pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0000566**
Facility Type	**Industrial**	APS ID	**1037713**
Major / Minor	**Major**	Authorization ID	**1352860**

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

Applicant and Facility Information

Applicant Name	**Libertas Copper LLC**	Facility Name	**Hussey Copper**
Applicant Address	100 Washington Street	Facility Address	100 Washington Street
	Leetsdale, PA 15056-1000		Leetsdale, PA 15056-1000
Applicant Contact	Stephen Robuck	Facility Contact	Stephen Robuck
Applicant Phone	(724) 251-4227	Facility Phone	(724) 251-4227
Client ID	292160	Site ID	68433
SIC Code	3351	Municipality	Leetsdale Borough
SIC Description	Manufacturing - Copper Rolling, Drawing and Extrusion	County	Allegheny
Date Application Received	May 3, 2021	EPA Waived?	No
Date Application Accepted	June 21, 2021	If No, Reason	Major Facility

Purpose of Application: NPDES permit renewal of Major <250 MGD.

Summary of Review

The Department received a timely NPDES Individual Wastewater Permit renewal application from Libertas Copper LLC for the Hussey Copper facility located in Leetsdale Borough, Allegheny County on May 3, 2012. Hussey Copper's wet and dry manufacturing industrial process consist of melting, casting, and finishing operations for copper and copper alloy products. The wet processes utilize acids and lubricants containing both water-soluble and insoluble oils, as well as contract rinse waters, "quench water and other contract and non-contact cooling water (NCCW). The primary Standard Industrial Classification (SIC) Code for the facility is 3351 for Rolling, Drawing, and Extrusion of Copper, the facility's industrial activities are also classified by secondary SIC of 3341 – Secondary Smelting, Refining and Alloying of Copper.

The Hussey Copper Leetsdale facility began operations in 1963, producing a variety of copper products including construction copper sheets, transformer winding, copper tape, copper nickel alloy sheet and plate, along with copper strip, sheet, and plate. In December 2011, Libertas Copper, LLC, a division of private equity firm Patriarch Partners, acquired the Hussey Copper Leetsdale facility.

Wastewater generated and discharged from this facility includes treated process wastewater, non-contact cooling water and storm water runoff. The treated process wastewater discharges through Outfall 001 with ELG effluent limitations and monitoring imposed at Internal Monitoring Point (IMP) 101 prior to mixing with any other waste streams. Outfall 001 also discharges NCCW and storm water. Outfalls 001, 002, 003, 004, 005 and 006 discharge storm water runoff from various areas of the plant. Outfalls 001, 002 and 006 discharge to the Ohio River and Outfalls 003, 004 and 005 discharge to Big Sewickley Creek.

Approve	Deny	Signatures	Date
X		Curtis Holes, P.E. / Environmental Engineer	May 14, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	May 14, 2025

Summary of Review

There are two Leetsdale Borough stormwater sewer line tie-ins downgradient from Outfall 002 sampling location. Additional stormwater from offsite locations, including the neighboring K&K Gourmet Meats, Inc. at 300 Washington Street, contributes to the discharge from Outfalls 003, 004, 005 and 006.

WQM 0274219 was originally issued on April 13, 1976 and amended on May 1, 1989; although versions of the system have been in operation for over 50 years. The current system consists of a neutralization tank, flocculation tank, two parallel clarifiers, oil skimmer tank and sludge press. MYCELX filters were added to the system in 2010 to address oil and grease violations at the facility.

The facility's SWPPP, dated December 2020, contains a list of significant spills and leak at the facility spanning 2003. Below is a summary of significant spills and leaks that occurred during the previous permit cycle (November 1, 2016 through December 2020).

- May 17, 2016 – Citizen's complaint of an oil sheen reportedly observed on the Ohio River. The Department inspected the facility.
- June 23, 2018 – An oily sheen was observed at Outfall 002. The oily sheen dissipated rapidly, and no actions were taken. The source of the oily sheen was unknown, and the Department was notified.
- July 28, 2018 – An oily sheen was observed at Outfall 001. Absorbent booms were deployed, and the Department was notified. The source of the oily sheen was unknown.
- August 3, 2018 – An oily sheen was observed at Outfall 001. Absorbent booms were deployed, and the Department was notified. The source of the oily sheen was unknown.
- November 24, 2018 – An oily sheen was observed at Outfall 001. The M-1 manhole was identified as the source. Absorbent booms were deployed on the Ohio river and in M-1 manhole. The Department was notified.
- December 15, 2018 – An oily sheen observed at Outfall 001. A leak at the diesel tank was identified to be the source. Absorbent booms were deployed on the Ohio River and in the stormwater drains. The Department was notified.
- December 28, 2018 – An oily sheen was observed at Outfall 001. The source was identified to be generated by an on-site contractor. Storm drains were inspected and absorbent pads and oil dry were deployed. The Department was notified.
- January 9, 2019 – An oily sheen was observed at Outfall 001. Excessive flow through M-1 manhole caused a bypass of the Mycelex filter, which was identified as the source. The flow was stopped, and absorbent booms were deployed on the Ohio River and in M-1 manhole. The Department was notified.
- January 23, 2019 – An oily sheen was observed at Outfall 001. The Department was notified, and the source of the sheen was unknown.
- February 6, 2019 – Discoloration was observed at Outfall 001. Absorbent booms were deployed, and the Department was notified. The source of discoloration was unknown.
- November 13, 2019 – The hot well overflowed into the Ohio River through Outfall 001. The Department was notified.
- August 18, 2020 – The hot well overflowed into the Ohio River through Outfall 001. The Department was notified.

On May 1, 2024, Ben Blasingame provided an update on Libertas Cooper via electronic mail. *On behalf of Libertas Cooper, LLC (Hussey Copper), I understand you are in the processing of developing renewed NPDES Permit PA0000566 based on the renewal application that was submitted on April 30, 2021. As part of the permit development, we'd like to share with you some planned facility changes that will impact how wastewater is managed and treated at the facility. Based on a review of the facilities process, Hussey is planning modifications to the wastewater collection and treatment at the facility. I've appended an updated process flow diagram that reflects the following changes:*

1. *Hussey will install an above ground oil water separator at the M-1 Motor room to treat water that is discharged at Outfall 001.*
2. *Hussey will install an above ground oil water separator at the Outfall 002 sump to treat water that is discharged at Outfall 002.*
3. *Hussey will install pumps into existing wells to help eliminate the contribution of groundwater into the stormwater sewers. The pumped groundwater will be conveyed to the wastewater treatment plant, will be treated, and discharge via Outfall 101 and 001.*
4. *Hussey will install a caustic addition at the CL, F-21, and F-31 sumps. These sumps collect process wastewater and Hussey wants to neutralize the wastewater prior to it being conveyed to the wastewater treatment system.*

In addition to those changes, Hussey is developing a plan to recycle effluent from the facility's wastewater treatment plant and use it as the source water for the facility's operations. A separate line diagram has been provided to show the modifications to influent, recycle, and proposed discharge at Outfall 101 and 001.

Summary of Review

We understand that some of the above changes may require additional correspondence with you including the potential for a Water Quality Management Permit Application. Please advise on any additional information you may need or if you would like to setup a meeting to discuss.

On April 22, 2025, updated sample data was provide on parameters that did not achieve Department Target QLs and WQBELs were being recommended.

The facility has no open violations.

The permittee complied with the Act 14 Notification requirements.

It is recommended that a draft NPDES permit be issued in response to the renewal application.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.34
Latitude	40º 34' 29.6"	Longitude	-80º 13' 26.4"
Quad Name	Ambridge	Quad Code	1404
Wastewater Description:	ELG regulated process wastewater; non-contact cooling water; & stormwater runoff		

Receiving Waters	Ohio River	Stream Code	32317
NHD Com ID	99682648	RMI	965.7
Drainage Area	19,500	Yield (cfs/mi^2)	0.24615
Q_{7-10} Flow (cfs)	4,800	Q_{7-10} Basis	USGS StreamStats; US Army COE min. flow
Elevation (ft)	682 (Normal Pool Elevation)	Slope (ft/ft)	0.0001
Watershed No.	20-G	Chapter 93 Class.	WWF
Existing Use	**WWF**	Existing Use Qualifier	-
Exceptions to Use	Navigation	Exceptions to Criteria	See ORSANCO PCS
Assessment Status	Not Attaining Use		
Cause(s) of Impairment	PCB; Dioxin		
Source(s) of Impairment	Unknown		
TMDL Status	**Approved 4/9/2001**	Name	**Ohio River**

Receiving Waters	Big Sewickley Creek	Stream Code	36596
NHD Com ID	99682390	RMI	0.25
Drainage Area	30.3	Yield (cfs/mi^2)	0.017162
Q_{7-10} Flow ($ft^3/_{sec}$)	0.52	Q_{7-10} Basis	USGS StreamStats

Nearest Downstream Public Water Supply Intake		Nova Chemicals Beaver Valley Plant	
PWS Waters	Ohio River	Flow at Intake (cfs)	4,800
PWS RMI	951.5	Distance from Outfall (mi)	14.12

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	101 (Discharge via Outfall 001)	Design Flow (MGD)	0.259
Latitude		Longitude	
Quad Name	Ambridge	Quad Code	1404

Wastewater Description: Treated process wastewater from direct chill caster, annealing furnaces, cleaning lines, and hot rolling mill.

Stormwater Outfalls

Outfall 002 Lat. 40° 34′ 17.4″ Long. -80° 13′ 26.4″ RMI 966 Stream Ohio River
Source and Characteristics: Stormwater runoff from the south end of the facility.

Outfall 003 Lat. 40° 34′ 28.2″ Long. -80° 13′ 17.8″ RMI 0.3 Stream Big Sewickley Creek
Source and Characteristics: Stormwater runoff from employee parking lot, mill scale loading area roll-off boxes.

Outfall 004 Lat. 40° 34′ 26.7″ Long. -80° 13′ 15.7″ RMI 0.3 Stream Big Sewickley Creek
Source and Characteristics: Stormwater runoff from employee parking lot, mill scale loading area roll-off boxes.

Outfall 005 Lat. 40° 34′ 25.5″ Long. -80° 13′ 14″ RMI 0.3 Stream Big Sewickley Creek
Source and Characteristics: Stormwater runoff from employee parking lot, mill scale loading area roll-off boxes.

Outfall 006 Lat. 40° 34′ 28.7″ Long. -80° 13′ 27.8″ RMI 965.7 Stream Ohio River
Source and Characteristics: Stormwater runoff from the Air Emission Control System (baghouse) at northern end of the building.

Treatment Facility Summary				
Treatment Facility Name: Leetsdale Plant				
WQM Permit No.	**Issuance Date**			
0274219 -A4	10/25/21			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Industrial			No Disinfection	0.25
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
1.1	N/A	Not Overloaded		

Changes Since Last Permit Issuance: WQM 0274219 was originally issued on April 13, 1976, and amended on May 1, 1989; although versions of the system have been in operation for over 50 years. The treatment system consists of a neutralization tank, flocculation tank, two parallel clarifiers, oil skimmer tank and sludge press. MYCELX filters were added to the system in 2010 to address oil and grease violations at the facility. In 2016, the WQM permit was amended to include the MYCELX modification.

In 2021, the treatment system was expanded after the MYCLEX filter. Wastewater flow from the MYCLEX filter enters an Equalization Tank then discharges via the transfer pumps, which drives the water through two (2) multi-bag vessels with the ability to either recycle or discharge via Outfall 101.

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from February 1, 2024 to December 31, 2024)

Parameter	Limit	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Flow (MGD) Average Monthly	**Report**	1.38	1.78	1.52	1.37	1.29	1.44	1.521	1.37	1.43	1.92	1.65
Flow (MGD) Daily Maximum	**Report**	1.93	1.93	1.71	1.63	1.61	1.93	2.248	1.69	2.61	2.13	1.97
pH (S.U.) Minimum	**6.0**	7.46	7.24	7.40	7.44	7.81	7.3	7.6	7.5	7.3	7.62	7.59
pH (S.U.) Maximum	**9.0**	8.76	8.04	8.19	7.69	8.84	8.5	9.0	8.6	7.9	8.21	8.01
TRC (mg/L) Average Monthly	**0.5**	< 0.01	0.03	0.04	0.03	0.03	0.03	< 0.02	0.04	0.04	< 0.02	0.03
TRC (mg/L) Daily Maximum	**1.0**	< 0.01	0.03	0.05	0.03	0.03	0.03	< 0.02	0.04	0.04	0.02	0.03
Temperature (ºF) Instantaneous Maximum	**110**	71.8	73.7	79.7	81.6	81	82	80	78	79	72.8	68.6
TSS (mg/L) Average Monthly	**30.0**	< 6.8	< 7.6	< 6.2	< 5.0	< 5.0	< 6.1	< 9.4	< 5.0	< 6.5	8.8	< 8.0
TSS (mg/L) Daily Maximum	**60.0**	12.0	15.0	11.0	< 5.0	< 5.0	6.0	18.5	< 5.0	8.4	13.5	14.0
Oil and Grease (mg/L) Average Monthly	**15.0**	< 5.5	< 5.4	< 5.1	< 5.4	< 5.3	< 5.2	< 5.1	< 5.2	< 5.2	< 5.6	< 5.2
Oil and Grease (mg/L) Daily Maximum	**30.0**	< 5.7	< 5.4	< 5.1	< 5.5	< 5.4	< 5.2	< 5.1	< 5.3	< 5.2	< 5.8	< 5.2
Total Copper (mg/L) Average Monthly	**0.4**	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2
Total Copper (mg/L) Daily Maximum	**0.8**	0.3	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.3	0.3

DMR Data for Outfall 002 (from February 1, 2024 to December 31, 2024)

Parameter	Benchmark	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
pH (S.U.) Maximum	**Report**	7.81	7.04	5.42	6.99	7.41	7.06	8.14	7.60	7.64	7.85	8.01
COD (mg/L) Daily Maximum	**120**	**244**	50.7	15.0	56.6	30.8	47.7	106	14.3	93.4	11.7	42.1
TSS (mg/L) Daily Maximum	**100**	47.5	17.5	15.5	82.7	28.0	64.0	35.5	18.0	28.5	< 5.0	5.5
Oil and Grease (mg/L) Daily Maximum	**30**	< 5.4	< 5.3	< 5.3	< 5.4	< 5.5	< 5.4	5.3	< 5.2	< 5.6	< 5.2	< 5.1
Total Aluminum (mg/L) Daily Maximum	**0.75**	0.409	0.252	**1.49**	**1.01**	< 0.200	0.436	< 0.200	0.326	< 0.200	< 0.200	< 0.200
Total Copper (mg/L) Daily Maximum	**1.28**	**1.88**	**5.59**	**84.1**	**5.30**	**6.35**	0.972	0.573	1.05	0.743	0.330	0.996
Total Iron (mg/L) Daily Maximum	**1.5**	0.486	0.514	**2.60**	**1.96**	**1.86**	**1.53**	0.602	0.457	0.404	0.258	0.372
Total Lead (mg/L) Daily Maximum	**0.0082**	**0.0128**	**0.0165**	**0.0377**	**0.0931**	**0.00619**	**0.0165**	0.00313	0.00553	0.00372	0.00135	0.00671
Total Nickel (mg/L) Daily Maximum	**0.55**	< 0.0160	0.0124	0.119	0.0311	0.0178	< 0.0160	< 0.0065	0.00846	< 0.0065	< 0.0065	< 0.0065
Total Zinc (mg/L) Daily Maximum	**1.02**	0.133	0.248	0.665	0.395	0.067	0.0765	0.090	0.097	0.092	0.045	0.271

DMR Data for Outfall 004 (from February 1, 2024 to December 31, 2024)

Parameter	Benchmark	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
pH (S.U.) Maximum	**Report**	8.30	8.21	8.33	8.07	8.16	7.94	8.04	8.16	8.01	8.01	7.74
COD (mg/L) Daily Maximum	**120**	**483**	**427**	35.4	72.5	34.0	96.6	216	56.5	63.6	25.8	105
TSS (mg/L) Daily Maximum	**100**	55.5	91.5	< 5.0	98.0	< 5.00	89.0	261	58.0	23.5	< 5.0	11.0
Oil and Grease (mg/L) Daily Maximum	**30**	< 5.2	**114**	< 5.3	< 5.3	< 5.4	< 5.4	9.3	< 5.2	< 5.6	< 5.3	< 5.3
Total Aluminum (mg/L) Daily Maximum	**0.75**	0.497	0.727	< 0.200	**1.41**	< 0.200	0.619	**2.92**	**0.818**	0.602	< 0.200	< 0.200
Total Copper (mg/L) Daily Maximum	**1.28**	1.11	**1.97**	0.144	1.06	0.232	**1.87**	**2.81**	0.810	0.667	0.0658	0.0915
Total Iron (mg/L) Daily Maximum	**1.5**	0.475	1.23	< 0.200	2.10	0.392	0.734	**4.37**	1.20	0.664	< 0.200	< 0.200

DMR Data for Outfall 004 (from February 1, 2024 to December 31, 2024) (cont.)

Parameter	Benchmark	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Total Lead (mg/L) Daily Maximum	**0.0082**	**0.0091**	0.00860	< 0.0008	**0.0111**	0.00180	**0.0190**	**0.0197**	0.00612	0.00326	**< 0.800**	**< 4.00**
Total Nickel (mg/L) Daily Maximum	**0.55**	< 0.0160	0.00990	< 0.0065	0.0123	< 0.0065	< 0.0160	0.0211	0.00717	< 0.0065	< 0.0065	< 0.0065
Total Zinc (mg/L) Daily Maximum	**1.02**	0.0930	0.128	0.013	0.105	0.017	0.100	0.364	0.074	0.047	0.013	< 0.100

DMR Data for Outfall 101 (from February 1, 2024 to December 31, 2024)

Parameter	Limit	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Flow (MGD) Average Monthly	**Report**	0.11	0.18	0.17	0.21	0.20	0.21	0.21	0.19	0.12	0.13	0.15
Flow (MGD) Daily Maximum	**Report**	0.23	0.24	0.23	0.33	0.27	0.26	0.29	0.27	0.21	0.21	0.20
pH (S.U.) Minimum	**7.5**	8.99	9.15	9.23	8.81	9.32	9.38	9.1	9.3	9.3	9.39	9.36
pH (S.U.) Daily Maximum	**10.0**	9.48	9.38	9.39	9.54	9.66	9.75	9.9	9.6	9.6	9.68	9.67
TSS (lbs/day) Average Monthly	**90**	< 5.5	< 9	< 7.1	< 9	< 9	< 10	< 10	< 9	< 6	< 6	< 6
TSS (lbs/day) Daily Maximum	**189**	< 8.5	< 9	< 8.3	< 12	11	< 16	11	< 10	< 7	8	8
TSS (mg/L) Average Monthly	**12.0**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.8	< 5.1	< 5.0	< 5.0	< 5.1	< 5.0
TSS (mg/L) Daily Maximum	**15.0**	< 5.0	< 5.0	< 5.0	< 5.0	5.0	< 8.9	5.5	< 5.0	< 5.0	5.5	5.0
Oil and Grease (lbs/day) Average Monthly	**57**	< 5.4	< 11	< 9	< 8	< 11	< 9	< 10	< 9	< 8	< 6	< 5
Oil and Grease (lbs/day) Daily Maximum	**105**	< 7.9	< 14	< 12	10	< 13	< 10	< 12	< 13	< 10	< 8	< 8
Oil and Grease (mg/L) Average Monthly	**10.0**	< 5.6	< 5.6	< 5.7	< 5.6	< 5.5	< 5.1	< 5.2	< 5.4	< 5.5	< 5.7	< 5.3
Oil and Grease (mg/L) Daily Maximum	**10.0**	< 5.7	< 5.7	< 6.0	< 5.8	< 5.6	< 5.3	< 5.4	< 5.7	< 5.6	< 6.0	< 5.6
Total Chromium (lbs/day) Average Monthly	**0.229**	< 0.004	< 0.005	< 0.003	< 0.004	< 0.004	< 0.004	< 0.004	< 0.003	< 0.002	< 0.002	< 0.00249

DMR Data for Outfall 101 (from February 1, 2024 to December 31, 2024) (cont.)

Parameter	Limit	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24
Total Chromium (lbs/day) Daily Maximum	**0.561**	< 0.007	< 0.008	< 0.003	< 0.005	< 0.005	< 0.007	< 0.004	< 0.004	< 0.003	< 0.003	< 0.00328
Total Chromium (mg/L) Average Monthly	**0.15**	< 0.004	< 0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Total Chromium (mg/L) Daily Maximum	**0.37**	< 0.004	< 0.004	< 0.002	< 0.002	< 0.002	< 0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Total Copper (lbs/day) Average Monthly	**1.59**	0.11	0.27	0.19	0.19	0.34	0.17	0.15	0.17	0.11	0.21	0.19
Total Copper (lbs/day) Daily Maximum	**3.034**	0.258	0.335	0.245	0.277	0.0532	0.308	0.216	0.204	0.190	0.339	0.244
Total Copper (mg/L) Average Monthly	**0.61**	0.08	0.15	0.14	0.10	0.18	0.10	0.08	0.10	0.09	0.17	0.15
Total Copper (mg/L) Daily Maximum	**1.28**	0.15	0.19	0.18	0.12	0.25	0.17	0.14	0.11	0.13	0.21	0.19
Total Lead (lbs/day) Average Monthly	**0.398**	< 0.001	< 0.001	< 0.001	< 0.004	< 0.001	< 0.035	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Total Lead (lbs/day) Daily Maximum	**0.669**	< 0.002	< 0.002	< 0.001	< 0.012	< 0.002	0.169	< 0.003	< 0.002	< 0.001	< 0.001	< 0.001
Total Lead (mg/L) Average Monthly	**0.13**	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.02	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Lead (mg/L) Daily Maximum	**0.28**	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	0.08	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001
Total Nickel (lbs/day) Average Monthly	**1.40**	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Total Nickel (lbs/day) Daily Maximum	**2.12**	< 0.03	< 0.03	< 0.01	< 0.02	< 0.01	< 0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Nickel (mg/L) Average Monthly	**0.37**	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Nickel (mg/L) Daily Maximum	**0.55**	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Zinc (lbs/day) Average Monthly	**1.02**	0.02	< 0.02	< 0.01	< 0.03	< 0.02	< 0.08	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01
Total Zinc (lbs/day) Daily Maximum	**2.50**	< 0.03	< 0.04	< 0.02	0.08	< 0.02	< 0.35	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02
Total Zinc (mg/L) Average Monthly	**0.42**	< 0.02	< 0.01	< 0.01	< 0.02	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	**1.02**	< 0.02	< 0.02	< 0.01	0.05	< 0.01	< 0.20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Compliance History

Effluent Violations for Outfall 101, from: September 1, 2021 To: December 31, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Copper	05/31/22	Daily Max	4.055	lbs/day	3.034	lbs/day
Total Copper	05/31/22	Daily Max	1.72	mg/L	1.28	mg/L

Summary of Inspections: The Department, Shawn Bell, last inspected the facility on December 8, 2023 with no violation noted.

Other Comments: None

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	1.34
Latitude	40º 34' 25"	**Longitude**	-80º 13' 35"

Wastewater Description: IW Process Effluent with ELG and stormwater.

Outfall 001 (1.03 MGD) discharges treated process wastewater, non-contact cooling water (NCCW), and stormwater runoff from the north end of the facility including roof drains and surface runoff.

Technology-Based Effluent Limitations – Outfall 001

Although Outfall 001 includes three distinct types of wastewater; an internal monitoring point has been established for the treated process wastewater(s) only. Monitoring requirements applicable to NCCW and stormwater are applied at the Outfall 001 discharge pipe. For NCCW, minimum requirements include monitoring for flow, temperature, and pH in accordance with the Department's Permit Writers' Manual (362-0400-001). For stormwater, those requirements include monitoring for pH, total suspended solids, and oil & grease.

Previous effluent limitations and monitoring requirements were imposed for flow, temperature, oil and grease, copper, TRC, TSS, and pH. The previous limits will remain in effect in accordance with the Department's Anti-backsliding rules.

Flow monitoring requirements are in accordance with PA Code, Title 25, Chapter 92a.61(d)(1).

Section 304(b) of the Federal Clean Water Act (CWA) requires technology limits to be considered. A temperature limitation of 110ºF is imposed to protect public safety in accordance with the Department's *Implementation Guidance for Temperature Criteria,* DEP-ID 391-2000-017.

Oil and Grease limitations are imposed in accordance with the regulations in the Pennsylvania Code Title 25, Chapter 95, Section 95.2(2)(ii). The source of the oil is the industrial wastewater treatment facility. Oil sheens have been observed at Outfall 001 during past site inspections. A Part C condition is included in the permit stating that at no time shall a discharge cause a film or sheen upon or discoloration of waters of the Commonwealth or adjoining shoreline.

A limit for Total Residual Chlorine is imposed because the facility uses chemical additives containing chlorine compounds. Total Residual Chlorine limitations are in accordance with the regulations in the Pennsylvania Code Title 25, Chapter 92a.48(b)(2).

The previous permit contained effluent limitations for copper at Outfall 001. These copper limits will remain in the permit due to anti-backsliding and the widespread presence of copper scrap and residues at the facility. The Department has requested that the company to continue to evaluate best management practices (BMPs) to eliminate the occurrence of copper coming into contact with stormwater.

An effluent limit for Total Suspended Solids (TSS) has been added to the permit following the visual observance of suspended solids in the effluent at Outfall 001. The Department considers the visible presence of solids to be a serious issue which should be corrected and monitored closely. Accordingly, the sampling frequency for TSS will be set at once per week.

pH limitations are in accordance with the regulations in the in the Pennsylvania Code Title 25, Chapter 95.2(1).

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS consistent with an EPA memorandum that provides guidance to states for addressing PFAS discharges. PFAS are a family of thousands of synthetic organic chemicals that contain a chain of strong carbon-fluorine bonds. Many PFAS are highly stable, water- and oil-resistant, and exhibit other properties that make them useful in a variety of consumer products and industrial processes. PFAS are resistant to

biodegradation, photooxidation, direct photolysis, and hydrolysis and do not readily degrade naturally; thus, many PFAS accumulate over time. According to the United States Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), the environmental persistence and mobility of some PFAS, combined with decades of widespread use, have resulted in their presence in surface water, groundwater, drinking water, rainwater, soil, sediment, ice caps, outdoor and indoor air, plants, animal tissue, and human blood serum across the globe. ATSDR also reported that exposure to certain PFAS can lead to adverse human health impacts Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as potentially significant pollutants of concern.

In accordance with Section II.I of DEP's "Standard Operating Procedure (SOP) for Clean Water Program – Establishing Effluent Limitations for Individual Industrial Permits" [SOP No. BCW-PMT-032] and under the authority of 25 Pa. Code § 92a.61(b), DEP has determined that monitoring for a subset of common/well-studied PFAS including Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorobutanesulfonic acid (PFBS), and Hexafluoropropylene oxide dimer acid (HFPO-DA) is necessary to help understand the extent of environmental contamination by PFAS in the Commonwealth and the extent to which point source dischargers are contributors. SOP BCW-PMT-032 directs permit writers to consider special monitoring requirements for PFOA, PFOS, PFBS, and HFPO-DA in the following instances:

a. If sampling that is completed as part of the permit renewal application reveals a detection of PFOA, PFOS, HFPO-DA or PFBS (any of these compounds), the application manager will establish a quarterly monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds) in the permit.

b. If sampling that is completed as part of the permit renewal application demonstrates non-detect values at or below the Target QLs for PFOA, PFOS, HFPO-DA and PFBS (all of these compounds in a minimum of 3 samples), the application manager will establish an annual monitoring requirement for PFOA, PFOS, HFPO-DA and PFBS in the permit.

c. In all cases the application manager will include a condition in the permit that the permittee may cease monitoring for PFOA, PFOS, HFPO-DA and PFBS when the permittee reports non-detect values at or below the Target QL for four consecutive monitoring periods for each PFAS parameter that is analyzed. Use the following language: The permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in 4 consecutive monitoring periods indicate non-detects at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, permittees should enter a No Discharge Indicator (NODI) Code of "GG" on DMRs.

The proposed technology based effluent limitations are shown in Table 1.

Table 1: Technology-Based Effluent Limitations and Monitoring Requirements – Outfall 001

Parameter	Mass		Concentration			Units
	Monthly Average	Daily Max.	Instant. Minimum	Monthly Average	Daily Maximum	
Flow	Report	Report	---	---	---	MGD
Temperature	---	---	---	---	110 (IMAX)	°F
Oil & Grease	---	---	---	15.0	30.0	mg/L
Total Residual Chlorine	---	---	---	0.5	1.0	mg/L
Copper, Total	---	---	---	0.4	0.8	mg/L
Total Suspended Solids	---	---	---	30	60	mg/L
pH	---	---	6.0	---	9.0 (IMAX)	S.U.
PFOA	---	---	---	---	Report	ng/L
PFOS	---	---	---	---	Report	ng/L
PFBS	---	---	---	---	Report	ng/L
HFPO-DA	---	---	---	---	Report	ng/L

Water Quality Based Effluent Limits – Outfall 001

Toxics Management Analysis

The Department's Toxics Management Spreadsheet (TMS) was utilized to facilitate calculations necessary for completing a reasonable potential analysis and determine Water Quality-Based Effluent Limitations (WQBELs) for discharges containing toxic pollutant concentrations. TMS combines the functionality of two (2) of the Department's analysis tools, Toxics Screening Analysis Spreadsheet and PENTOXSD water quality model.

DEP's procedures for evaluating reasonable potential are as follows:

1. For IW discharges, the design flow to use in modeling is the average flow during production or operation and may be taken form the permit application.

2. Perform a Toxics Screening Analysis to identify toxic pollutants of concern. All toxic pollutants, as reported in the permit application or on DMRs, are modeled by the TMS to determine the parameters of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion].

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. Establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

    - For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Discharges from Outfall 001 are evaluated based on concentrations reported on the application concentration and updated sample data as inputs into the TMS. The remaining parameters of concern were taken from the NPDES permit application and subsequent submissions. A summary of TMS Inputs is contained in Table 2 below.

Table 2. TMS Inputs

Parameter	Value
Discharge Inputs	
Facility	Hussey Copper
Evaluation Type	Industrial
NPDES Permit No.	PA0000566
Wastewater Description	Treated Industrial Wastewater
Outfall ID	001
Design Flow (MGD)	1.34
Hardness ($^{mg}/_{L}$)	329
pH (S.U.)	8.76
Partial Mix Factors	Unknown – Calculated by TMS
Complete Mix Times	
$Q_{7\text{-}10}$ (min)	
Q_h (min)	

Table 2. TMS Inputs (Cont.)

Stream Inputs	
Receiving Surface Water	Ohio River
Number of Reaches to Model	1
Stream Code	032317
RMI	965.7
Elevation (ft)	682/682*
Drainage Area (mi^2)	19,500/20,000*
Slope (ft/ft)	
PWS Withdrawal (MGD)	
Apply Fish Criteria	Yes
Low Flow Yield (cfs/mi^2)	
Flows	
Stream (cfs)	4,800/4,800*
Tributary (cfs)	N/A
Width (ft)	
Stream Hardness ($^{mg}/_{L}$)	
Stream pH (S.U.)	

***** Denotes discharge location/downstream location values.

Table 3 below is a summary of the recommendations of the TMS at Outfall 001. Analysis Report from the TMS run is included in Attachment B.

Table 3: TMS Model WQBELs

Parameter	Mass Load (lbs/day)		Concentration Limit ($^{\mu g}/_{L}$)	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Copper	1.65	2.57	0.147	0.230
Total Boron	Report	Report	Report	Report
Acrylamide($^{\mu g}/_{L}$)[1]	0.057	0.088	5.11	7.97

1) An evaluation of chemical additives verified that Polyacrylamide is a constituent of a polymer chemical additive in use at the facility. The Acrylamide WQBELs will be imposed.

Analytical EPA Test Method 8316 – Acrylamide, Acrylonitrile, and Acrolein by High Performance Liquid Chromatography has a method detection limit (MDL) of 10 $^{\mu g}/_{L}$. Since the recommended WQBEL for Acrylamide is below the most stringent test method MDL, a Part C permit condition will be included requiring the permittee to analyze the Acrylamide concentration using EPA Method 8316. To demonstrate compliance, the reported concentration shall be less than 10.0 $^{\mu g}/_{L}$ or non-detectable using this method.

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

Thermal WQBELs are evaluated using the Department's program called "Thermal Discharge Limit Calculation Spreadsheet" created with Microsoft Excel for Windows. The program calculates temperature WLAs through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream. In Case 2, intake water is from a source other than the receiving stream (e.g., municipal water supply). The determination of which case applies to a given discharge is determined by the input data which include the receiving stream flow rate ($Q_{7\text{-}10}$ or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life-uses—cold water fishes, warm water fishes and trout stocking—the program generates monthly and semi-monthly limits for each use. The Department selects the output that corresponds to the aquatic life-use of the receiving stream and consequently which limits apply to the discharge. Temperature WLAs are bounded by an upper limit of 110°F (as discussed in Technology-Based Limitations) for the safety of sampling personnel and anyone who may come into contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended by the program.

The Department's *Implementation Guidance for Temperature Criteria* directs permit writers to assume instantaneous complete mixing of the discharge with the receiving stream when calculating thermal effluent limits unless adverse factors exist. One such factor listed in the guidance is that the "discharge is to a receiving water that is very wide, resulting in restricted dispersion of the plume, and horizontal stratification of the plume."

Discharges from Outfall 001 are classified under Case 2 because the facility's water is obtained from the well water and public water supply water if needed. The flow rates used for modeling are 5.37 MGD, which is the maximum flow of the facility's heated effluent sources (NCCW) and 4,800 cfs, which is the Q_{7-10} from US Army Corp of Engineers. The results of the thermal analysis, included in Attachment C, indicate that water quality based thermal limits are not necessary for protection of aquatic life, therefore, 110.0°F provides for protection of sampling personnel at Outfall 001 as summarized below in Table 4.

Table 4: Outfall 001 WQBELs for Temperature

Date	WWF Daily WLA (°F)
Jan 1-31	110.0
Feb 1-29	110.0
Mar 1-31	110.0
Apr 1-15	110.0
Apr 16-30	110.0
May 1-15	110.0
May 16-30	110.0
Jun 1-15	110.0
Jun 16-30	110.0
Jul 1-31	110.0
Aug 1-15	110.0
Aug 16-31	110.0
Sep 1-15	110.0
Sep 16-30	110.0
Oct 1-15	110.0
Oct 16-31	110.0
Nov 1-15	110.0
Nov 16-30	110.0
Dec 1-31	110.0

WQM 7.0 Model

In general, the WQM 7.0 Model is run if the maximum BOD_5/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports BOD_5 concentration of 6 mg/L, therefore, WQM 7.0 Model is not required to be run.

Total Residual Chlorine (TRC)

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 discharge chlorine demands for the receiving stream, 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 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 then proposed. The results of the modeling, included in Attachment D, indicate that the BAT limit is protective of water quality standards.

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 *(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (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 of Outfall 001.

The current effluent limitations at Outfall 001 are summarized in Table 5.

Table 5: Current Effluent limits and Monitoring Requirements for Outfall 001

Parameter	Mass Loading ($^{lbs.}/_{day}$)		Concentration ($^{mg}/_{L}$)		
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum
Flow (MGD)	Report	Report	-	-	-
TSS	-	-	30.0	60.0	-
Oil & Grease	-	-	15.0	30.0	-
TRC	-	-	0.5	1.0	-
Total Copper	-	-	0.4	0.8	-
Temperature (°F)	-	-	-	-	110.0
pH (S.U.)	-	-	6.0 (Instant. Minimum)	-	9.0

Interim Effluent Limitations and Monitoring Requirements for Outfall 001

Interim effluent limits applicable at Outfall 001 (permit effective date to three (3) years from permit effective date) are summarized in Table 6.

Table 6: Interim effluent limits and monitoring requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Temperature (ºF)	—	—	—	—	110	25 Pa. Code § 93.7
Oil & Grease	—	—	15.0	30.0	—	25 Pa. Code § 95.2(2)(ii)
Total Residual Chlorine	—	—	0.5	1.0	—	25 Pa. Code § 92a.48(b)(2)
Copper, Total	—	—	0.4	0.8	—	WQBEL
Total Suspended Solids	—	—	30.0	60.0	—	40 CFR § 122.44
pH (S.U.)	—	—	6.0 (Instant. Min)	—	9.0	25 Pa. Code § 95.2
Total Boron	—	—	Report	Report	—	WQBEL
Acrylamide($^{\mu g}/_{L}$)	—	—	Report	Report	—	WQBEL
PFOA ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
PFOS ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
PFBS ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
HFPO-DA ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)

Final Effluent Limitations and Monitoring Requirements for Outfall 001

Final effluent limits applicable at Outfall 001 (three (3) years from permit effective date to permit expiration date) are the more stringent of TBELs, regulatory effluent standards, WQBELs, previously permitted effluent limits and the monitoring requirements are summarized in Table 7.

Table 7: Final effluent limits and monitoring requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Temperature (ºF)	—	—	—	—	110	25 Pa. Code § 93.7
Oil & Grease	—	—	15.0	30.0	—	25 Pa. Code § 95.2(2)(ii)
Total Residual Chlorine	—	—	0.5	1.0	—	25 Pa. Code § 92a.48(b)(2)
Copper, Total	—	—	0.147	0.230	—	WQBEL
Total Suspended Solids	—	—	30.0	60.0	—	40 CFR § 122.44
pH (S.U.)	—	—	6.0 (Instant. Min)	—	9.0	25 Pa. Code § 95.2
Total Boron	—	—	Report	Report	—	WQBEL
Acrylamide($^{\mu g}/_{L}$)	—	—	5.1	8.0	—	WQBEL
PFOA ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
PFOS ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
PFBS ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)
HFPO-DA ($^{ng}/_{L}$)	—	—	—	—	Report	25 Pa. Code § 952.a.61(b)

Monitoring requirements for the interim and final effluent limits are based on the previous permit's monitoring requirements for the facility and displayed in Table 8 below.

Table 8: Monitoring Requirements for Outfall 001

Parameter	Sample Type	Minimum Sample Frequency
Flow	Measured	1/week
Temperature	I-S	1/week
Oil & Grease	Grab	2/month
Total Residual Chlorine	Grab	2/month
Copper, total	Grab	2/month
Total Suspended Solids	Grab	1/week
pH (S.U.)	Grab	1/week
Total Boron	Grab	2/month
Acrylamide	Grab	2/month
PFOA	Grab	1/year
PFOS	Grab	1/year
PFBS	Grab	1/year
HFPO-DA	Grab	1/year

Development of Effluent Limitations

Outfall No.	101	**Design Flow (MGD)**	0.259
Latitude	40º 34' 25"	**Longitude**	-80º 13' 35"
Wastewater Description:	Treated process wastewater from direct chill caster, annealing furnaces, cleaning lines, and hot rolling mill.		

Internal Monitoring Point (IMP) 101 discharges treated process wastewater from Hussey's various copper production lines including direct chill casters, annealing furnaces, cleaning lines and hot rolling mill. Whenever permit effluent limitations or standards are impractical or infeasible to impose at the point of discharge (i.e. Outfall 001), effluent limitations or standards for discharges of pollutants may be imposed on internal waste streams prior to mixing with other waste streams or cooling water streams. The authority to designate IMPs is provided at 40 CFR 122.45(h).

Treatment technologies applied to discharges from IMP 101 employ various technologies including neutralization, flocculation, sedimentation, MYCELX filtration and sludge dewatering. The treatment plant discharge is continuous. Treated wastewater is discharged to the Ohio River via Outfall 001.

The discharges from IMP 101 are subject to the *Copper Forming Point Source Category (40 CFR Part 468)* and the *Metal Molding and Casting Point Source Category (40 CFR Part 464).* The effluent limitations developed for the NPDES permit are based upon Best Practicable Control Technology (BPT), Best Available Control Technology (BAT), and New Source Performance Standards (NSPS). Best Conventional Technology (BCT) has been reserved for all processes in the applicable Effluent Limitation Guidelines; therefore, BCT is considered equivalent to BPT.

Section 301(b)(1) of the Clean Water Act requires compliance with Best Practicable Control Technology (BPT) by July 1, 1977.

Section 301(b)(2)(E) of the Clean Water Act requires compliance with Best Conventional Pollutant Control Technology (BCT) by March 31, 1989.

Section 301(b)(2)(C) of the Clean Water Act requires compliance with Best Available Technology (BAT) by March 31, 1989.

In accordance with 40 CFR 122.2, New Source Performance Standards (NSPS) are applicable to discharges which commenced after promulgation of standards of performance under Section 306 of the Clean Water Act. In this case, standards of performance for the *Copper Forming Point Source Category* were promulgated on August 15, 1983; and for the *Metal Molding and Casting Point Source Category* on October 30, 1985. Therefore, activities such as the direct chill casting lines DC3 and DC4, as well as annealing furnace AF31, which were installed in 1990; are subject to NSPS.

All applicable federal ELGs are included in the Reference Section of this report.

The Hussey facility operates multiple production lines including Annealing Furnaces 21 and 31 (AF-21 & AF-31); Cleaning Lines (CL-1); Hot Rolling Mill 1 (M-1); and Direct Chill Casters 1, 2, 3 and 4 (DC-1, DC-2, DC-3, & DC-4). Direct chill casting lines DC3 and DC4, as well as annealing furnace AF31 are considered new sources because they were installed in 1990 and are subject to NSPS. The remaining production lines are subject to both BPT and BAT guidelines.

Table 9 includes production and flow rates for each of Hussey's production lines over the last five years. A complete summary of production data for the last five years of operation is included in the reference section of this report.

Table 9: Production and Flow Data (5-Years) – IMP 101				
Production Line	**Wastewater Type**	**Wastewater Flow Rate (MGD)**	**Process Production Rate (lb/day)**	
		Average Daily	**Average Daily**	**Maximum Daily**
Annealing Furnace 21 (AF-21)	Furnace Quench (FQ) & Pickling Rinse (PR)	0.019 0.006	120,316	140,730
Annealing Furnace 31 (AF-31)	Furnace Quench (FQ) & Pickling Rinse (PR)	0.092 0.025	153,923	204,788
Cleaning Line 1 (CL-01)	Pickling Rinse (PR)	0.021	78,304	105,153
Hot Rolling Mill 1 (M-01)	Contact Cooling Water (CCW)	0.160	583,478	658,529
Direct Chill Casters 1&2 (DC-1&2)	Contact Quench Water (CQW)		533,891	617,762
Direct Chill Casters 1&2 (DC-3&4)	Contact Quench Water (CQW)		57,826	185,785

The technology-based mass limitations were developed based on production rates reported in the NPDES permit application, and in conjunction with the effluent limitation guidelines (ELGs) specified in 40 CFR 464 Metal Molding and Casting and 40 CFR 468 Copper Forming. EPA's NPDES permitting regulations (40 CFR 122.21(g)(5)) require the Department to utilize a reasonable measure of production to calculate the allowable mass loadings (mass effluent limitations). The production rate used in development of the mass effluent limitations is based on the last five years (June 2016 through May 2020) of production data. On March 31, 2025, Michael Jenkins confirmed, via email, that the production data and flowrate data contained in the renewal application is still accurate. Because production varied throughout those five years, the maximum average daily production rate from each production line was selected. The mass based limits were calculated by multiplying the maximum average pounds of copper produced per day at each production line reported on the application by the appropriate factor from the applicable effluent limitation guideline and summing the results from each production line to determine the effluent limit for each parameter. Production rates, ELG multipliers, and the resulting effluent limitations for the IMP 101 regulated pollutants are shown in Tables 10a though 10g.

Table 10a: Total Chromium Effluent Limitations – IMP 101						
Production Line	Applicable ELG	Production $^{Mlb}/_{day}$	ELG Multiplier $^{Lb.}/_{Mlb}$		Mass Effluent Limitations $^{Lb.}/_{day}$	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.12(f) BAT	0.1407	0.223	0.545	0.031	0.077
AF - 21 (PR)	468.12(k) BAT	0.1407	0.235	0.574	0.033	0.081
AF - 31 (FQ)	468.13(f) NSPS	0.2047	0.186	0.458	0.038	0.094
AF - 31 (PR)	468.13(k) NSPS	0.2047	0.087	0.216	0.018	0.044
CL - 01 (PR)	468.12(k) BAT	0.1051	0.235	0.574	0.025	0.060
M - 01 (CCW)	468.12(d) BAT	0.6585	0.116	0.284	0.076	0.187
DC-1&2 (CQW)	464.23(b) BAT	0.6177	0	0	0.000	0.000
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	0	0	0.000	0.000
		Proposed Effluent Limitations			0.221	0.543

Table 10b: Total Copper Effluent Limitations – IMP 101							
Production Line	Applicable ELG	Production $^{Mlb}/_{day}$	ELG Multiplier $^{Lb.}/_{Mlb}$		Mass Effluent Limitations $^{Lb.}/_{day}$	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.12(f) BAT	0.1407	1.24	2.356	0.174	0.331
AF - 21 (PR)	468.12(k) BAT	0.1407	1.306	2.481	0.184	0.349
AF - 31 (FQ)	468.13(f) NSPS	0.2047	0.756	1.587	0.155	0.325
AF - 31 (PR)	468.13(k) NSPS	0.2047	0.356	0.748	0.073	0.153
CL - 01 (PR)	468.12(k) BAT	0.1051	1.306	2.481	0.137	0.261
M - 01 (CCW)	468.12(d) BAT	0.6585	0.646	1.227	0.425	0.808
DC-1&2 (CQW)	464.23(b) BAT	0.6177	0.506	0.928	0.313	0.573
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	0.506	0.928	0.094	0.172
				Proposed Effluent Limitations	***1.555***	***2.973***

Table 10c: Total Lead Effluent Limitations – IMP 101						
Production Line	Applicable ELG	Production $^{Mlb}/_{day}$	ELG Multiplier $^{Lb.}/_{Mlb}$		Mass Effluent Limitations $^{Lb.}/_{day}$	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.12(f) BAT	0.1407	0.161	0.186	0.023	0.026
AF - 21 (PR)	468.12(k) BAT	0.1407	0.169	0.195	0.024	0.027
AF - 31 (FQ)	468.13(f) NSPS	0.2047	0.111	0.124	0.023	0.025
AF - 31 (PR)	468.13(k) NSPS	0.2047	0.052	0.058	0.011	0.012
CL - 01 (PR)	468.12(k) BAT	0.1051	0.169	0.195	0.018	0.020
M - 01 (CCW)	468.12(d) BAT	0.6585	0.083	0.096	0.055	0.063
DC-1&2 (CQW)	464.23(b) BAT	0.6177	0.314	0.639	0.194	0.395
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	0.314	0.639	0.058	0.119
				Proposed Effluent Limitations	***0.404***	***0.688***

Table 10d: Total Nickel Effluent Limitations – IMP 101						
Production Line	Applicable ELG	Production $^{Mlb}/_{day}$	ELG Multiplier $^{Lb.}/_{Mlb}$		Mass Effluent Limitations $^{Lb.}/_{day}$	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.12(f) BAT	0.1407	1.574	2.38	0.221	0.335
AF - 21 (PR)	468.12(k) BAT	0.1407	1.658	2.507	0.233	0.353
AF - 31 (FQ)	468.13(f) NSPS	0.2047	0.458	0.682	0.094	0.140
AF - 31 (PR)	468.13(k) NSPS	0.2047	0.216	0.321	0.044	0.066
CL - 01 (PR)	468.12(k) BAT	0.1051	1.658	2.507	0.174	0.263
M - 01 (CCW)	468.12(d) BAT	0.6585	0.82	1.24	0.540	0.817
DC-1&2 (CQW)	464.23(b) BAT	0.6177	0	0	0	0
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	0	0	0	0

Proposed Effluent Limitations	***1.307***	***1.973***

Table 10e: Total Zinc Effluent Limitations – IMP 101

Production Line	Applicable ELG	Production Mlb/day	ELG Multiplier Lb./Mlb		Mass Effluent Limitations Lb./day	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.12(f) BAT	0.1407	0.756	1.81	0.106	0.255
AF - 21 (PR)	468.12(k) BAT	0.1407	0.796	1.906	0.112	0.268
AF - 31 (FQ)	468.13(f) NSPS	0.2047	0.52	1.264	0.106	0.259
AF - 31 (PR)	468.13(k) NSPS	0.2047	0.245	0.596	0.050	0.122
CL - 01 (PR)	468.12(k) BAT	0.1051	0.796	1.906	0.084	0.200
M - 01 (CCW)	468.12(d) BAT	0.6585	0.394	0.943	0.259	0.621
DC-1&2 (CQW)	464.23(b) BAT	0.6177	0.35	0.916	0.216	0.566
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	0.35	0.916	0.065	0.170
				Proposed Effluent Limitations	***0.999***	***2.461***

Table 10f: Total Oil & Grease Effluent Limitations – IMP 101

Production Line	Applicable ELG	Production Mlb/day	ELG Multiplier Lb./Mlb		Mass Effluent Limitations Lb./day	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.11(f) BPT	0.1407	68.004	113.34	9.568	15.947
AF - 21 (PR)	468.11(k) BPT	0.1407	43.464	72.44	6.115	10.192
AF - 31 (FQ)	468.13(f) NSPS	0.2047	12.4	12.4	2.538	2.538
AF - 31 (PR)	468.13(k) NSPS	0.2047	5.85	5.85	1.197	1.197
CL - 01 (PR)	468.11(k) BPT	0.1051	43.464	72.44	4.568	7.613
M - 01 (CCW)	468.11(d) BPT	0.6585	30.492	50.82	20.079	33.465
DC-1&2 (CQW)	464.22(b) BPT	0.6177	12.1	36.2	7.474	22.361
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	12.1	36.2	2.247	6.722
				Proposed Effluent Limitations	***53.788***	***100.037***

Table 10g: Total Suspended Solids Effluent Limitations – IMP 101

Production Line	Applicable ELG	Production Mlb/day	ELG Multiplier Lb./Mlb		Mass Effluent Limitations Lb./day	
			Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
AF - 21 (FQ)	468.11(f) BPT	0.1407	110.506	232.347	15.548	32.691
AF - 21 (PR)	468.11(k) BPT	0.1407	70.629	148.502	9.938	20.894
AF - 31 (FQ)	468.13(f) NSPS	0.2047	14.88	18.6	3.046	3.807
AF - 31 (PR)	468.13(k) NSPS	0.2047	7.02	8.775	1.437	1.796
CL - 01 (PR)	468.11(k) BPT	0.1051	70.629	148.502	7.423	15.608
M - 01 (CCW)	468.11(d) BPT	0.6585	49.549	104.181	32.628	68.603
DC-1&2 (CQW)	464.22(b) BPT	0.6177	18.1	45.8	11.180	28.291
DC-3&4 (CQW)	464.24(b) NSPS	0.1857	14.5	18.1	2.693	3.361

Proposed Effluent Limitations	***83.893***	***175.052***

Technology-Based Concentration Limits – IMP 101

"The option of including concentration based effluent limits was evaluated by the permit writer for use (in addition to the mass limits); pursuant to the Best Professional Judgment (BPJ) authority in Section 402(a)(1) of the Clean Water Act. This option is also discussed in the U.S. EPA NPDES Permit Writers' Manual. This option allows the addition of both a monthly average and daily maximum concentration limit from the appropriate subcategory tables in the development document[1] for the specific subcategory and pollutants involved into the permit as effluent limits (not mass x flow at the facility). EPA used the concentrations in the development document, in conjunction with the production normalizing flow, to derive the effluent limitations guidelines. The main reason for this approach is to assure proper operation and maintenance of the treatment facility during periods of low production. The major advantage of this approach is simplicity, and it in no way restricts production levels at the facility, since effluent concentrations from the treatment plant remain fairly constant over wide ranges of production levels. This approach is particularly useful at facilities where production is either moderately or highly variable and/or multiple production lines with a centralized treatment facility are involved. It is also useful at new facilities where production records do not exist and mass limits are based solely on production."

The use of concentration limits also assures compliance with the unit production figures in the ELG, especially during low production periods when mass limits alone can be achieved without treatment in some cases. This approach provides concentration limits that will not change over time and also represent what BAT for the particular production line involved can achieve in a well-operated treatment facility. This approach is preferable to calculating a concentration limit using the current flow at the facility and the mass limits from the ELG, which often yields concentration limits far less stringent than what BAT can achieve. The use of existing waste flow at a facility also leads to a moving target since waste flows are constantly changing at treatment facilities as production changes due to market factors, maintenance, product changes, down times, breakdowns, and facility modifications. If there are multiple subcategories involved, whichever subcategory has the majority of the flow to the treatment plant is used as the basis for deriving the concentration limits.

Some permittees have argued that they are being penalized for water conservation/reuse efforts, i.e., their flows are now much less than the normalized flows used by EPA in the development document to convert the concentrations to mass in the ELG, and as a result effluent concentrations are higher. Some conservation/reuse efforts result in higher influent concentrations to the treatment plants since less water is being used, but the pollutant load remains the same. Other efforts involve the elimination/reduction of both the flows and pollutant loadings (going to air cooling for example) resulting in less flow to the treatment plant but no increase in concentration. In either case, even if the influent pollutant concentration does increase due to reduced flows, the effluent concentration from a properly operated lime and settle system, for example, will not increase accordingly, if at all.

The concentration based effluent limits are the expected treatment effectiveness concentrations contained in Table VII-20 (attached) of the Copper Forming Development Document for Lime, Settle and Filter technology. Because a majority of the flow to the treatment plant is attributed to operations subject to 40 CFR 468, the concentration values from that development document are imposed. These are consistent with the concentration limits imposed in the previous permit. For the Copper Forming Category, BAT consists of recycle, lime and settle; and NSPS consists of recycle, lime, settle and filter. BAT and NSPS for the Metal Molding and Casting Category consists of recycle, lime, settle, and filter.

Flow monitoring requirements are imposed in accordance with the regulations in the Pennsylvania Code, Title 25, Chapter 92a.61(d)(1).

pH limitations are proposed in accordance with 40 CFR Part 468.

[1] The concentrations in the development documents were used in conjunction with the production normalizing flow to derive the effluent limitation guidelines.

Table 10 summarizes the technology-based effluent limitations explained in this section. All applicable federal ELG's are included in the Reference Section of this report.

Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitor the instantaneous maximum limitations. However, if grab samples are collected by the permittee, the results must be reported.

Proposed technology based effluent limitations are shown in Table 11.

Table 11: Technology-Based Effluent Limitations – IMP 101

Parameter	Mass (Lbs/day)		Concentration (mg/L)			
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	Instant. Maximum
Flow (MGD)	Monitor and Report		---	---	---	---
Chromium, total	0.221	0.543	---	0.15	0.37	0.463
Copper, total	1.56	2.97	---	0.61	1.28	1.6
Lead, total	0.404	0.688	---	0.13	0.28	0.35
Nickel, total	1.31	1.97	---	0.37	0.55	0.37
Zinc, total	1.0	2.46	---	0.42	1.02	1.28
Total Suspended Solids	84	175	---	12.0	15.0	24
Oil and Grease	53	100	---	10.0	10.0	---
pH	---	---	7.5	---	10.0	---

Water Quality Based Effluent Limits – IMP 101

While it is customary to evaluate water quality limits at the outfall pipe (in this case Outfall 001); treated wastewaters from IMP 101 are diluted at a ratio of 2.4 to 1.0 by non-contact cooling waters from the plant. As the primary source of pollutants at this facility, IMP 101 was evaluated for water quality limits independently of other site discharges.

Due to comingling and dilution with other wastewater sources, IMP 101 was modeled as a direct discharge to the Ohio River. The maximum pollutant discharge concentrations from the permit application and TBELs from above are entered into the model to ensure that effluent limitations are evaluated even under "worst case" scenarios. In this case, technology limits calculated in the previous section exceeded the highest known discharge concentrations for several parameters. In order to ensure that the calculated technology limits do not result in a violation of water quality standards, technology limits were entered into the TMS spreadsheet as the "maximum concentration" where applicable.

Toxics Management Analysis

The Department's Toxics Management Spreadsheet (TMS) was utilized to facilitate calculations necessary for completing a reasonable potential analysis and determine Water Quality-Based Effluent Limitations (WQBELs) for discharges containing toxic pollutant concentrations. TMS combines the functionality of two (2) of the Department's analysis tools, Toxics Screening Analysis Spreadsheet and PENTOXSD water quality model.

DEP's procedures for evaluating reasonable potential are as follows:

3. For IW discharges, the design flow to use in modeling is the average flow during production or operation and may be taken form the permit application.

4. Perform a Toxics Screening Analysis to identify toxic pollutants of concern. All toxic pollutants, as reported in the permit application or on DMRs, are modeled by the TMS to determine the parameters of concern.

[This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion].

- Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. Establish an IMAX limit at 2.5 times the average monthly limit.

- For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

- For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

Discharges from IMP 101 are evaluated based on concentrations reported on the application and the developed TBELs; data from those sources are used as inputs into the TMS. The pollutants evaluated in this manner included chromium, copper, lead, nickel and zinc. The remaining parameters of concern were taken from the NPDES permit application and subsequent submissions. A summary of TMS Inputs is contained in Table 12 below.

Table 12: TMS Inputs

Parameter	Value
Discharge Inputs	
Facility	Hussey Copper
Evaluation Type	Industrial
NPDES Permit No.	PA0000566
Wastewater Description	Treated Industrial Wastewater
Outfall ID	101
Design Flow (MGD)	0.259
Hardness ($^{mg}/_{L}$)	274
pH (S.U.)	9.4
Partial Mix Factors	Unknown – Calculated by TMS
Complete Mix Times	
Q_{7-10} (min)	
Q_h (min)	
Stream Inputs	
Receiving Surface Water	Ohio River
Number of Reaches to Model	1
Stream Code	032317
RMI	965.7
Elevation (ft)	682/682*
Drainage Area (mi^2)	19,500/20,000*
Slope (ft/ft)	
PWS Withdrawal (MGD)	
Apply Fish Criteria	Yes
Low Flow Yield (cfs/mi^2)	
Flows	
Stream (cfs)	4,800/4,800*
Tributary (cfs)	N/A
Width (ft)	
Stream Hardness ($^{mg}/_{L}$)	
Stream pH (S.U.)	

***** Denotes discharge location/downstream location values.

Table 13 below is a summary of the recommendations of the TMS at IMP 101. Analysis Report from the TMS run is included in Attachment B.

Table 13: TMS Model WQBELs

Parameter	Mass Load (lbs/day)		Concentration Limit ($^{\mu g}/_{L}$)	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Copper[1]	1.39	2.17	0.644	1.01
Acrylamide[3]	0.057	0.088	26.2	40.9
Total Lead[2]	Report	Report	Report	Report
Total Zinc[2]	Report	Report	Report	Report

1) The TMS Model recommends a WQBEL for Total Copper that is more protective then the TBEL, therefor, the WQBEL will be imposed.
2) The TMS Model recommends a WQBEL for Total Lead and Total Zinc that is less protective then the TBEL, therefor, the numerical TBEL will be imposed.
3) The updated renewal application reported Acrylamide concentration of <210 $^{\mu g}/_{L}$. Although Acrylamide does not have a TQL, the level of "non-detect" reported in the application triggers a Water Quality-Based Effluent Limitation. The WQBEL monitoring for Acrylamide will be imposed at Outfall 001.

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

The current effluent limitations at Outfall 101 are summarized in Table 14.

Table 14: Current Effluent limits and Monitoring Requirements for IMP 111

Parameter	Mass Loading ($^{lbs.}/_{day}$)		Concentration ($^{mg}/_{L}$)		
	Average Monthly	Daily Maximum	Daily Minimum	Daily Maximum	Instant Maximum
Flow (MGD)	Report	Report	-	-	-
TSS	90	189	12.0	15.0	30*****
Oil & Grease	57	105	10.0	10.0	-
Total Chromium	0.229	0.561	0.15	0.37	0.463*****
Total Copper	1.59	3.034	0.61	1.28	1.6*****
Total Lead	0.398	0.669	0.13	0.28	0.35*****
pH	-	-	7.5	-	10.0
Total Nickel	1.40	2.12	0.37	0.55	0.69*****
Total Zinc	1.02	2.50	0.42	1.02	1.28*****

***** Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitor the instantaneous maximum limitations. However, if grab samples are collected by the permittee, the results must be reported.

Effluent Limitations and Monitoring Requirements for IMP 101

Effluent limits applicable at IMP 101 are the more stringent of TBELs, regulatory effluent standards, WQBELs, previously permitted effluent limits and the monitoring requirements are summarized in Table 15.

Table 15: Final Effluent limits and monitoring requirements for IMP 101

Parameter	Mass (lbs/day)		Concentration (mg/L)			Basis
	Average Monthly	Daily Maximum	Average Monthly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Chromium, total	0.221	0.543	0.15	0.37	0.463	40 CFR § 464 & 468
Copper, total	1.39	2.17	0.61	1.01	1.6	WQBEL
Lead, total	0.404	0.688	0.13	0.28	0.35	40 CFR § 464 & 468
Nickel, total	1.31	1.97	0.37	0.55	0.69	40 CFR § 464 & 468
Zinc, total	1.0	2.46	0.42	1.02	1.28	40 CFR § 464 & 468
Total Suspended Solids	84	175	12.0	15.0	30.0	40 CFR § 464 & 468
Oil and Grease	53	100	10.0	10.0	---	40 CFR § 464 & 468
pH (S.U.)	Within the range of 7.5 to 10.0					40 CFR § 464 & 468

Monitoring requirements for the interim and final effluent limits are based on the previous permit's monitoring requirements for the facility and displayed in Table 16 below.

Table 16: Monitoring Requirements for Outfall 301

Parameter	Sample Type	Minimum Sample Frequency
Flow (MGD)	Measured	1/day
Chromium, total	24-hr Composite	1/week
Copper, total	24-hr Composite	1/week
Lead, total	24-hr Composite	1/week
Nickel, total	24-hr Composite	1/week
Zinc, total	24-hr Composite	1/week
Total Suspended Solids	24-hr Composite	1/week
Oil and Grease	Grab	1/week
pH (S.U.)	Grab	1/day

Development of Effluent Limitations

Outfall No. 002, 003, 004, 004, & 006 **Design Flow (MGD)** 0.0 (varies)
Latitude **Longitude**
Wastewater Description: Stormwater

The Department's policy for storm water discharges is to either (1) require that the storm water be uncontaminated, (2) impose "monitor and report," establish effluent goals and require the permittee to submit a Storm Water Pollution Prevention Plan (SWPPP), or (3) impose effluent limits. In all cases a storm water special condition is placed in the permit. Storm water effluent data reported in the application are compared to stream criteria, EPA's Multi-Sector General Permit "benchmark values," ELGs and other references while considering site specific conditions such as stream flow and location to determine if actual discharge concentrations of various pollutants in storm water warrant further controls. If there is insufficient data available, or if pollutant levels are excessive, monitoring for specific pollutants and/or a SWPPP are required in the permit. Otherwise, the storm water outfalls are simply listed as discharge points. In either case, a special condition is added to the permit to include some of the key components of the Department's General Permit (PAG-03) for Discharges of Stormwater Associated with Industrial Activities.

The following BMPs may be helpful for reducing pollutional discharges into the receiving waterways.

A. Install and use dust control/collection systems around materials handling and transfer activities.

B. Perform all mixing, pouring, cutting and molding activities in buildings with dust control systems.

C. Store flux materials in enclosed silos or buildings, or otherwise cover materials susceptible to erosion and wind entrainment.

D. Provide for reclamation of/or erosion control on historic waste piles.

The facility has five (5) stormwater outfalls that are subject to PAG-03 General Stormwater Permit conditions as a minimum requirement because the outfall receives stormwater runoff from industrial areas which discharge to Chartiers Creek. The facilities industrial activities are classified by SIC codes 3351 & 3341 and the corresponding appendix of the PAG-03 that would apply to the facility is Appendix B – Primary Metals. The reporting requirements applicable to stormwater discharges are shown in Table 17 below.

Table 17: PAG-03 Appendix (B) Monitoring Requirements

Parameter	Max Daily Concentration ($^{mg}/_{L}$)	Measurement Frequency	Sample Type	Benchmark Value ($^{mg}/_{L}$)
Total Suspended Solids (TSS)	Report	1/6 Months	Grab	100.0
Total Aluminum	Report	1/6 Months	Grab	XXX
Total Zinc	Report	1/6 Months	Grab	XXX
Total Copper	Report	1/6 Months	Grab	XXX
Total Iron	Report	1/6 Months	Grab	XXX
Total Lead	Report	1/6 Months	Grab	XXX
Oil and Grease	Report	1/6 Months	Grab	30.0
Total Nitrogen	Report	1/6 Months	Grab	XXX
Total Phosphorus	Report	1/6 Months	Grab	XXX

Outfall 001 (40° 34' 29.6", -80° 13' 26.4") – The drainage area is 435,600 ft^2 and is 100% impervious. Outfall 001 discharges storm water runoff from the north end of the facility including roof drains and surface runoff.

Significant materials exposed to the stormwater include sulfuric acid storage tank, lime silo, diesel fuel tank, slag pad, dross storage area, baghouse area, mill scale processing area, miscellaneous drums and scrap equipment. In addition, copper slabs and billets are at times stored outside in the yard.

Outfall 001 is the representative sample location for Outfall 006.

Outfall 002 (40° 34' 17.4", -80° 13' 16.7") – The drainage area is 435,600 ft^2 and is 100% impervious. Outfall 002 discharges storm water runoff to the Ohio River from the south end of the facility including roof drains and surface runoff. Significant materials exposed to stormwater include sulfuric acid storage tank, lime silo, diesel fuel tank, Slag pad/dross storage area, mill scale processing area, miscellaneous drums and scrap equipment.

Outfall 003 (40° 34' 28.2", -80° 13' 17.8"), **Outfall 004** (40° 34' 26.7", -80° 13' 15.7"), and **Outfall 005** (40° 34' 25.5", -80° 13' 14") – The drainage area of each outfall is 87,120 ft^2 and they are all 100% impervious. The outfalls discharge storm water runoff from the northeastern edge of the facility. The discharges originate at the employee parking lot and mill-scale loading area roll-off boxes. These "outfalls" are actually individual catch basins which are plumbed together via a 48-inch diameter pipe that discharges into Big Sewickley Creek. The pipe also collects stormwater runoff from off-site sources, which is why it was necessary to designate each catch basin as an individual outfall. Each catch basin is equipped with a manually activated shut-off valve.

Outfall 004 is the representative sample location for Outfalls 003 and 005.

Outfall 006 (40° 34' 28.7", -80° 13' 27.8") - The drainage area is 17,424 ft^2 and is 100% impervious. Outfall 006 discharges storm water runoff to an existing manhole adjacent to the Air Emission Control System (Baghouse) at the northern end of the facility. Two existing catch basins in the Baghouse area are designed to collect storm water runoff and convey it to the manhole. Discharges from the manhole enter the existing sewer which conveys the discharge to the Ohio River via Outfall 001.

Storm Water Monitoring Requirements

The Department's General Permit for Discharges of Stormwater Associated with Industrial Activity (PAG-03) includes minimum stormwater monitoring requirements for pollutants associated with Primary Metals manufacturing facilities (Appendix B). In addition to the monitoring requirements discussed above, Hussey must monitor for total aluminum, total iron, and total lead.

Target concentrations for TSS, oil & grease, COD, and lead are based on EPA stormwater benchmark values.

Target concentrations for copper, nickel, and zinc are taken from the Copper Forming Development Document.

Target concentrations for aluminum and iron are based on DEP's water quality criteria.

Chapter 95.10 Effluent Standards - TDS

The provisions of Chapter 95.10 were adopted on August 20, 2010 and became effective August 21, 2010. Chapter 95.10 of the Department's regulations establish the effluent standards applicable to new and expanding discharges of TDS. Under the provisions of this regulation, dischargers that are subject to the requirements of 95.10 must be identified; discharges that are exempt from any treatment requirements under this chapter must be identified; the existing mass loadings of TDS that are exempt from the treatment requirements must be identified and quantified; and discharges of new and expanding mass loadings of TDS must be evaluated.

Integral to the implementation of Chapter 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Generally, no permit actions are required until an NPDES permit is issued, renewed, or amended. Discharge loadings of TDS authorized by the Department are typically exempt

from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or there is a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading.

For storm water that does come into contact with industrial materials, the provisions of Chapter 95.10 are applicable only to the extent that the storm water has the potential to exceed 2,000 $^{mg}/_{L}$ TDS. The provisions of Chapter 95.10 generally apply only to the final discharge of process wastewater, not intermediate or internal points, except that process wastewater may not be diluted with storm water or ambient water in order to meet the treatment requirements of Chapter 95.10.

The discharges from Hussey Copper were authorized and existed prior to August 21, 2010. Additionally, none of the discharges has the potential to exceed 2,000 $^{mg}/_{L}$ TDS. Therefore, the discharge is considered to be an existing, authorized mass loading of TDS and is exempt from any treatment requirements.

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

The current stormwater monitoring requirements for Outfalls 001, 002, 003, 004 & 005 are shown in Table 18.

Table 18: Stormwater Monitoring Requirements
Outfalls 001, 002, 003, 004, & 005

Parameter	Daily Maximum	Stormwater Goal	Units
Total Suspended Solids	Monitor and Report	100	$^{mg}/_{L}$
Oil and Grease	Monitor and Report	30	$^{mg}/_{L}$
Chemical Oxygen Demand	Monitor and Report	120	$^{mg}/_{L}$
Copper, total	Monitor and Report	1.28	$^{mg}/_{L}$
Nickel, total	Monitor and Report	0.55	$^{mg}/_{L}$
Zinc, total	Monitor and Report	1.02	$^{mg}/_{L}$
Aluminum, total	Monitor and Report	0.75	$^{mg}/_{L}$
Iron, total	Monitor and Report	1.50	$^{mg}/_{L}$
Lead, total	Monitor and Report	0.082	$^{mg}/_{L}$
pH	Monitor and Report	Between 6.0 and 9.0	S.U.

The previous permit had a requirement to develop a Stormwater Pollution Prevention Plan (SWPP) to identify Best Management Practices (BMPs) to eliminate or reduce the elevated pollutants of the facility's stormwater discharges. The facility has made great progress on adjusting BMPs to reduce the elevated pollutants. The Stormwater Goals will be used as Benchmark Concentrations for the stormwater discharges. The Benchmark

Concentrations will be used to evaluate the existing BMPs and are not effluent limitations. Back-to-back exceedances of a parameter will trigger the requirement to complete a Corrective Action Plan (CAP). The monitoring frequency will change from 1/month to 1/6 months to align with the NPDES General Stormwater Permit.

Final stormwater effluent monitoring requirements for Outfalls 001, 002, 003, 004 & 005 are shown in Table 19.

Table 19: Stormwater Monitoring Requirements
Outfalls 001, 002, 003, 004, & 005

Parameter	Daily Maximum	Benchmark	Units
Total Suspended Solids	Monitor and Report	100	$^{mg}/_{L}$
Oil and Grease	Monitor and Report	30	$^{mg}/_{L}$
Chemical Oxygen Demand	Monitor and Report	120	$^{mg}/_{L}$
Copper, total	Monitor and Report	1.28	$^{mg}/_{L}$
Nickel, total	Monitor and Report	0.55	$^{mg}/_{L}$
Zinc, total	Monitor and Report	1.02	$^{mg}/_{L}$
Aluminum, total	Monitor and Report	0.75	$^{mg}/_{L}$
Iron, total	Monitor and Report	1.50	$^{mg}/_{L}$
Lead, total	Monitor and Report	0.082	$^{mg}/_{L}$
pH	Monitor and Report	Between 6.0 and 9.0	S.U.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment **B**)
☐	TRC Model Spreadsheet (see Attachment **D**)
☒	Temperature Model Spreadsheet (see Attachment **C**)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☒	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☒	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5€ for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

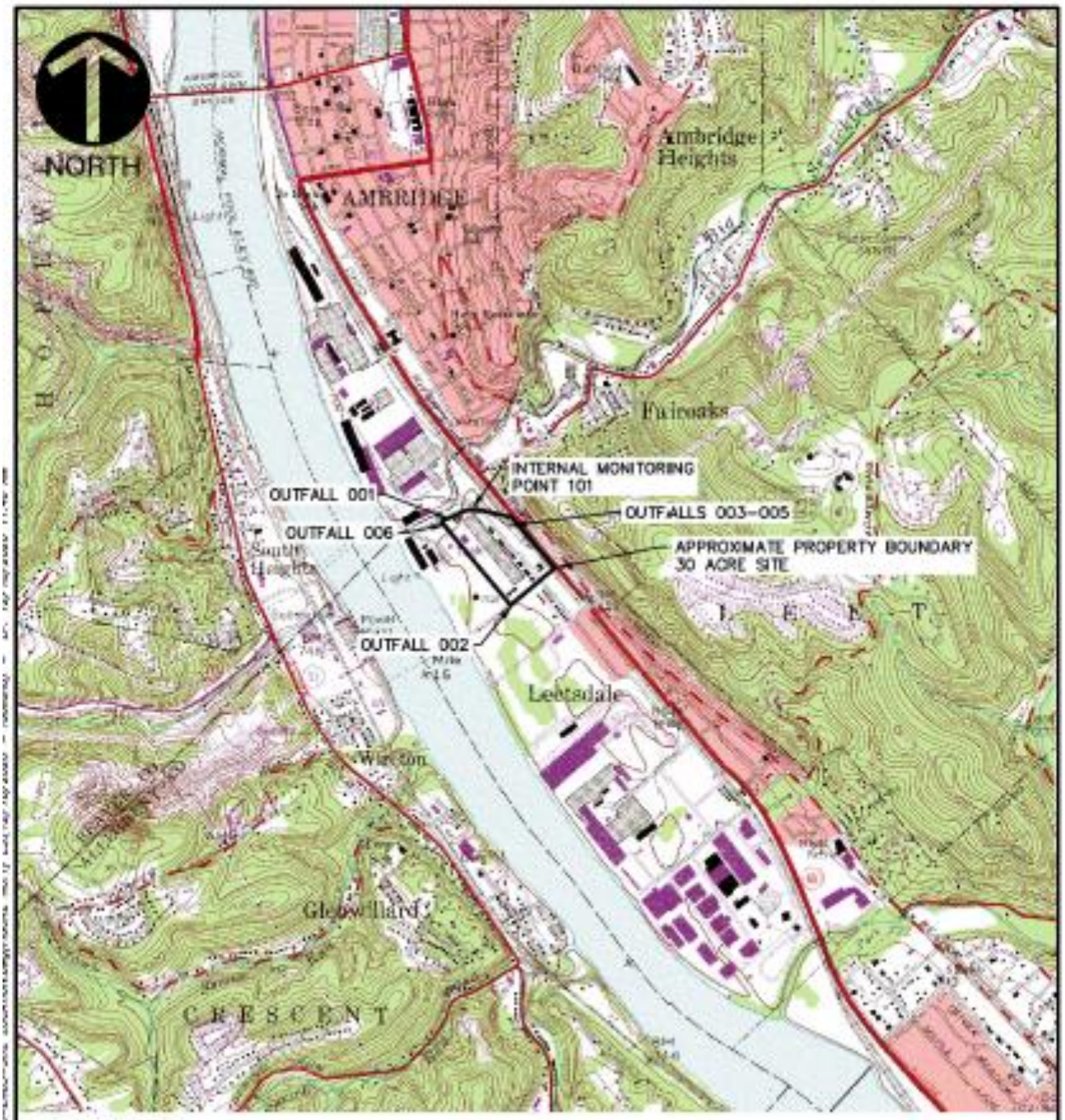
Attachment A – Site Plan

Attachment B – TMS Model

Attachment C – Thermal Model

Attachment D – TRC Model

Attachment A – Site Plan


NORTH
AMBRIDGE
Ambridge Heights
Fairoaks
INTERNAL MONITORING POINT 101
OUTFALL 001
OUTFALLS 003-005
OUTFALL 006
APPROXIMATE PROPERTY BOUNDARY 30 ACRE SITE
OUTFALL 002
Leetsdale
Glenfield
CRESCENT
REFERENCE
1. USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE AMBRIDGE, PA, DATED 1960. PHOTOREVISED 1990.
SCALE IN FEET
0
2000
4000
*HAND SIGNATURE ON FILE
Civil & Environmental Consultants, Inc.
333 Baldwin Road - Pittsburgh, PA 15205
412-429-2324 - 800-365-2324
www.cecinc.com
LIBERTAS COPPER, LLC
100 WASHINGTON STREET, LEETSDALE
PENNSYLVANIA 15056
GENERAL FACILITY LOCATION MAP
DRAWN BY: RJB
CHECKED BY: EMD
APPROVED BY: DJL*
FIGURE NO.: 1
DATE: 12/18/2020
DWG SCALE: 1"=2,000'
PROJECT NO: 160-926


Beaver St
Hussey Copper Ltd
65
Petrun Rd
Image © 2025 Airbus

Attachment B – TMS Model

Outfall 001

Outfall 101

Outfall 001

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Hussey Copper NPDES Permit No.: PA0000566 Outfall No.: 001

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
1.34	329	8.76						

					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		607									
	Chloride (PWS)	mg/L		299									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		103									
	Fluoride (PWS)	mg/L		1.5									
Group 2	Total Aluminum	µg/L		61.1									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L		1									
	Total Barium	µg/L		77.7									
	Total Beryllium	µg/L	<	0.2									
	Total Boron	µg/L		2160									
	Total Cadmium	µg/L		0.14									
	Total Chromium (III)	µg/L		1.6									
	Hexavalent Chromium	µg/L	<	0.01									
	Total Cobalt	µg/L		0.52									
	Total Copper	µg/L		2730									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		0.013									
	Dissolved Iron	µg/L		448									
	Total Iron	µg/L		1120									
	Total Lead	µg/L		0.57									
	Total Manganese	µg/L		1640									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		8.9									
	Total Phenols (Phenolics) (PWS)	µg/L	<	50									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		73.3									
	Total Molybdenum	µg/L		1.1									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<	540									
	Acrylonitrile	µg/L	<	4									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	2									
	Chloroform	µg/L	<	0.5									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	100									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	1									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	0.99									
	2,4-Dichlorophenol	µg/L	<	0.99									
	2,4-Dimethylphenol	µg/L	<	0.99									
	4,6-Dinitro-o-Cresol	µg/L	<	2.5									
	2,4-Dinitrophenol	µg/L	<	2.5									
	2-Nitrophenol	µg/L	<	0.99									
	4-Nitrophenol	µg/L	<	0.99									
	p-Chloro-m-Cresol	µg/L	<	0.99									
	Pentachlorophenol	µg/L	<	2.5									
	Phenol	µg/L	<	0.99									
	2,4,6-Trichlorophenol	µg/L	<	0.99									
Group 5	Acenaphthene	µg/L	<	0.99									
	Acenaphthylene	µg/L	<	0.99									
	Anthracene	µg/L	<	0.99									
	Benzidine	µg/L	<	14.9									
	Benzo(a)Anthracene	µg/L	<	0.99									
	Benzo(a)Pyrene	µg/L	<	0.99									
	3,4-Benzofluoranthene	µg/L	<	0.99									
	Benzo(ghi)Perylene	µg/L	<	0.99									
	Benzo(k)Fluoranthene	µg/L	<	0.99									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.99									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.99									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.99									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.5									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.99									
	Butyl Benzyl Phthalate	µg/L	<	2.5									
	2-Chloronaphthalene	µg/L	<	0.99									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.99									
	Chrysene	µg/L	<	0.99									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.99									
	1,2-Dichlorobenzene	µg/L	<	0.99									
	1,3-Dichlorobenzene	µg/L	<	0.99									
	1,4-Dichlorobenzene	µg/L	<	0.99									
	3,3-Dichlorobenzidine	µg/L	<	0.99									
	Diethyl Phthalate	µg/L	<	0.99									
	Dimethyl Phthalate	µg/L	<	0.99									
	Di-n-Butyl Phthalate	µg/L		1.1									
	2,4-Dinitrotoluene	µg/L	<	0.99									

	2,6-Dinitrotoluene	µg/L	<	0.99									
	Di-n-Octyl Phthalate	µg/L	<	2.5									
	1,2-Diphenylhydrazine	µg/L	<	0.99									
	Fluoranthene	µg/L	<	0.99									
	Fluorene	µg/L	<	0.99									
	Hexachlorobenzene	µg/L	<	0.99									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	0.99									
	Hexachloroethane	µg/L	<	0.99									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.99									
	Isophorone	µg/L	<	0.99									
	Naphthalene	µg/L	<	0.99									
	Nitrobenzene	µg/L	<	0.99									
	n-Nitrosodimethylamine	µg/L	<	0.99									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.99									
	n-Nitrosodiphenylamine	µg/L	<	0.99									
	Phenanthrene	µg/L	<	0.99									
	Pyrene	µg/L	<	0.99									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Hussey Copper, NPDES Permit No. PA0000566, 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	965.7	682	19500			Yes
End of Reach 1	032317	965	681	20000			Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	965.7	0.1	4800									490	7		
End of Reach 1	965	0.1	4800												

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	965.7														
End of Reach 1	965														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Hussey Copper, NPDES Permit No. PA0000566, Outfall 001

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

Hydrodynamics

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.001 Analysis Hardness (mg/l): 449.62 Analysis pH: 7.12

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	2,990	
Total Antimony	0	0		0	1,100	1,100	4,385	
Total Arsenic	0	0		0	340	340	1,355	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	83,721	
Total Boron	0	0		0	8,100	8,100	32,292	
Total Cadmium	0	0		0	8.664	9.83	39.2	Chem Translator of 0.881 applied
Total Chromium (III)	0	0		0	1951.515	6,176	24,621	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	65.0	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	379	
Total Copper	0	0		0	55.396	57.7	230	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	316.494	553	2,206	Chem Translator of 0.572 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	6.57	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1670.200	1,674	6,672	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	42.688	50.2	200	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	259	
Total Zinc	0	0		0	418.801	428	1,707	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	12.0	

Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	2,591	
Benzene	0	0		0	640	640	2,551	
Bromoform	0	0		0	1,800	1,800	7,176	
Carbon Tetrachloride	0	0		0	2,800	2,800	11,163	
Chlorobenzene	0	0		0	1,200	1,200	4,784	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	71,761	
Chloroform	0	0		0	1,900	1,900	7,575	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	59,801	
1,1-Dichloroethylene	0	0		0	7,500	7,500	29,900	
1,2-Dichloropropane	0	0		0	11,000	11,000	43,854	
1,3-Dichloropropylene	0	0		0	310	310	1,236	
Ethylbenzene	0	0		0	2,900	2,900	11,561	
Methyl Bromide	0	0		0	550	550	2,193	
Methyl Chloride	0	0		0	28,000	28,000	111,628	
Methylene Chloride	0	0		0	12,000	12,000	47,840	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	3,987	
Tetrachloroethylene	0	0		0	700	700	2,791	
Toluene	0	0		0	1,700	1,700	6,777	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	27,110	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	11,960	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	13,555	
Trichloroethylene	0	0		0	2,300	2,300	9,169	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	2,233	
2,4-Dichlorophenol	0	0		0	1,700	1,700	6,777	
2,4-Dimethylphenol	0	0		0	660	660	2,631	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	319	
2,4-Dinitrophenol	0	0		0	660	660	2,631	
2-Nitrophenol	0	0		0	8,000	8,000	31,894	
4-Nitrophenol	0	0		0	2,300	2,300	9,169	
p-Chloro-m-Cresol	0	0		0	160	160	638	
Pentachlorophenol	0	0		0	9.870	9.87	39.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	1,834	
Acenaphthene	0	0		0	83	83.0	331	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,196	
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.99	
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	119,601	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	17,940	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	1,076	

Butyl Benzyl Phthalate	0	0		0	140	140	558	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	3,269	
1,3-Dichlorobenzene	0	0		0	350	350	1,395	
1,4-Dichlorobenzene	0	0		0	730	730	2,910	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	15,947	
Dimethyl Phthalate	0	0		0	2,500	2,500	9,967	
Di-n-Butyl Phthalate	0	0		0	110	110	439	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	6,379	
2,6-Dinitrotoluene	0	0		0	990	990	3,947	
1,2-Diphenylhydrazine	0	0		0	15	15.0	59.8	
Fluoranthene	0	0		0	200	200	797	
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	39.9	
Hexachlorocyclopentadiene	0	0		0	5	5.0	19.9	
Hexachloroethane	0	0		0	60	60.0	239	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	39,867	
Naphthalene	0	0		0	140	140	558	
Nitrobenzene	0	0		0	4,000	4,000	15,947	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	67,774	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,196	
Phenanthrene	0	0		0	5	5.0	19.9	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	518	

CFC CCT (min): 720 PMF: 0.009 Analysis Hardness (mg/l): 482.58 Analysis pH: 7.02

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	4,772	
Total Arsenic	0	0		0	150	150	3,254	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	88,939	
Total Boron	0	0		0	1,600	1,600	34,708	
Total Cadmium	0	0		0	0.732	0.87	18.8	Chem Translator of 0.843 applied
Total Chromium (III)	0	0		0	268.996	313	6,785	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	225	Chem Translator of 0.962 applied

Total Cobalt	0	0		0	19	19.0	412	
Total Copper	0	0		0	34.372	35.8	777	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	3,474,761	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	13.252	23.6	512	Chem Translator of 0.562 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	19.7	Chem Translator of 0.85 applied
Total Nickel	0	0		0	196.950	198	4,285	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	108	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	282	
Total Zinc	0	0		0	448.312	455	9,863	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	65.1	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	2,820	
Benzene	0	0		0	130	130	2,820	
Bromoform	0	0		0	370	370	8,026	
Carbon Tetrachloride	0	0		0	560	560	12,148	
Chlorobenzene	0	0		0	240	240	5,206	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	75,924	
Chloroform	0	0		0	390	390	8,460	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	67,247	
1,1-Dichloroethylene	0	0		0	1,500	1,500	32,539	
1,2-Dichloropropane	0	0		0	2,200	2,200	47,724	
1,3-Dichloropropylene	0	0		0	61	61.0	1,323	
Ethylbenzene	0	0		0	580	580	12,582	
Methyl Bromide	0	0		0	110	110	2,386	
Methyl Chloride	0	0		0	5,500	5,500	119,309	
Methylene Chloride	0	0		0	2,400	2,400	52,062	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	4,555	
Tetrachloroethylene	0	0		0	140	140	3,037	
Toluene	0	0		0	330	330	7,159	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	30,370	
1,1,1-Trichloroethane	0	0		0	610	610	13,232	
1,1,2-Trichloroethane	0	0		0	680	680	14,751	
Trichloroethylene	0	0		0	450	450	9,762	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	2,386	
2,4-Dichlorophenol	0	0		0	340	340	7,375	
2,4-Dimethylphenol	0	0		0	130	130	2,820	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	347	
2,4-Dinitrophenol	0	0		0	130	130	2,820	

2-Nitrophenol	0	0		0	1,600	1,600	34,708	
4-Nitrophenol	0	0		0	470	470	10,195	
p-Chloro-m-Cresol	0	0		0	500	500	10,846	
Pentachlorophenol	0	0		0	7.572	7.57	164	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,974	
Acenaphthene	0	0		0	17	17.0	369	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	1,280	
Benzo(a)Anthracene	0	0		0	0.1	0.1	2.17	
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	130,155	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	19,740	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	1,171	
Butyl Benzyl Phthalate	0	0		0	35	35.0	759	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	3,471	
1,3-Dichlorobenzene	0	0		0	69	69.0	1,497	
1,4-Dichlorobenzene	0	0		0	150	150	3,254	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	17,354	
Dimethyl Phthalate	0	0		0	500	500	10,846	
Di-n-Butyl Phthalate	0	0		0	21	21.0	456	
2,4-Dinitrotoluene	0	0		0	320	320	6,942	
2,6-Dinitrotoluene	0	0		0	200	200	4,339	
1,2-Diphenylhydrazine	0	0		0	3	3.0	65.1	
Fluoranthene	0	0		0	40	40.0	868	
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	43.4	
Hexachlorocyclopentadiene	0	0		0	1	1.0	21.7	
Hexachloroethane	0	0		0	12	12.0	260	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	45,554	
Naphthalene	0	0		0	43	43.0	933	
Nitrobenzene	0	0		0	810	810	17,571	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	73,755	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	1,280	
Phenanthrene	0	0		0	1	1.0	21.7	

Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	564	

THH CCT (min): 720 PMF: 0.009 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	1,000	1,000	21,693	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	121	
Total Arsenic	0	0		0	10	10.0	217	
Total Barium	0	0		0	1,000	1,000	21,693	
Total Boron	0	0		0	3,100	3,100	67,247	
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	28,200	
Dissolved Iron	0	0		0	300	300	6,508	
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	21,693	
Total Mercury	0	0		0	0.012	0.012	0.26	
Total Nickel	0	0		0	610	610	13,232	
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	5.21	
Total Zinc	0	0		0	7,400	7,400	160,525	
Acrolein	0	0		0	3	3.0	65.1	
Acrylamide	0	0		0	N/A	N/A	N/A	
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	2,169	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	124	
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	716	

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	1,475	
Methyl Bromide	0	0		0	47	47.0	1,020	
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	1,236	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	2,169	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	216,925	
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	651	
2,4-Dichlorophenol	0	0		0	10	10.0	217	
2,4-Dimethylphenol	0	0		0	100	100.0	2,169	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	43.4	
2,4-Dinitrophenol	0	0		0	10	10.0	217	
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	86,770	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	1,518	
Anthracene	0	0		0	300	300	6,508	
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	4,339	
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	2.17	
2-Chloronaphthalene	0	0		0	800	800	17,354	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	9,111	
1,3-Dichlorobenzene	0	0		0	7	7.0	152	
1,4-Dichlorobenzene	0	0		0	63	63.0	1,367	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	13,016	

Dimethyl Phthalate	0	0		0	2,000	2,000	43,385	
Di-n-Butyl Phthalate	0	0		0	20	20.0	434	
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	434	
Fluorene	0	0		0	50	50.0	1,085	
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	86.8	
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	738	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	217	
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	434	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	1.52	

CRL CCT (min): 720 PMF: 0.012 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	

Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	50	50.0	3,649	
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	
Acrylamide	0	0		0	0.07	0.07	5.11	
Acrylonitrile	0	0		0	0.051	0.051	3.72	
Benzene	0	0		0	0.58	0.58	42.3	
Bromoform	0	0		0	4.3	4.3	314	
Carbon Tetrachloride	0	0		0	0.4	0.4	29.2	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	29.2	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.55	0.55	40.1	
1,2-Dichloroethane	0	0		0	0.38	0.38	27.7	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	36.5	
1,3-Dichloropropylene	0	0		0	0.27	0.27	19.7	
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	336	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	12.4	
Tetrachloroethylene	0	0		0	0.69	0.69	50.4	
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	40.1	
Trichloroethylene	0	0		0	0.6	0.6	43.8	
Vinyl Chloride	0	0		0	0.02	0.02	1.46	
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	2.19	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	102	
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	0.006	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.073	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.073	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	0.28	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	2.19	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	23.4	
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	0.28	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.007	
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	1.53	
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	3.65	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.65	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	2.19	
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	0.006	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.73	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	7.3	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.073	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.05	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.36	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	241	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Boron	Report	Report	Report	Report	Report	µg/L	20,698	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	1.65	2.57	147	230	369	µg/L	147	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Acrylamide	0.057	0.089	5.11	7.97	12.8	µg/L	5.11	CRL	Discharge Conc ≥ 50% WQBEL (RP)

Other Pollutants without Limits or Monitoring

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	21.7	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	1,916	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	217	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	21,693	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS

Total Cadmium	18.8	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	6,785	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	41.6	µg/L	Discharge Conc < TQL
Total Cobalt	243	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	6,508	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	3,474,761	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	512	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	21,693	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.012	µg/L	Discharge Conc < TQL
Total Nickel	4,276	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	108	µg/L	Discharge Conc < TQL
Total Silver	128	µg/L	Discharge Conc < TQL
Total Thallium	5.21	µg/L	Discharge Conc < TQL
Total Zinc	1,094	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	7.67	µg/L	Discharge Conc < TQL
Acrylonitrile	3.72	µg/L	Discharge Conc < TQL
Benzene	42.3	µg/L	Discharge Conc < TQL
Bromoform	314	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	29.2	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	2,169	µg/L	Discharge Conc < TQL
Chlorodibromomethane	29.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	45,996	µg/L	Discharge Conc < TQL
Chloroform	124	µg/L	Discharge Conc < TQL
Dichlorobromomethane	40.1	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	27.7	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	716	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	36.5	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	19.7	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	1,475	µg/L	Discharge Conc < TQL
Methyl Bromide	1,020	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	71,549	µg/L	Discharge Conc < TQL
Methylene Chloride	336	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	12.4	µg/L	Discharge Conc < TQL
Tetrachloroethylene	50.4	µg/L	Discharge Conc < TQL
Toluene	1,236	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	2,169	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	7,666	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	40.1	µg/L	Discharge Conc < TQL
Trichloroethylene	43.8	µg/L	Discharge Conc < TQL

Vinyl Chloride	1.46	µg/L	Discharge Conc < TQL
2-Chlorophenol	651	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	217	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	1,687	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	43.4	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	217	µg/L	Discharge Conc < TQL
2-Nitrophenol	20,443	µg/L	Discharge Conc < TQL
4-Nitrophenol	5,877	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	409	µg/L	Discharge Conc < TQL
Pentachlorophenol	2.19	µg/L	Discharge Conc < TQL
Phenol	86,770	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	102	µg/L	Discharge Conc < TQL
Acenaphthene	212	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	6,508	µg/L	Discharge Conc < TQL
Benzidine	0.006	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.073	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.073	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.28	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	2.19	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	4,339	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	23.4	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	690	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	2.17	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	17,354	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	0.28	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	2,095	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	152	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	1,367	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	1.53	µg/L	Discharge Conc < TQL
Diethyl Phthalate	10,221	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	6,388	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	281	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	3.65	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.65	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	2.19	µg/L	Discharge Conc < TQL
Fluoranthene	434	µg/L	Discharge Conc < TQL
Fluorene	1,085	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL

Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	12.8	µg/L	Discharge Conc < TQL
Hexachloroethane	7.3	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.073	µg/L	Discharge Conc < TQL
Isophorone	738	µg/L	Discharge Conc < TQL
Naphthalene	358	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	217	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.05	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.36	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	241	µg/L	Discharge Conc < TQL
Phenanthrene	12.8	µg/L	Discharge Conc < TQL
Pyrene	434	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	1.52	µg/L	Discharge Conc < TQL

Outfall 101

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: Hussey Copper | NPDES Permit No.: PA0000566 | Outfall No.: 101

Evaluation Type: Major Sewage / Industrial Waste | Wastewater Description: Treated Industrial Wastewater

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.259	274	9.4						

					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		599									
	Chloride (PWS)	mg/L		224									
	Bromide	mg/L	<	2.5									
	Sulfate (PWS)	mg/L		159									
	Fluoride (PWS)	mg/L		4.3									
Group 2	Total Aluminum	µg/L		45.6									
	Total Antimony	µg/L		0.61									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		50									
	Total Beryllium	µg/L	<	0.2									
	Total Boron	µg/L		4600									
	Total Cadmium	µg/L	<	0.08									
	Total Chromium (III)	µg/L		370									
	Hexavalent Chromium	µg/L	<	0.01									
	Total Cobalt	µg/L	<	0.5									
	Total Copper	µg/L		1280									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	70									
	Total Iron	µg/L	<	20									
	Total Lead	µg/L		280									
	Total Manganese	µg/L		48									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		550									
	Total Phenols (Phenolics) (PWS)	µg/L	<	50									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		1020									
	Total Molybdenum	µg/L		1.9									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<	210									
	Acrylonitrile	µg/L	<	4									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	1									

Group 3	Carbon Tetrachloride	µg/L	<	1									
	Chlorobenzene	µg/L	<	0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	1									
	2-Chloroethyl Vinyl Ether	µg/L	<	2									
	Chloroform	µg/L	<	0.5									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<	100									
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	1									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	1									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	0.98									
	2,4-Dichlorophenol	µg/L	<	0.98									
	2,4-Dimethylphenol	µg/L	<	0.98									
	4,6-Dinitro-o-Cresol	µg/L	<	2.5									
	2,4-Dinitrophenol	µg/L	<	2.5									
	2-Nitrophenol	µg/L	<	0.98									
	4-Nitrophenol	µg/L	<	0.98									
	p-Chloro-m-Cresol	µg/L	<	0.98									
	Pentachlorophenol	µg/L	<	2.5									
	Phenol	µg/L	<	0.98									
	2,4,6-Trichlorophenol	µg/L	<	0.98									
Group 5	Acenaphthene	µg/L	<	0.98									
	Acenaphthylene	µg/L	<	0.98									
	Anthracene	µg/L	<	0.98									
	Benzidine	µg/L	<	14.7									
	Benzo(a)Anthracene	µg/L	<	0.98									
	Benzo(a)Pyrene	µg/L	<	0.98									
	3,4-Benzofluoranthene	µg/L	<	0.98									
	Benzo(ghi)Perylene	µg/L	<	0.98									
	Benzo(k)Fluoranthene	µg/L	<	0.98									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.98									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.98									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.98									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.5									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.98									
	Butyl Benzyl Phthalate	µg/L	<	2.5									
	2-Chloronaphthalene	µg/L	<	0.98									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.98									
	Chrysene	µg/L	<	0.98									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.98									
	1,2-Dichlorobenzene	µg/L	<	0.98									
	1,3-Dichlorobenzene	µg/L	<	0.98									
	1,4-Dichlorobenzene	µg/L	<	0.98									
	3,3-Dichlorobenzidine	µg/L	<	0.98									
	Diethyl Phthalate	µg/L	<	0.98									
	Dimethyl Phthalate	µg/L	<	0.98									
	Di-n-Butyl Phthalate	µg/L	<	0.98									
	2,4-Dinitrotoluene	µg/L	<	0.98									

	2,6-Dinitrotoluene	µg/L	<	0.98									
	Di-n-Octyl Phthalate	µg/L	<	2.5									
	1,2-Diphenylhydrazine	µg/L	<	0.98									
	Fluoranthene	µg/L	<	0.98									
	Fluorene	µg/L	<	0.98									
	Hexachlorobenzene	µg/L	<	0.98									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	0.98									
	Hexachloroethane	µg/L	<	0.98									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.98									
	Isophorone	µg/L	<	0.98									
	Naphthalene	µg/L	<	0.98									
	Nitrobenzene	µg/L	<	0.98									
	n-Nitrosodimethylamine	µg/L	<	0.98									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.98									
	n-Nitrosodiphenylamine	µg/L	<	0.98									
	Phenanthrene	µg/L	<	0.98									
	Pyrene	µg/L	<	0.98									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Hussey Copper, NPDES Permit No. PA0000566, Outfall 101

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Ohio River

No. Reaches to Model: 1

- ○ Statewide Criteria
- ○ Great Lakes Criteria
- ● ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	032317	965.7	682	19500			Yes
End of Reach 1	032317	965	681	20000			Yes

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

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	965.7	0.1	4800									490	7		
End of Reach 1	965	0.1	4800												

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	965.7														
End of Reach 1	965														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Hussey Copper, NPDES Permit No. PA0000566, Outfall 101

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

Hydrodynamics

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
965.7	4.800		4.800	0.401	0.00027	0.367	4893.239	13347.815	2.676	0.016	8987409.745
965	4.800		4.800								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
965.7	12257.27		12257.27	0.401	0.00027	0.554	4893.239	8836.348	4.524	0.009	4841418.338
965	12257.267		12257.27								

Wasteload Allocations

AFC

CCT (min): 15 PMF: 0.001 Analysis Hardness (mg/l): 476.89 Analysis pH: 7.03

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	12,358	
Total Antimony	0	0		0	1,100	1,100	18,124	
Total Arsenic	0	0		0	340	340	5,602	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	346,012	
Total Boron	0	0		0	8,100	8,100	133,462	
Total Cadmium	0	0		0	9.173	10.4	172	Chem Translator of 0.879 applied
Total Chromium (III)	0	0		0	2047.951	6,481	106,783	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	268	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,565	
Total Copper	0	0		0	58.557	61.0	1,005	Chem Translator of 0.96 applied

Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	336.016	596	9,827	Chem Translator of 0.563 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	27.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1755.524	1,759	28,983	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	47.239	55.6	916	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	1,071	
Total Zinc	0	0		0	440.230	450	7,417	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	49.4	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	10,710	
Benzene	0	0		0	640	640	10,545	
Bromoform	0	0		0	1,800	1,800	29,658	
Carbon Tetrachloride	0	0		0	2,800	2,800	46,135	
Chlorobenzene	0	0		0	1,200	1,200	19,772	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	296,581	
Chloroform	0	0		0	1,900	1,900	31,306	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	247,151	
1,1-Dichloroethylene	0	0		0	7,500	7,500	123,576	
1,2-Dichloropropane	0	0		0	11,000	11,000	181,244	
1,3-Dichloropropylene	0	0		0	310	310	5,108	
Ethylbenzene	0	0		0	2,900	2,900	47,783	
Methyl Bromide	0	0		0	550	550	9,062	
Methyl Chloride	0	0		0	28,000	28,000	461,349	
Methylene Chloride	0	0		0	12,000	12,000	197,721	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	16,477	
Tetrachloroethylene	0	0		0	700	700	11,534	
Toluene	0	0		0	1,700	1,700	28,010	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	112,042	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	49,430	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	56,021	
Trichloroethylene	0	0		0	2,300	2,300	37,897	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	9,227	
2,4-Dichlorophenol	0	0		0	1,700	1,700	28,010	
2,4-Dimethylphenol	0	0		0	660	660	10,875	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	1,318	
2,4-Dinitrophenol	0	0		0	660	660	10,875	
2-Nitrophenol	0	0		0	8,000	8,000	131,814	
4-Nitrophenol	0	0		0	2,300	2,300	37,897	
p-Chloro-m-Cresol	0	0		0	160	160	2,636	
Pentachlorophenol	0	0		0	8.964	8.96	148	
Phenol	0	0		0	N/A	N/A	N/A	

2,4,6-Trichlorophenol	0	0		0	460	460	7,579	
Acenaphthene	0	0		0	83	83.0	1,368	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	4,943	
Benzo(a)Anthracene	0	0		0	0.5	0.5	8.24	
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	494,302	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	74,145	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	4,449	
Butyl Benzyl Phthalate	0	0		0	140	140	2,307	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	13,511	
1,3-Dichlorobenzene	0	0		0	350	350	5,767	
1,4-Dichlorobenzene	0	0		0	730	730	12,028	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	65,907	
Dimethyl Phthalate	0	0		0	2,500	2,500	41,192	
Di-n-Butyl Phthalate	0	0		0	110	110	1,812	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	26,363	
2,6-Dinitrotoluene	0	0		0	990	990	16,312	
1,2-Diphenylhydrazine	0	0		0	15	15.0	247	
Fluoranthene	0	0		0	200	200	3,295	
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	165	
Hexachlorocyclopentadiene	0	0		0	5	5.0	82.4	
Hexachloroethane	0	0		0	60	60.0	989	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	164,767	
Naphthalene	0	0		0	140	140	2,307	
Nitrobenzene	0	0		0	4,000	4,000	65,907	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	280,105	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	4,943	
Phenanthrene	0	0		0	5	5.0	82.4	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	2,142	

CFC CCT (min): 720 PMF: 0.009 Analysis Hardness (mg/l): 488 Analysis pH: 7.00

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

Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	23,810	
Total Arsenic	0	0		0	150	150	16,234	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	443,727	
Total Boron	0	0		0	1,600	1,600	173,162	
Total Cadmium	0	0		0	0.738	0.88	94.8	Chem Translator of 0.843 applied
Total Chromium (III)	0	0		0	271.470	316	34,163	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	1,125	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	2,056	
Total Copper	0	0		0	34.702	36.1	3,912	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	17,971,266	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	13.403	23.9	2,590	Chem Translator of 0.56 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	98.0	Chem Translator of 0.85 applied
Total Nickel	0	0		0	198.822	199	21,582	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	540	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	1,407	
Total Zinc	0	0		0	452.579	459	49,676	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	325	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	14,069	
Benzene	0	0		0	130	130	14,069	
Bromoform	0	0		0	370	370	40,044	
Carbon Tetrachloride	0	0		0	560	560	60,607	
Chlorobenzene	0	0		0	240	240	25,974	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	378,791	
Chloroform	0	0		0	390	390	42,208	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	335,501	
1,1-Dichloroethylene	0	0		0	1,500	1,500	162,339	
1,2-Dichloropropane	0	0		0	2,200	2,200	238,097	
1,3-Dichloropropylene	0	0		0	61	61.0	6,602	
Ethylbenzene	0	0		0	580	580	62,771	
Methyl Bromide	0	0		0	110	110	11,905	
Methyl Chloride	0	0		0	5,500	5,500	595,243	
Methylene Chloride	0	0		0	2,400	2,400	259,742	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	22,727	
Tetrachloroethylene	0	0		0	140	140	15,152	

Toluene	0	0		0	330	330	35,715	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	151,516	
1,1,1-Trichloroethane	0	0		0	610	610	66,018	
1,1,2-Trichloroethane	0	0		0	680	680	73,594	
Trichloroethylene	0	0		0	450	450	48,702	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	11,905	
2,4-Dichlorophenol	0	0		0	340	340	36,797	
2,4-Dimethylphenol	0	0		0	130	130	14,069	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	1,732	
2,4-Dinitrophenol	0	0		0	130	130	14,069	
2-Nitrophenol	0	0		0	1,600	1,600	173,162	
4-Nitrophenol	0	0		0	470	470	50,866	
p-Chloro-m-Cresol	0	0		0	500	500	54,113	
Pentachlorophenol	0	0		0	6.877	6.88	744	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	9,849	
Acenaphthene	0	0		0	17	17.0	1,840	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	6,385	
Benzo(a)Anthracene	0	0		0	0.1	0.1	10.8	
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	649,356	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	98,486	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	5,844	
Butyl Benzyl Phthalate	0	0		0	35	35.0	3,788	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	17,316	
1,3-Dichlorobenzene	0	0		0	69	69.0	7,468	
1,4-Dichlorobenzene	0	0		0	150	150	16,234	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	86,581	
Dimethyl Phthalate	0	0		0	500	500	54,113	
Di-n-Butyl Phthalate	0	0		0	21	21.0	2,273	
2,4-Dinitrotoluene	0	0		0	320	320	34,632	
2,6-Dinitrotoluene	0	0		0	200	200	21,645	
1,2-Diphenylhydrazine	0	0		0	3	3.0	325	
Fluoranthene	0	0		0	40	40.0	4,329	
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	216	
Hexachlorocyclopentadiene	0	0		0	1	1.0	108	
Hexachloroethane	0	0		0	12	12.0	1,299	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	227,275	
Naphthalene	0	0		0	43	43.0	4,654	
Nitrobenzene	0	0		0	810	810	87,663	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	367,968	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	6,385	
Phenanthrene	0	0		0	1	1.0	108	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	2,814	

THH CCT (min): 720 PMF: 0.009 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	1,000	1,000	108,226	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	606	
Total Arsenic	0	0		0	10	10.0	1,082	
Total Barium	0	0		0	1,000	1,000	108,226	
Total Boron	0	0		0	3,100	3,100	335,501	
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	140,694	
Dissolved Iron	0	0		0	300	300	32,468	
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	108,226	
Total Mercury	0	0		0	0.012	0.012	1.3	
Total Nickel	0	0		0	610	610	66,018	
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	26.0	
Total Zinc	0	0		0	7,400	7,400	800,872	
Acrolein	0	0		0	3	3.0	325	
Acrylamide	0	0		0	N/A	N/A	N/A	

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	10,823	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	617	
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	3,571	
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	7,359	
Methyl Bromide	0	0		0	47	47.0	5,087	
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	6,169	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	10,823	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	1,082,260	
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	3,247	
2,4-Dichlorophenol	0	0		0	10	10.0	1,082	
2,4-Dimethylphenol	0	0		0	100	100.0	10,823	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	216	
2,4-Dinitrophenol	0	0		0	10	10.0	1,082	
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	432,904	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	7,576	
Anthracene	0	0		0	300	300	32,468	
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	21,645	

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	10.8	
2-Chloronaphthalene	0	0		0	800	800	86,581	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	420	420	45,455	
1,3-Dichlorobenzene	0	0		0	7	7.0	758	
1,4-Dichlorobenzene	0	0		0	63	63.0	6,818	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	64,936	
Dimethyl Phthalate	0	0		0	2,000	2,000	216,452	
Di-n-Butyl Phthalate	0	0		0	20	20.0	2,165	
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	2,165	
Fluorene	0	0		0	50	50.0	5,411	
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	433	
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	3,680	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	1,082	
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	2,165	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	7.58	

CRL CCT (min): 720 PMF: 0.012 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	

Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	50	50.0	18,703	
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	
Acrylamide	0	0		0	0.07	0.07	26.2	
Acrylonitrile	0	0		0	0.051	0.051	19.1	
Benzene	0	0		0	0.58	0.58	217	
Bromoform	0	0		0	4.3	4.3	1,608	
Carbon Tetrachloride	0	0		0	0.4	0.4	150	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	150	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.55	0.55	206	
1,2-Dichloroethane	0	0		0	0.38	0.38	142	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	187	
1,3-Dichloropropylene	0	0		0	0.27	0.27	101	
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	1,721	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	63.6	
Tetrachloroethylene	0	0		0	0.69	0.69	258	
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	206	
Trichloroethylene	0	0		0	0.6	0.6	224	
Vinyl Chloride	0	0		0	0.02	0.02	7.48	
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	11.2	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	524	
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	0.032	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.37	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.037	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.37	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	1.42	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	11.2	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	120	
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	1.42	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.037	
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	7.86	
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	18.7	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	18.7	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	11.2	
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	0.03	
Hexachlorobutadiene	0	0		0	0.01	0.01	3.74	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	37.4	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.37	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	

n-Nitrosodimethylamine	0	0		0	0.00069	0.0007	0.26	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	1.87	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	1,234	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Copper	1.39	2.17	644	1,005	1,610	µg/L	644	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	Report	Report	Report	Report	Report	µg/L	2,590	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	4,754	AFC	Discharge Conc > 10% WQBEL (no RP)
Acrylamide	0.057	0.088	26.2	40.9	65.5	µg/L	26.2	CRL	Discharge Conc ≥ 50% WQBEL (RP)

Other Pollutants without Limits or Monitoring

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

Pollutants	Governing	Units	Comments

Pollutants	WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	108	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	7,921	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	606	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	108,226	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	85,543	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	94.8	µg/L	Discharge Conc < TQL
Total Chromium (III)	34,163	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	172	µg/L	Discharge Conc < TQL
Total Cobalt	1,003	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	32,468	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	17,971,266	µg/L	Discharge Conc < TQL
Total Manganese	108,226	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.012	µg/L	Discharge Conc < TQL
Total Nickel	18,577	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	540	µg/L	Discharge Conc < TQL
Total Silver	587	µg/L	Discharge Conc < TQL
Total Thallium	26.0	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	31.7	µg/L	Discharge Conc < TQL
Acrylonitrile	19.1	µg/L	Discharge Conc < TQL
Benzene	217	µg/L	Discharge Conc < TQL
Bromoform	1,608	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	150	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorobenzene	10,823	µg/L	Discharge Conc < TQL
Chlorodibromomethane	150	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	190,097	µg/L	Discharge Conc < TQL
Chloroform	617	µg/L	Discharge Conc < TQL
Dichlorobromomethane	206	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	142	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	3,571	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	187	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	101	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	7,359	µg/L	Discharge Conc < TQL

Methyl Bromide	5,087	µg/L	Discharge Conc ≤ 25% WQBEL
Methyl Chloride	295,706	µg/L	Discharge Conc < TQL
Methylene Chloride	1,721	µg/L	Discharge Conc ≤ 25% WQBEL
1,1,2,2-Tetrachloroethane	63.6	µg/L	Discharge Conc < TQL
Tetrachloroethylene	258	µg/L	Discharge Conc < TQL
Toluene	6,169	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	10,823	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	31,683	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	206	µg/L	Discharge Conc < TQL
Trichloroethylene	224	µg/L	Discharge Conc < TQL
Vinyl Chloride	7.48	µg/L	Discharge Conc < TQL
2-Chlorophenol	3,247	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	1,082	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	6,970	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	216	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	1,082	µg/L	Discharge Conc < TQL
2-Nitrophenol	84,487	µg/L	Discharge Conc < TQL
4-Nitrophenol	24,290	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	1,690	µg/L	Discharge Conc < TQL
Pentachlorophenol	11.2	µg/L	Discharge Conc < TQL
Phenol	432,904	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	524	µg/L	Discharge Conc < TQL
Acenaphthene	877	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	32,468	µg/L	Discharge Conc < TQL
Benzidine	0.032	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.37	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.037	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.37	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	1.42	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	11.2	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	21,645	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	120	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	2,851	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	10.8	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	86,581	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	1.42	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.037	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	8,660	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	758	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	6,818	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	7.86	µg/L	Discharge Conc < TQL

Diethyl Phthalate	42,244	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	26,402	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	1,162	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	18.7	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	18.7	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	11.2	µg/L	Discharge Conc < TQL
Fluoranthene	2,112	µg/L	Discharge Conc < TQL
Fluorene	5,411	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	52.8	µg/L	Discharge Conc < TQL
Hexachloroethane	37.4	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.37	µg/L	Discharge Conc < TQL
Isophorone	3,680	µg/L	Discharge Conc < TQL
Naphthalene	1,479	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	1,082	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.26	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	1.87	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	1,234	µg/L	Discharge Conc < TQL
Phenanthrene	52.8	µg/L	Discharge Conc < TQL
Pyrene	2,165	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	7.58	µg/L	Discharge Conc < TQL

Attachment C – Thermal Model

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Instructions | *Inputs*

Facility: **Hussey Copper**

Permit No.: **PA0000566**

Stream Name: **Ohio River**

Analyst/Engineer: **Curt Holes**

Stream Q7-10 (cfs)*: **4,800.0**

Outfall No.: **001**

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31		5.37		5.37
Feb 1-29		5.37		5.37
Mar 1-31		5.37		5.37
Apr 1-15		5.37		5.37
Apr 16-30		5.37		5.37
May 1-15		5.37		5.37
May 16-31		5.37		5.37
Jun 1-15		5.37		5.37
Jun 16-30		5.37		5.37
Jul 1-31		5.37		5.37
Aug 1-15		5.37		5.37
Aug 16-31		5.37		5.37
Sep 1-15		5.37		5.37
Sep 16-30		5.37		5.37
Oct 1-15		5.37		5.37
Oct 16-31		5.37		5.37
Nov 1-15		5.37		5.37
Nov 16-30		5.37		5.37
Dec 1-31		5.37		5.37

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	15360.00	15368.31
3.5	1.00	16800.00	16808.31
7	1.00	33600.00	33608.31
9.3	1.00	44640.00	44648.31
9.3	1.00	44640.00	44648.31
5.1	1.00	24480.00	24488.31
5.1	1.00	24480.00	24488.31
3	1.00	14400.00	14408.31
3	1.00	14400.00	14408.31
1.7	1.00	8160.00	8168.31
1.4	1.00	6720.00	6728.31
1.4	1.00	6720.00	6728.31
1.1	1.00	5280.00	5288.31
1.1	1.00	5280.00	5288.31
1.2	1.00	5760.00	5768.31
1.2	1.00	5760.00	5768.31
1.6	1.00	7680.00	7688.31
1.6	1.00	7680.00	7688.31
2.4	1.00	11520.00	11528.31

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Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | *WWF Results*

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	WWF Target Maximum Stream Temp. (°F)	Case 1 Daily WLA (Million BTUs/day)	Case 2 Daily WLA (°F)
Jan 1-31	40	N/A -- Case 2	110.0
Feb 1-29	40	N/A -- Case 2	110.0
Mar 1-31	46	N/A -- Case 2	110.0
Apr 1-15	52	N/A -- Case 2	110.0
Apr 16-30	58	N/A -- Case 2	110.0
May 1-15	64	N/A -- Case 2	110.0
May 16-31	72	N/A -- Case 2	110.0
Jun 1-15	80	N/A -- Case 2	110.0
Jun 16-30	84	N/A -- Case 2	110.0
Jul 1-31	87	N/A -- Case 2	110.0
Aug 1-15	87	N/A -- Case 2	110.0
Aug 16-31	87	N/A -- Case 2	110.0
Sep 1-15	84	N/A -- Case 2	110.0
Sep 16-30	78	N/A -- Case 2	110.0
Oct 1-15	72	N/A -- Case 2	110.0
Oct 16-31	66	N/A -- Case 2	110.0
Nov 1-15	58	N/A -- Case 2	110.0
Nov 16-30	50	N/A -- Case 2	110.0
Dec 1-31	42	N/A -- Case 2	110.0

Attachment D – TRC Model

TRC EVALUATION

Hussey Copper Outfall 101

4800	= Q stream (cfs)	0.5	= CV Daily
1.34	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.705	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 520.765	1.3.2.iii	WLA cfc = 720.134
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 194.049	5.1d	LTA_cfc = 418.652

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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)**