluene	0	0		0	990	990	78,227	
1,2-Diphenylhydrazine	0	0		0	15	15.0	1,185	
Fluoranthene	0	0		0	200	200	15,803	
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	790	
Hexachlorocyclopentadiene	0	0		0	5	5.0	395	
Hexachloroethane	0	0		0	60	60.0	4,741	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	790,168	
Naphthalene	0	0		0	140	140	11,062	
Nitrobenzene	0	0		0	4,000	4,000	316,067	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	1,343,285	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	23,705	
Phenanthrene	0	0		0	5	5.0	395	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	10,272	

☒ CFC

CCT (min): 720

PMF: 0.435

Analysis Hardness (mg/l): 100.13

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	119,134	
Total Arsenic	0	0		0	150	150	81,227	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	2,220,216	

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Total Boron	0	0		0	1,600	1,600	866,426	
Total Cadmium	0	0		0	0.246	0.27	147	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.193	86.3	46,717	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	5,629	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	10,289	
Total Copper	0	0		0	8.966	9.34	5,057	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	2,816	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,863,943	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.520	3.19	1,726	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	491	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.063	52.2	28,278	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	2,702	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	7,040	
Total Zinc	0	0		0	118.268	120	64,954	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	1,625	
Acrylonitrile	0	0		0	130	130	70,397	
Benzene	0	0		0	130	130	70,397	
Bromoform	0	0		0	370	370	200,361	
Carbon Tetrachloride	0	0		0	560	560	303,249	
Chlorobenzene	0	0		0	240	240	129,964	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	1,895,306	
Chloroform	0	0		0	390	390	211,191	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	1,678,700	
1,1-Dichloroethylene	0	0		0	1,500	1,500	812,274	
1,2-Dichloropropane	0	0		0	2,200	2,200	1,191,335	
1,3-Dichloropropylene	0	0		0	61	61.0	33,032	
Ethylbenzene	0	0		0	580	580	314,079	
Methyl Bromide	0	0		0	110	110	59,567	
Methyl Chloride	0	0		0	5,500	5,500	2,978,339	
Methylene Chloride	0	0		0	2,400	2,400	1,299,639	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	113,718	
Tetrachloroethylene	0	0		0	140	140	75,812	
Toluene	0	0		0	330	330	178,700	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	758,123	
1,1,1-Trichloroethane	0	0		0	610	610	330,325	
1,1,2-Trichloroethane	0	0		0	680	680	368,231	
Trichloroethylene	0	0		0	450	450	243,682	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	59,567	

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2,4-Dichlorophenol	0	0		0	340	340	184,115	
2,4-Dimethylphenol	0	0		0	130	130	70,397	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	8,664	
2,4-Dinitrophenol	0	0		0	130	130	70,397	
2-Nitrophenol	0	0		0	1,600	1,600	866,426	
4-Nitrophenol	0	0		0	470	470	254,513	
p-Chloro-m-Cresol	0	0		0	500	500	270,758	
Pentachlorophenol	0	0		0	6.585	6.59	3,566	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	49,278	
Acenaphthene	0	0		0	17	17.0	9,206	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	31,949	
Benzo(a)Anthracene	0	0		0	0.1	0.1	54.2	
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	3,249,097	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	492,780	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	29,242	
Butyl Benzyl Phthalate	0	0		0	35	35.0	18,953	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	86,643	
1,3-Dichlorobenzene	0	0		0	69	69.0	37,365	
1,4-Dichlorobenzene	0	0		0	150	150	81,227	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	433,213	
Dimethyl Phthalate	0	0		0	500	500	270,758	
Di-n-Butyl Phthalate	0	0		0	21	21.0	11,372	
2,4-Dinitrotoluene	0	0		0	320	320	173,285	
2,6-Dinitrotoluene	0	0		0	200	200	108,303	
1,2-Diphenylhydrazine	0	0		0	3	3.0	1,625	
Fluoranthene	0	0		0	40	40.0	21,661	
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	1,083	
Hexachlorocyclopentadiene	0	0		0	1	1.0	542	
Hexachloroethane	0	0		0	12	12.0	6,498	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	1,137,184	
Naphthalene	0	0		0	43	43.0	23,285	
Nitrobenzene	0	0		0	810	810	438,628	

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n-Nitrosodimethylamine	0	0		0	3,400	3,400	1,841,155	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	31,949	
Phenanthrene	0	0		0	1	1.0	542	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	14,079	

☒ THH

CCT (min): 720

PMF: 0.435

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	3,032	
Total Arsenic	0	0		0	10	10.0	5,415	
Total Barium	0	0		0	1,000	1,000	541,516	
Total Boron	0	0		0	3,100	3,100	1,678,700	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	1,300	1,300	703,971	
Free Cyanide	0	0		0	4	4.0	2,166	
Dissolved Iron	0	0		0	300	300	162,455	
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	541,516	
Total Mercury	0	0		0	0.012	0.012	6.5	
Total Nickel	0	0		0	610	610	330,325	
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	130	
Total Zinc	0	0		0	7,400	7,400	4,007,219	
Acrolein	0	0		0	3	3.0	1,625	
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	54,152	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	17,870	

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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	36,823
Methyl Bromide	0	0		0	47	47.0	25,451
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	30,866
1,2-trans-Dichloroethylene	0	0		0	100	100.0	54,152
1,1,1-Trichloroethane	0	0		0	10,000	10,000	5,415,161
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	16,245
2,4-Dichlorophenol	0	0		0	10	10.0	5,415
2,4-Dimethylphenol	0	0		0	100	100.0	54,152
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	1,083
2,4-Dinitrophenol	0	0		0	10	10.0	5,415
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	2,166,064
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A
Acenaphthene	0	0		0	70	70.0	37,906
Anthracene	0	0		0	300	300	162,455
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	108,303
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	54.2
2-Chloronaphthalene	0	0		0	800	800	433,213
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	420	420	227,437
1,3-Dichlorobenzene	0	0		0	7	7.0	3,791
1,4-Dichlorobenzene	0	0		0	63	63.0	34,116
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	600	600	324,910



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Dimethyl Phthalate	0	0		0	2,000	2,000	1,083,032
Di-n-Butyl Phthalate	0	0		0	20	20.0	10,830
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	10,830
Fluorene	0	0		0	50	50.0	27,076
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	2,166
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	18,412
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	10	10.0	5,415
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	10,830
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	37.9

☒ CRL

CCT (min): 720

PMF: 0.593

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
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	

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Total Silver	0	0		0	50	50.0	94,018
Total Thallium	0	0		0	N/A	N/A	N/A
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	0.051	0.051	95.9
Benzene	0	0		0	0.58	0.58	1,091
Bromoform	0	0		0	4.3	4.3	8,086
Carbon Tetrachloride	0	0		0	0.4	0.4	752
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.4	0.4	752
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	5.7	5.7	10,718
Dichlorobromomethane	0	0		0	0.55	0.55	1,034
1,2-Dichloroethane	0	0		0	0.38	0.38	715
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.5	0.5	940
1,3-Dichloropropylene	0	0		0	0.27	0.27	508
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	4.6	4.6	8,650
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	320
Tetrachloroethylene	0	0		0	0.69	0.69	1,297
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	1,034
Trichloroethylene	0	0		0	0.6	0.6	1,128
Vinyl Chloride	0	0		0	0.02	0.02	37.6
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	56.4
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	2,632
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	0.000086	0.00009	0.16
Benzo(a)Anthracene	0	0		0	0.001	0.001	1.88
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.19

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3,4-Benzofluoranthene	0	0	0	0.001	0.001	1.88
Benzo(k)Fluoranthene	0	0	0	0.0038	0.004	7.15
Bis(2-Chloroethyl)Ether	0	0	0	0.03	0.03	56.4
Bis(2-Chloroisopropyl)Ether	0	0	0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0	0	0.32	0.32	602
4-Bromophenyl Phenyl Ether	0	0	0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0	0	N/A	N/A	N/A
2-Chloronaphthalene	0	0	0	N/A	N/A	N/A
Chrysene	0	0	0	0.0038	0.004	7.15
Dibenzo(a,h)Anthracene	0	0	0	0.0001	0.0001	0.19
1,2-Dichlorobenzene	0	0	0	N/A	N/A	N/A
1,3-Dichlorobenzene	0	0	0	N/A	N/A	N/A
1,4-Dichlorobenzene	0	0	0	N/A	N/A	N/A
3,3-Dichlorobenzidine	0	0	0	0.021	0.021	39.5
Diethyl Phthalate	0	0	0	N/A	N/A	N/A
Dimethyl Phthalate	0	0	0	N/A	N/A	N/A
Di-n-Butyl Phthalate	0	0	0	N/A	N/A	N/A
2,4-Dinitrotoluene	0	0	0	0.05	0.05	94.0
2,6-Dinitrotoluene	0	0	0	0.05	0.05	94.0
1,2-Diphenylhydrazine	0	0	0	0.03	0.03	56.4
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	0.15
Hexachlorobutadiene	0	0	0	0.01	0.01	18.8
Hexachlorocyclopentadiene	0	0	0	N/A	N/A	N/A
Hexachloroethane	0	0	0	0.1	0.1	188
Indeno(1,2,3-cd)Pyrene	0	0	0	0.001	0.001	1.88
Isophorone	0	0	0	N/A	N/A	N/A
Naphthalene	0	0	0	N/A	N/A	N/A
Nitrobenzene	0	0	0	N/A	N/A	N/A
n-Nitrosodimethylamine	0	0	0	0.00069	0.0007	1.3
n-Nitrosodi-n-Propylamine	0	0	0	0.005	0.005	9.4
n-Nitrosodiphenylamine	0	0	0	3.3	3.3	6,205
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

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Mercury	0.0003	0.0004	12.0	18.7	30.0	ng/L	12.0		Discharge Conc ≥ 50% WQBEL (RP)



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☒ **Other Pollutants without Limits or Monitoring**

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

Pollutants	Governing WQBEL	Units	Comments
Total Aluminum	37,985	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	3,032	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	541,516	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	410,237	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	109	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	46,717	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	825	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	4,811	µg/L	Discharge Conc < TQL
Total Copper	715	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	1,114	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	162,455	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,863,943	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,726	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	541,516	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	23,940	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	2,702	µg/L	Discharge Conc < TQL
Total Silver	195	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	130	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	6,114	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	152	µg/L	Discharge Conc < TQL
Acrylonitrile	95.9	µg/L	Discharge Conc < TQL
Benzene	1,091	µg/L	Discharge Conc < TQL
Bromoform	8,086	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	752	µg/L	Discharge Conc < TQL
Chlorobenzene	54,152	µg/L	Discharge Conc < TQL

## NPDES Permit Fact Sheet

### NPDES Permit No. PA0037940 Elkhorn Run STP

Chlorodibromomethane	752	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	911,638	µg/L	Discharge Conc < TQL
Chloroform	10,718	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	1,034	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	715	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	17,870	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	940	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	508	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	36,823	µg/L	Discharge Conc < TQL
Methyl Bromide	25,451	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	1,418,104	µg/L	Discharge Conc < TQL
Methylene Chloride	8,650	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	320	µg/L	Discharge Conc < TQL
Tetrachloroethylene	1,297	µg/L	Discharge Conc < TQL
Toluene	30,866	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	54,152	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	151,940	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	1,034	µg/L	Discharge Conc < TQL
Trichloroethylene	1,128	µg/L	Discharge Conc < TQL
Vinyl Chloride	37.6	µg/L	Discharge Conc < TQL
2-Chlorophenol	16,245	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	5,415	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	33,427	µg/L	Discharge Conc ≤ 25% WQBEL
4,6-Dinitro-o-Cresol	1,083	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	5,415	µg/L	Discharge Conc < TQL
2-Nitrophenol	405,173	µg/L	Discharge Conc < TQL
4-Nitrophenol	116,487	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	8,103	µg/L	Discharge Conc < TQL
Pentachlorophenol	56.4	µg/L	Discharge Conc < TQL
Phenol	2,166,064	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	2,632	µg/L	Discharge Conc < TQL
Acenaphthene	4,204	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	162,455	µg/L	Discharge Conc < TQL
Benidine	0.16	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	1.88	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.19	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	1.88	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	7.15	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	56.4	µg/L	Discharge Conc < TQL

## NPDES Permit Fact Sheet

### NPDES Permit No. PA0037940 Elkhorn Run STP

Bis(2-Chloroisopropyl)Ether	108,303	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	602	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	13,675	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	54.2	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	433,213	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	7.15	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthracene	0.19	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	41,530	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	3,791	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	34,116	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	39.5	µg/L	Discharge Conc < TQL
Diethyl Phthalate	202,586	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	126,616	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	5,571	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	94.0	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	94.0	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	56.4	µg/L	Discharge Conc < TQL
Fluoranthene	10,129	µg/L	Discharge Conc < TQL
Fluorene	27,076	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	253	µg/L	Discharge Conc < TQL
Hexachloroethane	188	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	1.88	µg/L	Discharge Conc < TQL
Isophorone	18,412	µg/L	Discharge Conc < TQL
Naphthalene	7,091	µg/L	Discharge Conc < TQL
Nitrobenzene	5,415	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	1.3	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	9.4	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	6,205	µg/L	Discharge Conc < TQL
Phenanthrene	253	µg/L	Discharge Conc < TQL
Pyrene	10,830	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	37.9	µg/L	Discharge Conc < TQL

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT I:  
PRE-DRAFT LETTER**

NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



February 1, 2022

**VIA ELECTRONIC MAIL:**

Frank Vescio  
Center Township Sanitary Authority  
224 Center Grange Road  
Aliquippa, PA 15001

Re: Draft NPDES Permit- Sewage  
Elkhorn Run STP  
Application No. PA0037940  
Authorization ID No. 1372115  
Center Township, Beaver County

Dear Permittee:

The Department of Environmental Protection (DEP) has reviewed your NPDES permit application and has reached a preliminary finding that new or more stringent water quality-based effluent limitations (WQBELs) for toxic pollutant(s) should be established in the permit. This finding is based on DEP's assessment that reasonable potential exists to exceed water quality criteria under Chapter 93 in the receiving waters during design flow conditions. The following WQBELs are anticipated based on the information available to DEP during its review:

Outfall No.	Pollutant	Average Monthly (ng/L)	Maximum Daily (ng/L)	IMAX (ng/L)
001	Total Mercury	12.0	18.7	30.3

Attached is a survey that DEP requests that you complete and return to DEP in 30 days. Completion of this survey will help DEP understand your current capabilities or plans to treat or control these pollutant(s). Your response to this notice does not constitute an official comment for DEP response but will be taken under consideration. When the draft NPDES permit is formally noticed in the *Pennsylvania Bulletin*, you may make official comments for DEP's further consideration and response.

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940**  
**Elkhorn Run STP**

Please contact me if you have any questions about this information or the attached survey.

Sincerely,

A handwritten signature in cursive script that reads "Grace Polakoski".

Grace Polakoski, E.I.T.  
Environmental Engineering Specialist  
Clean Water Program

Enclosures

cc: Robert Martini – Center Township Sanitary Authority  
Marie S. Hartman – Lennon, Smith, Souleret Engineering, Inc.  
US EPA Region III  
Southwest Regional Office

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT J:  
PRE-DRAFT SURVEY**

NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PRE-DRAFT PERMIT SURVEY FOR TOXIC POLLUTANTS**

Permittee Name:	<b>Center Township Sanitary Authority</b>	Permit No.:	<b>PA0037940</b>
Pollutant(s) identified by DEP that may require WQBELs: <u>Mercury</u>			
Is the permittee aware of the source(s) of the pollutant(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Suspected			
If Yes or Suspected, describe the known or suspected source(s) of pollutant(s) in the effluent.			
Has the permittee completed any studies in the past to control or treat the pollutant(s)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, describe prior studies and results:			
Does the permittee believe it can achieve the proposed WQBELs now? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Uncertain			
If No, describe the activities, upgrades or process changes that would be necessary to achieve the WQBELs, if known.			
Unknown. Extensive sampling is required to identify/quantify baseline Mercury levels present. Extensive pilot studies are required to determine Best Available Technologies (BAT) to treat Mercury to proposed WQBEL. This would require a significant capital expenditure and upgrade to the STP.			
Estimated date by which the permittee could achieve the proposed WQBELs: <input checked="" type="checkbox"/> Uncertain			
Will the permittee conduct additional sampling for the pollutant(s) to supplement the application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Check the appropriate box(es) below to indicate site-specific data that have been collected by the permittee in the past. If any of these data have <u>not</u> been submitted to DEP, please attach to this survey.			
<input type="checkbox"/> Discharge pollutant concentration coefficient(s) of variability	Year(s) Studied:		
<input type="checkbox"/> Discharge and background Total Hardness concentrations (metals)	Year(s) Studied:		
<input type="checkbox"/> Background / ambient pollutant concentrations	Year(s) Studied:		



## NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

<input type="checkbox"/> Chemical translator(s) (metals)	Year(s) Studied:
<input type="checkbox"/> Slope and width of receiving waters	Year(s) Studied:
<input type="checkbox"/> Velocity of receiving waters at design conditions	Year(s) Studied:
<input type="checkbox"/> Acute and/or chronic partial mix factors (mixing at design conditions)	Year(s) Studied:
<input type="checkbox"/> Volatilization rates (highly volatile organics)	Year(s) Studied:
<input type="checkbox"/> Site-specific criteria (e.g., Water Effect Ratio or related study)	Year(s) Studied:

**Please submit this survey to the DEP regional office that is reviewing the permit application within 30 days of receipt.**

**ATTACHMENT K:**  
**ADDITIONAL MERCURY SAMPLING VIA EPA TEST METHOD 1631E**  
**(June 8, 2022)**

NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Managing Principals:  
Kevin A. Brett, P.E.  
Ned Mitrovich, P.E.  
Jason E. Stanton, P.E.

June 8, 2022

S. O. No. 495-025

**VIA EMAIL ONLY**  
**([grpolakosk@pa.gov](mailto:grpolakosk@pa.gov))**

Ms. Grace Polakoski  
Environmental Engineering Specialist  
Department of Environmental Protection  
Clean Water Program  
400 Waterfront Drive  
Pittsburgh, Pennsylvania 15222

**Subject: Center Township Sanitary Authority  
NPDES Permit No PA0037940 Renewal**

Dear Ms. Polakoski:

As discussed, enclosed herewith please find additional analyses for effluent Mercury (12 samples), that were collected and analyzed by CWM Environmental from April 12, 2022 through May 4, 2022. These analyses represent the second set of supplemental data to the NPDES Permit Renewal Application submitted by the Center Township Sanitary Authority (NPDES Permit No PA0037940).

Should you have any questions, please contact Marie S. Hartman, P.E. directly (Ext. 246).

Sincerely,

Ned Mitrovich, P.E.

NM/als

Attachment

cc/att: Robert Martini, Operations Supervisor - CTSA ([martini@ctsapa.us](mailto:martini@ctsapa.us))  
Marie S. Hartman, P.E., LSSE ([mhartman@lsse.com](mailto:mhartman@lsse.com))  
Ken Parks, LSSE ([kparks@rabellsurvey.com](mailto:kparks@rabellsurvey.com))

NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

**Center Township Sanitary Authority**  
**NPDES Permit No PA0037940 Renewal**  
**CWM Environmental Sampling Results Summary**

Effluent 24 Hour Composite Sample		
Date	Result	Notes
4/12/2022	0.5 ng/L	Blank**
4/12/2022	3.4 ng/L	Sample 2
4/13/2022	49.8 ng/L	Sample 3
4/13/2022	43.2 ng/L	Sample 4
4/19/2022	7.5 ng/L	Sample 5
4/20/2022	28.1 ng/L	Sample 6
4/25/2022	6.2 ng/L	Sample 7
4/26/2022	25.9 ng/L	Sample 8
4/27/2022	6.1 ng/L	Sample 9
4/28/2022	30.2ng/L	Sample 10
4/28/2022	0.5 ng/L	Blank 1**
4/28/2022	0.5 ng/L	Blank 2**
4/28/2022	0.5 ng/L	Blank 3**
5/3/2022	37.4 ng/L	Sample 1
5/4/2022	25.7 ng/L	Sample 2
5/4/2022	0.5 ng/L	Sample 3**
5/4/2022	0.5 ng/L	Blank 1**
5/4/2022	0.5 ng/L	Blank 2**
5/4/2022	0.5 ng/L	Blank 3**

\*Estimated value (above detection limit/below reporting limit)

\*\*The analyte was not detected at or above the listed concentration, which is below the laboratory quantitation limit.

**ATTACHMENT L:**  
**TOXCONC MODELING FOR MERCURY (20 samples)**

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

## INPUT:

	Facility:	Elkhorn Run STP					
	NPDES #:	PA0037940					
	Outfall No:	001					
	n (Samples/Month):	4					
	Reviewer/Permit Engineer:	GRP					
Parameter Name	Total Mercury						
Units	other						
Detection Limit	12						
Sample Date	When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)						
12/01/21	9.8						
12/02/21	19						
12/03/21	15.5						
12/04/21	14.2						
12/05/21	19.4						
12/07/21	26.9						
12/09/21	18.3						
12/10/21	44						
12/11/21	20.7						
12/12/21	8.7						
12/13/21	25.2						
12/15/21	5.3						
04/12/22	3.4						
04/13/22	49.8						
04/13/22	43.2						
04/19/22	7.5						
04/20/22	28.1						
04/25/22	6.2						
04/26/22	25.9						
04/27/22	6.1						
04/28/22	30.2						
05/03/22	37.4						
05/04/22	25.7						
05/04/22	0.5						

## OUTPUT:

Facility:		Elkhorn Run STP		Reviewer/Permit Engineer:		GRP
NPDES #:		PA0037940				
Outfall No:		001				
n (Samples/Month):		4				
Parameter	Distribution Applied	Coefficient of Variation (daily)		Avg. Monthly		
Total Mercury (other)	Lognormal	1.3893173		88.5128543		

**NPDES Permit Fact Sheet**

**NPDES Permit No. PA0037940  
Elkhorn Run STP**

**ATTACHMENT M:  
TMS MODELING RESULTS (Run 2)**

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Discharge Information

Instructions Discharge Stream

Facility: Elkhorn Run STP NPDES Permit No.: PA0037940 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: treated sewage

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q <sub>7-10</sub>	Q <sub>h</sub>
2.5	170	6.4						

				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										
	Chloride (PWS)	mg/L										
	Bromide	mg/L										
	Sulfate (PWS)	mg/L										
	Fluoride (PWS)	mg/L										
Group 2	Total Aluminum	µg/L	320									
	Total Antimony	µg/L	1									
	Total Arsenic	µg/L	< 1									
	Total Barium	µg/L	57									
	Total Beryllium	µg/L	< 0.3									
	Total Boron	µg/L	250									
	Total Cadmium	µg/L	< 0.4									
	Total Chromium (III)	µg/L	3									
	Hexavalent Chromium	µg/L	11									
	Total Cobalt	µg/L	< 0.7									
	Total Copper	µg/L	9									
	Free Cyanide	µg/L	22									
	Total Cyanide	µg/L	11									
	Dissolved Iron	µg/L	631									
	Total Iron	µg/L	417									
	Total Lead	µg/L	3									
	Total Manganese	µg/L	115									
	Total Mercury	ng/L	86.5									
	Total Nickel	µg/L	< 6									
	Total Phenols (Phenolics) (PWS)	µg/L	4									
	Total Selenium	µg/L	< 1									
	Total Silver	µg/L	< 1									
	Total Thallium	µg/L	3									
	Total Zinc	µg/L	48									
	Total Molybdenum	µg/L	4									
	Acrolein	µg/L	< 1.3									
	Acrylamide	µg/L	< 1									
	Acrylonitrile	µg/L	< 2									
	Benzene	µg/L	< 0.12									
	Bromoform	µg/L	< 0.37									



**NPDES Permit No. PA0037940**  
**Elkhorn Run STP**

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**NPDES Permit No. PA0037940**  
**Elkhorn Run STP**

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# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Stream / Surface Water Information

Elkhorn Run STP, NPDES Permit No. PA0037940, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: **Ohio River**

No. Reaches to Model: **1**

- ☐ Statewide Criteria  
☐ Great Lakes Criteria  
☒ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi <sup>2</sup> )*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032317	958.1	680	19600	0.0001		Yes
End of Reach 1	032317	957.1	679	19800	0.0001		Yes

**Q<sub>7-10</sub>**

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	958.1	0.245				1270	15					100	7		
End of Reach 1	957.1	0.245				1270	15								

**Q<sub>n</sub>**

Location	RMI	LFY (cfs/mi <sup>2</sup> )*	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	958.1														
End of Reach 1	957.1														

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP



Toxics Management Spreadsheet  
Version 1.3, March 2021

## Model Results

Elkhorn Run STP, NPDES Permit No. PA0037940, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All ☐ Inputs ☐ Results ☐ Limits

### ☒ Hydrodynamics

**Q<sub>7-10</sub>**

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
958.1	4,802		4,802	3.868	0.0001	15.	1270.	84.667	0.252	0.242	3799.259
957.1	4,851		4,851								

**Q<sub>h</sub>**

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
958.1	12261.73		12261.73	3.868	0.0001	22.653	1270.	56.062	0.426	0.143	2049.081
957.1	12371.015		12371.02								

### ☒ Wasteload Allocations

☒ AFC

CCT (min): 15

PMF: 0.063

Analysis Hardness (mg/l): 100.89

Analysis pH: 6.98

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	59,263	
Total Antimony	0	0		0	1,100	1,100	86,918	
Total Arsenic	0	0		0	340	340	26,866	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	1,659,352	
Total Boron	0	0		0	8,100	8,100	640,036	
Total Cadmium	0	0		0	2.031	2.15	170	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	573.894	1,816	143,504	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	1,287	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	7,507	
Total Copper	0	0		0	13.551	14.1	1,115	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	1,738	
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	65.204	82.6	6,524	Chem Translator of 0.79 applied

# NPDES Permit Fact Sheet

NPDES Permit No. PA0037940  
Elkhorn Run STP

Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1,400	1.65	130	Chem Translator of 0.85 applied
Total Nickel	0	0		0	471,743	473	37,350	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3,266	3.84	304	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	5,136	
Total Zinc	0	0		0	118,059	121	9,539	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	237	
Acrylonitrile	0	0		0	650	650	51,361	
Benzene	0	0		0	640	640	50,571	
Bromoform	0	0		0	1,800	1,800	142,230	
Carbon Tetrachloride	0	0		0	2,800	2,800	221,247	
Chlorobenzene	0	0		0	1,200	1,200	94,820	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	1,422,302	
Chloroform	0	0		0	1,900	1,900	150,132	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	1,185,252	
1,1-Dichloroethylene	0	0		0	7,500	7,500	592,626	
1,2-Dichloropropane	0	0		0	11,000	11,000	869,185	
1,3-Dichloropropylene	0	0		0	310	310	24,495	
Ethylbenzene	0	0		0	2,900	2,900	229,149	
Methyl Bromide	0	0		0	550	550	43,459	
Methyl Chloride	0	0		0	28,000	28,000	2,212,470	
Methylene Chloride	0	0		0	12,000	12,000	948,201	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	79,017	
Tetrachloroethylene	0	0		0	700	700	55,312	
Toluene	0	0		0	1,700	1,700	134,329	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	537,314	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	237,050	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	268,657	
Trichloroethylene	0	0		0	2,300	2,300	181,739	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	44,249	
2,4-Dichlorophenol	0	0		0	1,700	1,700	134,329	
2,4-Dimethylphenol	0	0		0	660	660	52,151	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	6,321	
2,4-Dinitrophenol	0	0		0	660	660	52,151	
2-Nitrophenol	0	0		0	8,000	8,000	632,134	
4-Nitrophenol	0	0		0	2,300	2,300	181,739	
p-Chloro-m-Cresol	0	0		0	160	160	12,643	
Pentachlorophenol	0	0		0	8,583	8.58	678	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	36,348	
Acenaphthene	0	0		0	83	83.0	6,558	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	23,705	

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Benzo(a)Anthracene	0	0		0	0.5	0.5	39.5	
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	2,370,503	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	355,576	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	21,335	
Butyl Benzyl Phthalate	0	0		0	140	140	11,062	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	64,794	
1,3-Dichlorobenzene	0	0		0	350	350	27,656	
1,4-Dichlorobenzene	0	0		0	730	730	57,682	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	316,067	
Dimethyl Phthalate	0	0		0	2,500	2,500	197,542	
Di-n-Butyl Phthalate	0	0		0	110	110	8,692	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	126,427	
2,6-Dinitrotoluene	0	0		0	990	990	78,227	
1,2-Diphenylhydrazine	0	0		0	15	15.0	1,185	
Fluoranthene	0	0		0	200	200	15,803	
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	790	
Hexachlorocyclopentadiene	0	0		0	5	5.0	395	
Hexachloroethane	0	0		0	60	60.0	4,741	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	790,168	
Naphthalene	0	0		0	140	140	11,062	
Nitrobenzene	0	0		0	4,000	4,000	316,067	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	1,343,285	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	23,705	
Phenanthrene	0	0		0	5	5.0	395	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	10,272	

☒ CFC

CCT (min): 720

PMF: 0.435

Analysis Hardness (mg/l): 100.13

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 Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	119,134	
Total Arsenic	0	0		0	150	150	81,227	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	2,220,216	



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Total Boron	0	0		0	1,600	1,600	866,426	
Total Cadmium	0	0		0	0.246	0.27	147	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.193	86.3	46,717	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	5,629	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	10,289	
Total Copper	0	0		0	8.966	9.34	5,057	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	2,816	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,863,943	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.520	3.19	1,726	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	491	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.063	52.2	28,278	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	2,702	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	7,040	
Total Zinc	0	0		0	118.268	120	64,954	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	1,625	
Acrylonitrile	0	0		0	130	130	70,397	
Benzene	0	0		0	130	130	70,397	
Bromoform	0	0		0	370	370	200,361	
Carbon Tetrachloride	0	0		0	560	560	303,249	
Chlorobenzene	0	0		0	240	240	129,964	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	1,895,306	
Chloroform	0	0		0	390	390	211,191	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	1,678,700	
1,1-Dichloroethylene	0	0		0	1,500	1,500	812,274	
1,2-Dichloropropane	0	0		0	2,200	2,200	1,191,335	
1,3-Dichloropropylene	0	0		0	61	61.0	33,032	
Ethylbenzene	0	0		0	580	580	314,079	
Methyl Bromide	0	0		0	110	110	59,567	
Methyl Chloride	0	0		0	5,500	5,500	2,978,339	
Methylene Chloride	0	0		0	2,400	2,400	1,299,639	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	113,718	
Tetrachloroethylene	0	0		0	140	140	75,812	
Toluene	0	0		0	330	330	178,700	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	758,123	
1,1,1-Trichloroethane	0	0		0	610	610	330,325	
1,1,2-Trichloroethane	0	0		0	680	680	368,231	
Trichloroethylene	0	0		0	450	450	243,682	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	59,567	

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2,4-Dichlorophenol	0	0		0	340	340	184,115	
2,4-Dimethylphenol	0	0		0	130	130	70,397	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	8,664	
2,4-Dinitrophenol	0	0		0	130	130	70,397	
2-Nitrophenol	0	0		0	1,600	1,600	866,426	
4-Nitrophenol	0	0		0	470	470	254,513	
p-Chloro-m-Cresol	0	0		0	500	500	270,758	
Pentachlorophenol	0	0		0	6.585	6.59	3,566	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	49,278	
Acenaphthene	0	0		0	17	17.0	9,206	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	31,949	
Benzo(a)Anthracene	0	0		0	0.1	0.1	54.2	
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	3,249,097	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	492,780	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	29,242	
Butyl Benzyl Phthalate	0	0		0	35	35.0	18,953	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	86,643	
1,3-Dichlorobenzene	0	0		0	69	69.0	37,365	
1,4-Dichlorobenzene	0	0		0	150	150	81,227	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	433,213	
Dimethyl Phthalate	0	0		0	500	500	270,758	
Di-n-Butyl Phthalate	0	0		0	21	21.0	11,372	
2,4-Dinitrotoluene	0	0		0	320	320	173,285	
2,6-Dinitrotoluene	0	0		0	200	200	108,303	
1,2-Diphenylhydrazine	0	0		0	3	3.0	1,625	
Fluoranthene	0	0		0	40	40.0	21,661	
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	1,083	
Hexachlorocyclopentadiene	0	0		0	1	1.0	542	
Hexachloroethane	0	0		0	12	12.0	6,498	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	1,137,184	
Naphthalene	0	0		0	43	43.0	23,285	
Nitrobenzene	0	0		0	810	810	438,628	



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n-Nitrosodimethylamine	0	0		0	3,400	3,400	1,841,155	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	31,949	
Phenanthrene	0	0		0	1	1.0	542	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	14,079	

☒ THH

CCT (min): 720

PMF: 0.435

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	3,032	
Total Arsenic	0	0		0	10	10.0	5,415	
Total Barium	0	0		0	1,000	1,000	541,516	
Total Boron	0	0		0	3,100	3,100	1,678,700	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	1,300	1,300	703,971	
Free Cyanide	0	0		0	4	4.0	2,166	
Dissolved Iron	0	0		0	300	300	162,455	
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	541,516	
Total Mercury	0	0		0	0.012	0.012	6.5	
Total Nickel	0	0		0	610	610	330,325	
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	130	
Total Zinc	0	0		0	7,400	7,400	4,007,219	
Acrolein	0	0		0	3	3.0	1,625	
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	54,152	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	17,870	

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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	36,823
Methyl Bromide	0	0		0	47	47.0	25,451
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	30,866
1,2-trans-Dichloroethylene	0	0		0	100	100.0	54,152
1,1,1-Trichloroethane	0	0		0	10,000	10,000	5,415,161
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	16,245
2,4-Dichlorophenol	0	0		0	10	10.0	5,415
2,4-Dimethylphenol	0	0		0	100	100.0	54,152
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	1,083
2,4-Dinitrophenol	0	0		0	10	10.0	5,415
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	2,166,064
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A
Acenaphthene	0	0		0	70	70.0	37,906
Anthracene	0	0		0	300	300	162,455
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	108,303
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	54.2
2-Chloronaphthalene	0	0		0	800	800	433,213
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	420	420	227,437
1,3-Dichlorobenzene	0	0		0	7	7.0	3,791
1,4-Dichlorobenzene	0	0		0	63	63.0	34,116
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	600	600	324,910

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Dimethyl Phthalate	0	0		0	2,000	2,000	1,083,032	
Di-n-Butyl Phthalate	0	0		0	20	20.0	10,830	
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	10,830	
Fluorene	0	0		0	50	50.0	27,076	
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	2,166	
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	18,412	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	5,415	
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	10,830	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	37.9	

☒ CRL

CCT (min): 720

PMF: 0.593

Analysis Hardness (mg/l): N/A

Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
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	

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Total Silver	0	0		0	50	50.0	94,018
Total Thallium	0	0		0	N/A	N/A	N/A
Total Zinc	0	0		0	N/A	N/A	N/A
Acrolein	0	0		0	N/A	N/A	N/A
Acrylonitrile	0	0		0	0.051	0.051	95.9
Benzene	0	0		0	0.58	0.58	1,091
Bromoform	0	0		0	4.3	4.3	8,086
Carbon Tetrachloride	0	0		0	0.4	0.4	752
Chlorobenzene	0	0		0	N/A	N/A	N/A
Chlorodibromomethane	0	0		0	0.4	0.4	752
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A
Chloroform	0	0		0	5.7	5.7	10,718
Dichlorobromomethane	0	0		0	0.55	0.55	1,034
1,2-Dichloroethane	0	0		0	0.38	0.38	715
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,2-Dichloropropane	0	0		0	0.5	0.5	940
1,3-Dichloropropylene	0	0		0	0.27	0.27	508
Ethylbenzene	0	0		0	N/A	N/A	N/A
Methyl Bromide	0	0		0	N/A	N/A	N/A
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	4.6	4.6	8,650
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	320
Tetrachloroethylene	0	0		0	0.69	0.69	1,297
Toluene	0	0		0	N/A	N/A	N/A
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A
1,1,2-Trichloroethane	0	0		0	0.55	0.55	1,034
Trichloroethylene	0	0		0	0.6	0.6	1,128
Vinyl Chloride	0	0		0	0.02	0.02	37.6
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	56.4
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	2,632
Acenaphthene	0	0		0	N/A	N/A	N/A
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	0.000086	0.00009	0.16
Benzo(a)Anthracene	0	0		0	0.001	0.001	1.88
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.19

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3,4-Benzofluoranthene	0	0		0	0.001	0.001	1.88
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	7.15
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	56.4
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	602
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	0.0038	0.004	7.15
Dibenzo(a,h)Anthracene	0	0		0	0.0001	0.0001	0.19
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A
3,3-Dichlorobenzidine	0	0		0	0.021	0.021	39.5
Diethyl Phthalate	0	0		0	N/A	N/A	N/A
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A
2,4-Dinitrotoluene	0	0		0	0.05	0.05	94.0
2,6-Dinitrotoluene	0	0		0	0.05	0.05	94.0
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	56.4
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	0.15
Hexachlorobutadiene	0	0		0	0.01	0.01	18.8
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A
Hexachloroethane	0	0		0	0.1	0.1	188
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	1.88
Isophorone	0	0		0	N/A	N/A	N/A
Naphthalene	0	0		0	N/A	N/A	N/A
Nitrobenzene	0	0		0	N/A	N/A	N/A
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	1.3
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	9.4
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	6,205
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

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Mercury	0.0003	0.0004	12.0	18.7	30.0	ng/L	12.0		Discharge Conc ≥ 50% WQBEL (RP)

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☒ **Other Pollutants without Limits or Monitoring**

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

Pollutants	Governing WQBEL	Units	Comments
Total Aluminum	37,985	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	3,032	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	541,516	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	410,237	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	109	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	46,717	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	825	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	4,811	µg/L	Discharge Conc < TQL
Total Copper	715	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	1,114	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	162,455	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,863,943	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	1,726	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	541,516	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	23,940	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	2,702	µg/L	Discharge Conc < TQL
Total Silver	195	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	130	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	6,114	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	152	µg/L	Discharge Conc < TQL
Acrylonitrile	95.9	µg/L	Discharge Conc < TQL
Benzene	1,091	µg/L	Discharge Conc < TQL
Bromoform	8,086	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	752	µg/L	Discharge Conc < TQL
Chlorobenzene	54,152	µg/L	Discharge Conc < TQL
Chlorodibromomethane	752	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	911,638	µg/L	Discharge Conc < TQL
Chloroform	10,718	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	1,034	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	715	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	17,870	µg/L	Discharge Conc < TQL



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1,2-Dichloropropane	940	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	508	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	36,823	µg/L	Discharge Conc < TQL
Methyl Bromide	25,451	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	1,418,104	µg/L	Discharge Conc < TQL
Methylene Chloride	8,650	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	320	µg/L	Discharge Conc < TQL
Tetrachloroethylene	1,297	µg/L	Discharge Conc < TQL
Toluene	30,866	µg/L	Discharge Conc ≤ 25% WQBEL
1,2-trans-Dichloroethylene	54,152	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	151,940	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	1,034	µg/L	Discharge Conc < TQL
Trichloroethylene	1,128	µg/L	Discharge Conc < TQL
Vinyl Chloride	37.6	µg/L	Discharge Conc < TQL
2-Chlorophenol	16,245	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	5,415	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	33,427	µg/L	Discharge Conc ≤ 25% WQBEL
4,6-Dinitro-o-Cresol	1,083	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	5,415	µg/L	Discharge Conc < TQL
2-Nitrophenol	405,173	µg/L	Discharge Conc < TQL
4-Nitrophenol	116,487	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	8,103	µg/L	Discharge Conc < TQL
Pentachlorophenol	56.4	µg/L	Discharge Conc < TQL
Phenol	2,166,064	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	2,632	µg/L	Discharge Conc < TQL
Acenaphthene	4,204	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	162,455	µg/L	Discharge Conc < TQL
Benzidine	0.16	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	1.88	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.19	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	1.88	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	7.15	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	56.4	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	108,303	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	602	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	13,675	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	54.2	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	433,213	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	7.15	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthracene	0.19	µg/L	Discharge Conc < TQL

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1,2-Dichlorobenzene	41,530	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	3,791	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	34,116	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	39.5	µg/L	Discharge Conc < TQL
Diethyl Phthalate	202,586	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	126,616	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	5,571	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	94.0	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	94.0	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	56.4	µg/L	Discharge Conc < TQL
Fluoranthene	10,129	µg/L	Discharge Conc < TQL
Fluorene	27,076	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	253	µg/L	Discharge Conc < TQL
Hexachloroethane	188	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	1.88	µg/L	Discharge Conc < TQL
Isophorone	18,412	µg/L	Discharge Conc < TQL
Naphthalene	7,091	µg/L	Discharge Conc < TQL
Nitrobenzene	5,415	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	1.3	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	9.4	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	6,205	µg/L	Discharge Conc < TQL
Phenanthrene	253	µg/L	Discharge Conc < TQL
Pyrene	10,830	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	37.9	µg/L	Discharge Conc < TQL