pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0001236**
Facility Type	**Industrial**	APS ID	**769639**
Major / Minor	**Minor**	Authorization ID	**909772**

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

Applicant and Facility Information

Applicant Name	**Eaton Corporation**	Facility Name	**Beaver Plant**
Applicant Address	1 Tuscarawas Road	Facility Address	1 Tuscarawas Road
	Beaver, PA 15009-1720		Beaver, PA 15009-1720
Applicant Contact	Samantha Wedekind, EHS Manager	Facility Contact	***same as applicant***
Applicant Phone	(724) 773-1286	Facility Phone	***same as applicant***
Client ID	126390	Site ID	245153
SIC Code	3613	Municipality	Vanport Township
SIC Description	Manufacturing - Switchgear and Switchboard Apparatus	County	Beaver
Date Application Received	November 30, 2011	EPA Waived?	Yes
Date Application Accepted	January 10, 2012	If No, Reason	

Purpose of Application: Renewal of an NPDES permit for discharges of industrial waste and storm water.

Summary of Review

On November 29, 2011, on behalf of Eaton Corporation (Eaton), SE Technologies, LLC submitted an application to renew NPDES Permit PA0001236 for discharges from Eaton's Beaver Plant. The application was received by DEP on November 30, 2011. The current NPDES permit for the Beaver Plant was issued on May 31, 2007 with an effective date of June 1, 2007 and an expiration date of May 31, 2012. The renewal application was received at least 180 days before the expiration date (i.e., was received before December 3, 2011), so the application was timely. In accordance with 25 Pa. Code § 92a.7(b) and (c) and 40 CFR § 122.6(d), since the application was timely and DEP did not reissue a permit for the Beaver Plant before May 31, 2012, the terms and conditions of the 2007 permit were automatically continued and remain in effect until the Department takes a final action on the pending renewal application.

On August 31, 2021, DEP requested new sample analyses and an updated application to ensure DEP has the most up-to-date information on the Beaver Plant and its discharges. On January 14, 2022, on behalf of Eaton, SE Technologies, LLC submitted an addendum to the pending NPDES permit renewal application. This Fact Sheet and the draft NPDES permit are based primarily on information in the 2022 application updates.

Eaton manufactures, maintains, and tests circuit breakers and automatic electrical switches at the Beaver Plant. NPDES Permit PA0001236 currently authorizes Eaton to discharge industrial wastes and storm water from nine outfalls at the Beaver Plant. Outfalls 001, 003, 004, 005, 006, 007, 008, and 009 are authorized to discharge storm water runoff from the site to Twomile Run, a stream designated for warm water fishes that flows near the plant. Outfall 002 is authorized to discharge process wastewaters from Eaton's manufacturing and related operations to the Ohio River. Process wastewaters currently consist of boiler blowdown, compressor blowdown, softener backwash water, weld/braze contact cooling water, and wastewaters from the cyclojet parts washer, ultrasonic parts washer, tumble barrel, and drum cleaning. Process wastewaters flow to a weir tank for flow equalization and then to a pH Adjustment Tank where the pH of the wastewaters, which are generally alkaline, is neutralized with sulfuric acid. The treated process wastewaters discharge through a pipeline that follows a path parallel to Twomile Run to the Ohio River. Effluent limits for Outfall 002's process wastewaters are based partly on Federal Effluent Limitation Guidelines for the Metal Products and Machinery (MP&M) Point Source Category under 40 CFR Part 438.

Approve	Deny	Signatures	Date
✓		Ryan C. Decker, P.E. / Environmental Engineer	May 22, 2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	June 8, 2023

Summary of Review

The limits are imposed at Internal Monitoring Point (IMP) 302. IMPs 102 and 202 and their effluent limits were eliminated as part of the 2007 permit due to the elimination of Eaton's electroplating and heat-treating processes. Consequently, IMP 302's wastewaters are the only wastewaters discharging through Outfall 002.

Outfall 008 will be eliminated as part of this NPDES permit renewal because the outfall location could not be located and is believed to no longer exist.

Treatment System Modifications

The process wastewater treatment systems at the Beaver Plant were originally authorized by Water Quality Management (WQM) Permit 713 (Application No. 9102-IW) issued to the Westinghouse Electric Corporation on May 28, 1948. WQM Permit 0486201 was issued to Westinghouse Electric Corporation on January 22, 1987 for a discharge pipeline from the Beaver Plant to the Ohio River. The treatment systems authorized by WQM Permit 713 included treatment units for chromium reduction, cyanide destruction, and acid/caustic wastewater neutralization. The treatment system was downsized to a simple pH adjustment system by Eaton after heating treating, electroplating, and phosphating operations ceased in 2001, 2002, and 2005, respectively. The changes to the treatment systems and a previously undocumented transfer of ownership from Westinghouse Electric Corporation to Eaton Corporation on or about January 27, 1994 will be addressed by amending WQM Permit 0486201 to include the modified treatment units (in addition to the discharge pipeline previously authorized by that permit) and to document the transfer of ownership of the Beaver Plant from Westinghouse Electric Corporation to Eaton Corporation. WQM Permit 713 (Application No. 9102-IW) will be terminated because the treatment facilities it authorized largely have been replaced (except for a lagoon that is still in use) and because authorization for the replacement facilities will be incorporated into and consolidated by WQM Permit 0486201 A-1.

Discharges from a groundwater remediation system formerly associated with the Beaver Plant are permitted separately by NPDES Permit PA0216500. NPDES Permit PA0216500 was originally issued to Westinghouse Electric Corporation on May 2, 1994. Westinghouse Electric Corporation manufactured case circuit breakers at the Beaver Plant. The Beaver Plant was sold to Eaton Corporation on or about January 27, 1994, but Westinghouse maintained responsibility for operating the groundwater remediation systems. The Beaver Groundwater Remediation system is currently operated by CBS Corporation. The system consists of a UV system, bag filters, activated carbon adsorption, and equalization and is designed primarily to treat and remove Trichloroethylene, Total Suspended Solids, and Manganese.

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)	Variable
Latitude	40° 41' 38.0"	Longitude	-80° 19' 5.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from the northeastern edge of the facility along Tuscarawas Road and the majority of the rear parking lot behind the facility		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.59
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired (Aquatic Life)		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.78

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.011 (avg.); 0.019 (max)
Latitude	40° 40' 51.0"	Longitude	-80° 20' 2.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Sources monitored at IMP 302		
Receiving Waters	Ohio Run (WWF)	Stream Code	32317
NHD Com ID	99679242	RMI	952.9
Drainage Area	22,800	Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)	4,730	Q_{7-10} Basis	ORSANCO Pollution Control Standards (2019)
Elevation (ft)	682 (normal pool elev.)	Slope (ft/ft)	0.001
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining (Aquatic Life, Potable Water Supply); Impaired (Recreation, Fish Consumption)		
Cause(s) of Impairment	1. Pathogens (Recreation); 2. Dioxins (Fish Consumption); 3. PCBs (Fish Consumption)		
Source(s) of Impairment	1. Source Unknown; 2. Source Unknown; 3. Source Unknown		
TMDL 1 Status	Pending (Pathogens, Recreation)	Name	N/A
TMDL 2 Status	Pending (Dioxins, Fish Consumption)	Name	N/A
TMDL 3 Status	Final (PCBs; Fish Consumption)	Name	Ohio River TMDL (4/9/2001)

Background/Ambient Data		Data Source
pH (SU)	7.33	Mean pH; USGS Gage 03086000 (2000 – 2013)
Temperature (°F)	66.2	Mean temp; USGS Gage 03086000 (2000 – 2013)
Hardness (mg/L)	98	Mean hardness; USGS Gage 03086000 (2000 – 2013)
Other:		

Nearest Downstream Public Water Supply Intake		BVPV Styrenics (NOVA Chemicals Corporation)	
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	1.19

Discharge, Receiving Waters and Water Supply Information

IMP No.	302	Design Flow (MGD)	Variable
Wastewater Description:	Process wastewaters including boiler blowdown, compressor blowdown, softener backwash water, weld/braze contact water, and wastewaters from the cyclojet parts washer, ultrasonic parts washer, tumble barrel, and drum cleaning		

Changes Since Last Permit Issuance: Process modifications to reduce mercury effluent concentrations.

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	Variable
Latitude	40° 41' 30"	Longitude	-80° 19' 12"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from roof drains located on the central part of the manufacturing building and from the rear of the facility		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.40
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.59

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	Variable
Latitude	40° 41' 30.0"	Longitude	-80° 19' 12.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from roof drains on the west side of the manufacturing building and portions of the parking lot		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.39
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.58

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	005	Design Flow (MGD)	Variable
Latitude	40° 41' 26.0"	Longitude	-80° 19' 19.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from open paved areas on the west side of the facility including portions of a solar panel farm		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.26
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.45

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	006	Design Flow (MGD)	0.0000144
Latitude	40° 41' 36.0"	Longitude	-80° 19' 05.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Non-contact cooling water from cleaning activities associated with the administrative building's cooling tower and storm water runoff from roof drains located on the east side of the manufacturing building and from the employee parking lot		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.49
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.68

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	007	Design Flow (MGD)	Variable
Latitude	40° 41' 29"	Longitude	-80° 19' 14"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from open paved areas on the west side of the facility		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.35
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.54

Changes Since Last Permit Issuance: None

Other Comments:

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	008	Design Flow (MGD)	Variable
Latitude	40° 41' 26"	Longitude	-80° 19' 30"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water associated with industrial activity		

Changes Since Last Permit Issuance: According to the applicant, Outfall 008 could not be located during multiple site visits in both dry weather and wet weather. The applicant's conclusion was that Outfall 008 is no longer an active storm water conveyance. Outfall 008 will be removed from the permit, but non-point source storm water runoff from the Outfall 008 drainage area is still subject to the use of best management practices.

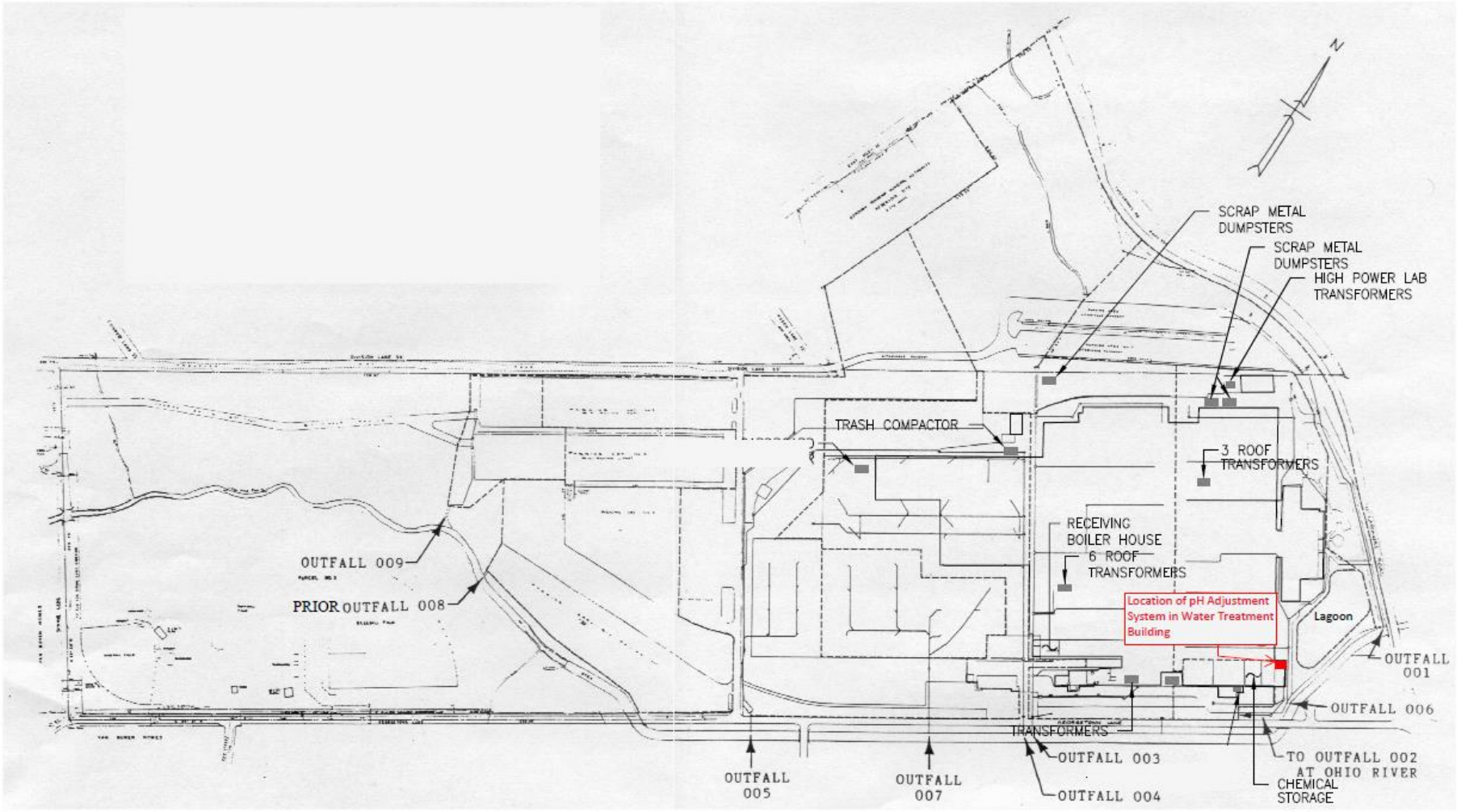
Discharge, Receiving Waters and Water Supply Information

Outfall No.	009	Design Flow (MGD)	Variable
Latitude	40° 41' 26.0"	Longitude	-80° 19' 32.0"
Quad Name	Beaver	Quad Code	1303
Wastewater Description:	Storm water runoff from undeveloped vegetated areas and open paved areas on the west side of the facility, including portions of a solar panel farm		
Receiving Waters	Twomile Run (WWF)	Stream Code	33940
NHD Com ID	99679016	RMI	1.06
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation; Siltation		
Source(s) of Impairment	Highway/road/bridge runoff (non-construction related); Removal of Riparian Vegetation		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	BVPV Styrenics (NOVA Chemicals Corporation)		
PWS ID	5040300	PWS Withdrawal (MGD)	216 (safe yield)
PWS Waters	Ohio River	Flow at Intake (cfs)	4,730
PWS RMI	951.71	Distance from Outfall (mi)	2.25

Changes Since Last Permit Issuance: None

Other Comments:

Image Source and Date: Google Earth Pro, April 2022. Annotations by DEP.



LEGEND:

BUILDING STRUCTURE BOUNDARY

DRAWN BY	DJF
DATE	12/28/21
CHECKED BY	JDW
SET JOB NO.	211115
SET DWG FILE	EATONb02.dwg
DRAWING SCALE	N.T.S.

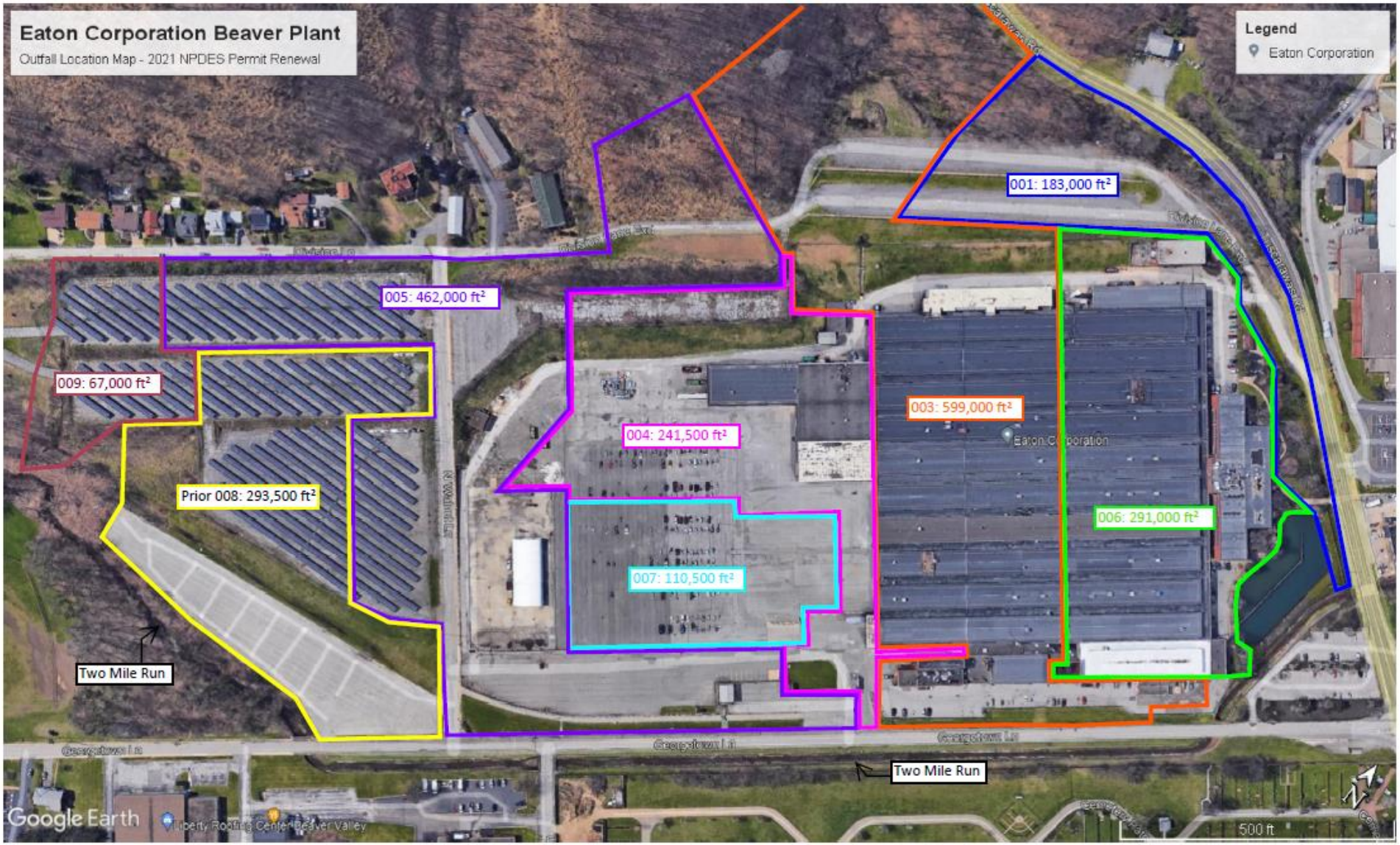
TECHNOLOGIES
98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

EATON ELECTRICAL, INC.
BEAVER FACILITY
VANPORT TOWNSHIP, BEAVER COUNTY, PENNSYLVANIA
STORM DRAINS, OUTFALLS AND MATERIAL STORAGE LOCATIONS

DRAWING NAME: FIGURE 2a
REV.: 0

Plot: env045 01/31/2012 13:50 C:\EATON\211080\EATONb02.dwg

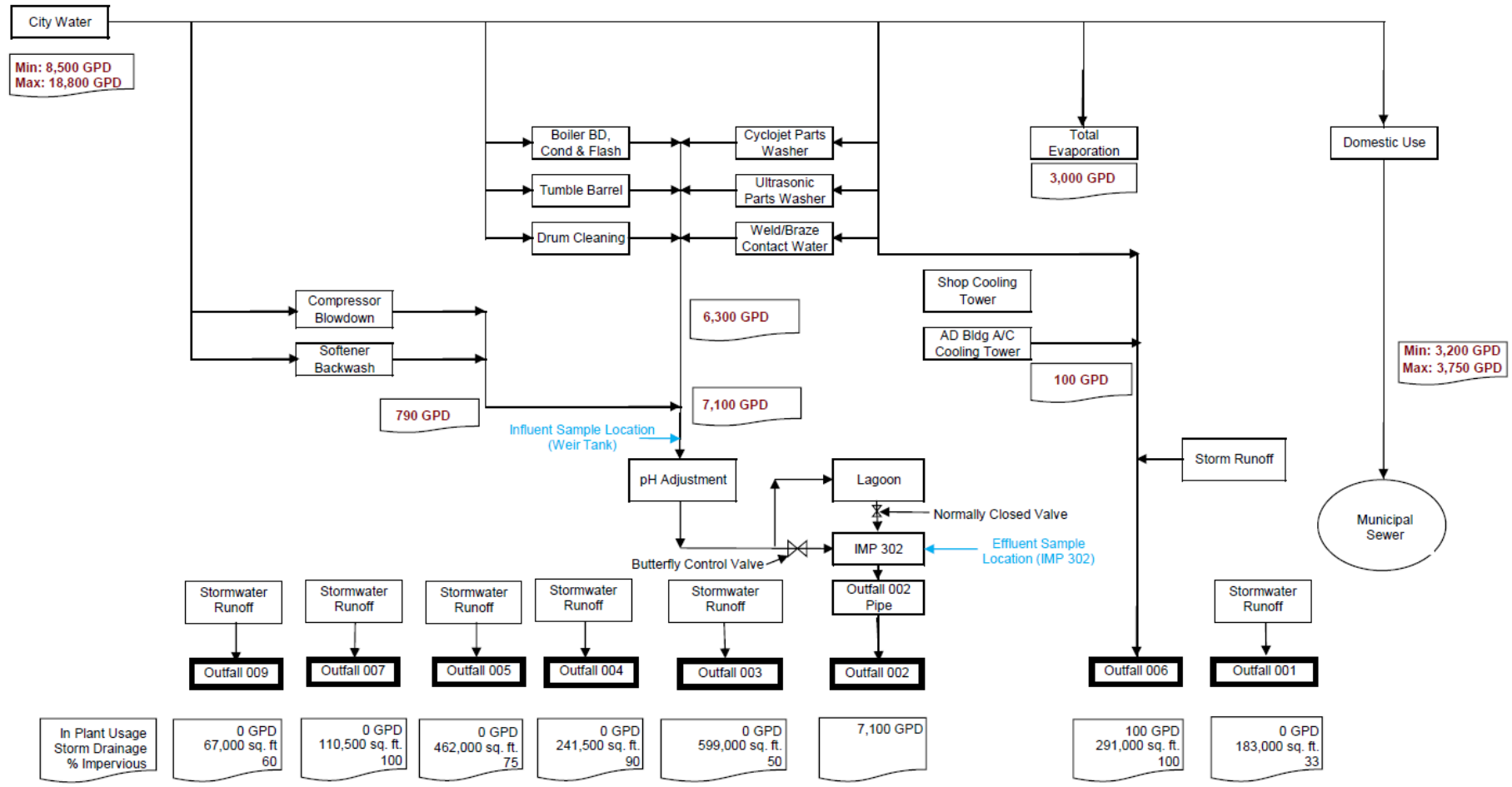
Figure 2b - Eaton Corporation Outfall Drainage Areas

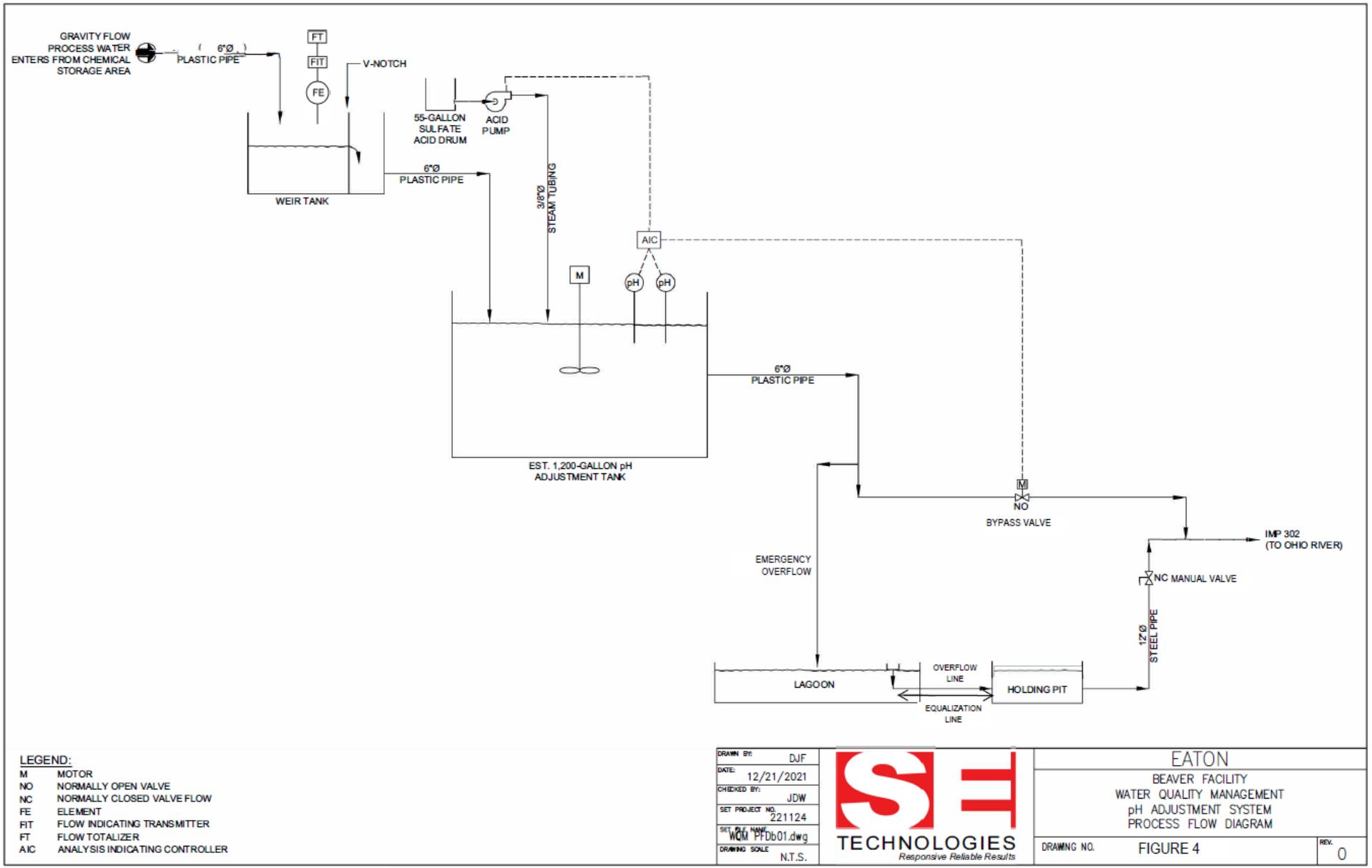


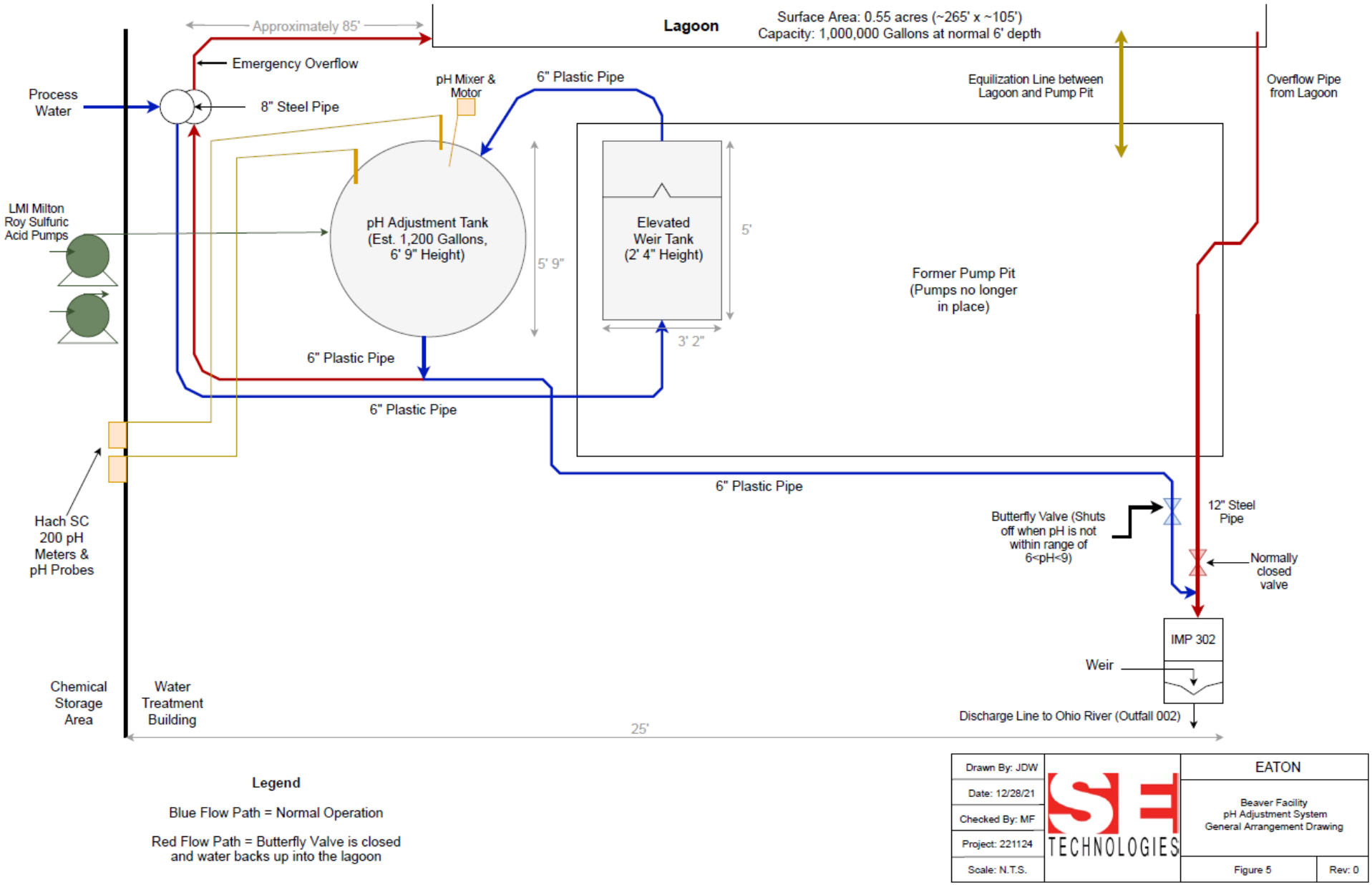
Notes:
The yellow drainage area no longer discharges as a point source to Two Mile Run.

Figure 3. Facility Water Balance

Eaton Corporation NPDES Renewal
January 2022




GRAVITY FLOW PROCESS WATER ENTERS FROM CHEMICAL STORAGE AREA
6"Ø PLASTIC PIPE
FT
FIT
FE
V-NOTCH
55-GALLON SULFATE ACID DRUM
ACID PUMP
WEIR TANK
6"Ø PLASTIC PIPE
3/8"Ø STEAM TUBING
AIC
M
pH
pH
EST. 1,200-GALLON pH ADJUSTMENT TANK
6"Ø PLASTIC PIPE
M
NO
BYPASS VALVE
IMP 302 (TO OHIO RIVER)
EMERGENCY OVERFLOW
NC MANUAL VALVE
1"Ø STEEL PIPE
LAGOON
OVERFLOW LINE
HOLDING PIT
EQUALIZATION LINE
LEGEND:
M MOTOR
NO NORMALLY OPEN VALVE
NC NORMALLY CLOSED VALVE FLOW
FE ELEMENT
FIT FLOW INDICATING TRANSMITTER
FT FLOW TOTALIZER
AIC ANALYSIS INDICATING CONTROLLER
DRAWN BY: DJF
DATE: 12/21/2021
CHECKED BY: JDW
SET PROJECT NO. 221124
SET FILE NAME WQM PFDb01.dwg
DRAWING SCALE N.T.S.
TECHNOLOGIES
Responsive Reliable Results
EATON
BEAVER FACILITY
WATER QUALITY MANAGEMENT
pH ADJUSTMENT SYSTEM
PROCESS FLOW DIAGRAM
DRAWING NO. FIGURE 4
REV. 0


Approximately 85'
Lagoon
Surface Area: 0.55 acres (~265' x ~105')
Capacity: 1,000,000 Gallons at normal 6' depth
Emergency Overflow
Process Water
8" Steel Pipe
pH Mixer & Motor
6" Plastic Pipe
Equilization Line between Lagoon and Pump Pit
Overflow Pipe from Lagoon
LMI Milton Roy Sulfuric Acid Pumps
pH Adjustment Tank (Est. 1,200 Gallons, 6' 9" Height)
5' 9"
Elevated Weir Tank (2' 4" Height)
5'
3' 2"
Former Pump Pit (Pumps no longer in place)
6" Plastic Pipe
6" Plastic Pipe
6" Plastic Pipe
Hach SC 200 pH Meters & pH Probes
Butterfly Valve (Shuts off when pH is not within range of 6<pH<9)
12" Steel Pipe
Normally closed valve
IMP 302
Weir
Chemical Storage Area
Water Treatment Building
25'
Discharge Line to Ohio River (Outfall 002)
Legend
Blue Flow Path = Normal Operation
Red Flow Path = Butterfly Valve is closed and water backs up into the lagoon
Drawn By: JDW
Date: 12/28/21
Checked By: MF
Project: 221124
Scale: N.T.S.
TECHNOLOGIES
EATON
Beaver Facility
pH Adjustment System
General Arrangement Drawing
Figure 5
Rev: 0

Treatment Facility Summary		
Treatment Facility: pH Adjustment System		
WQM Permit No.	**Issuance Date**	**Purpose**
713 (App. No. 9102IW)	May 28, 1948	Permit issued to Westinghouse Electric Corporation by the Sanitary Water Board for a treat system for chromic rinses, cyanide rinses, and acid/caustic rinses from electroplating operations. Chromic rinses were processed through a Chrome Reduction System that added sulfuric acid to lower the pH and sodium metabisulfite as a reducing agent to convert hexavalent chromium to trivalent chromium. Effluent from the Chrome Reduction System discharged to an Acid Rinse Collection Tank. Cyanide rinses were collected in a Cyanide Rinse Collection Tank and then pumped to a Cyanide Reaction Tank for cyanide destruction via alkaline chlorination at pH >10. A portion of the effluent discharged to an Acid Rinse Collection Tank and a portion went directly to a Settling Tank. Acid and caustic rinses (separate from chromic and cyanide rinses) also were collected in the Acid Rinse Collection Tank. The pH of the combined wastewaters was adjusted, and the effluent was directed to the Settling Tank where a polymer was added to drop out metal hydroxides. Sludge was dewatered using a filter press and sent for offsite disposal. Filtrate from the press was returned the Settling Tank. Effluent from the Settling Tank was directed to sand filters and then to a holding pond, which discharged through Outfall 002
713 (App. No. 9102IW) Modification	February 28, 1969	Permit modification issued to Westinghouse Electric Corporation by the Sanitary Water Board to require a plan to prevent accidental discharges of polluting materials.
		Pending termination following consolidation with WQM 0486201 (see below).

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Neutralization	N/A	—

Treatment Facility Summary		
Treatment Facility: Outfall 002 Discharge Pipeline		
WQM Permit No.	**Issuance Date**	**Purpose**
0486201	January 22, 1987	Permit issued to Westinghouse Electric Corporation by the Pennsylvania Department of Environmental Resources for the construction of 7,900 feet of 12-inch diameter PVC pipe to an outfall on the Ohio River near the mouth of Twomile Run.
0486201 A-1	Pending	Permit amendment will be issued to Eaton Corporation to consolidate authorization for the modified pH Adjustment System and the Outfall 002 Discharge Pipeline into one WQM Permit (0486201 A-1) and to document the transfer of ownership from Westinghouse Electric Corporation to Eaton Corporation.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	None	Wastewater conveyance	N/A	—

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

Compliance History

DMR Data for Outfall 003 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Total Zinc (mg/L) Average Monthly	0.042			0.043			0.104			0.057		
Total Zinc (mg/L) Daily Maximum	0.05			0.048			0.104			0.078		

DMR Data for Outfall 004 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Total Zinc (mg/L) Average Monthly	0.049			0.036			0.033			0.039		
Total Zinc (mg/L) Daily Maximum	0.055			0.037			0.033			0.041		

DMR Data for Outfall 005 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Total Zinc (mg/L) Average Monthly	0.069			0.049			0.446			0.054		
Total Zinc (mg/L) Daily Maximum	0.088			0.069			0.446			0.069		

DMR Data for Outfall 006 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Flow (MGD) Average Monthly	0.328	0.271	0.72	0.25	0.26	0.25	0.26	0.229	0.229	0.264	0.40	1.81
Flow (MGD) Daily Maximum	0.438	0.281	1.2	0.26	0.39	0.26	0.28	0.239	0.239	0.385	0.41	2.77
pH (S.U.) Minimum	8.08	8.46	8.17	8.45	8.57	8.44	8.41	8.27	8.55	7.97	8.01	7.76
pH (S.U.) Maximum	8.15	8.63	8.60	8.56	8.63	8.62	8.65	8.37	8.72	8.36	8.18	7.84
Temperature (Day 1 thru 15) (ºF) Daily Maximum							65			64.58		

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Temperature (Day 16 thru End of Month) (ºF) Daily Maximum							66			65.12		
Temperature (ºF) Daily Maximum								69.3	67.6			
Total Zinc (mg/L) Average Monthly	0.067			0.095			0.062			0.053		
Total Zinc (mg/L) Daily Maximum	0.080			0.128			0.062			0.065		

DMR Data for Outfall 007 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Total Zinc (mg/L) Average Monthly	0.053			0.108			0.112			0.037		
Total Zinc (mg/L) Daily Maximum	0.053			0.192			0.112			0.052		

DMR Data for Outfall 302 (from April 1, 2022 to March 31, 2023)

Parameter	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22
Flow (MGD) Average Monthly	0.012	0.006	0.008	0.010	0.010	0.011	0.008	0.009	0.08	0.008	0.009	0.015
Flow (MGD) Daily Maximum	0.017	0.014	0.015	0.015	0.016	0.016	0.016	0.012	0.09	0.012	0.022	0.019
pH (S.U.) Minimum	7.06	8.69	8.21	8.15	8.24	8.1	8.28	8.03	7.98	7.80	7.89	7.82
pH (S.U.) Maximum	8.48	8.89	8.79	8.68	8.81	8.85	8.57	8.67	8.54	8.38	8.59	8.50
TRC (mg/L) Average Monthly	0.07	0.04	0.145	0.06	0.2	0.07	0.155	0.165	0.07	0.17	0.14	0.15
TRC (mg/L) Instantaneous Maximum	0.11	0.07	0.150	0.07	0.22	0.17	0.16	0.17	0.17	0.17	0.15	0.15
TSS (mg/L) Average Monthly	17.8	58.5	5.25	< 5.0	6.8	5.25	10.8	< 5.0	7.0	6.0	7.5	6.8
TSS (mg/L) Daily Maximum	25.0	62.0	5.5	< 5.0	8.5	5.5	16.5	< 5.0	9.0	7.0	8.0	8.0
Oil and Grease (mg/L) Average Monthly	< 5.0	< 5.0	< 5.0	5.95	< 3.2	< 5.0	1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Oil and Grease (mg/L) Daily Maximum	< 5.0	< 5.0	< 5.0	6.9	< 5.0	< 5.0	1.5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Development of Effluent Limitations

IMP No.	302	**Design Flow (MGD)**	0.011 (avg.); 0.019 (max)
Latitude	See Outfall 002	**Longitude**	See Outfall 002
Wastewater Description:	Process wastewaters including boiler blowdown, compressor blowdown, softener backwash water, weld/braze contact water, and wastewaters from the cyclojet parts washer, ultrasonic parts washer, tumble barrel, and drum cleaning		

Process wastewater enters the Wastewater Treatment (WWT) Building. Upon entering the WWT Building, the process wastewater flows to a weir tank where the instantaneous flow is recorded to a localized flow meter. The process wastewater then leaves the weir tank and flows to the 1,200-gallon pH adjustment tank where sulfuric acid is added to lower the pH to an appropriate level. The pH adjustment tank includes a motor and mixer that evenly distributes the sulfuric acid. The NPDES permit requires the pH of the water discharged through IMP 302 and Outfall 002 to be between 6.0 and 9.0 standard units. Process wastewater that has been brought to an appropriate pH discharges through a bypass valve to the Ohio River via Outfall 002. If the pH adjustment tank does not bring the pH to an acceptable level, the bypass valve to IMP 302 is automatically closed and the process wastewater is routed to an onsite lagoon. Wastewater flow out of IMP 302 resumes when the pH of wastewater in the pH adjustment tank is brought to an appropriate level.

Wastewaters monitored at IMP 302 are the only wastewaters that discharge through the Outfall 002 pipeline to the Ohio River. Sources monitored at IMPs 102 and 202 from electroplating and heat-treating processes were eliminated before the current NPDES permit was issued on May 31, 2007. The regulation of wastewaters at IMP 302 is consistent with 40 CFR § 122.45(h)[1], which allows for the imposition of effluent limitations on internal waste streams in these circumstances.

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

In 2007, DEP determined that Eaton is no longer subject to Federal Effluent Limitations Guidelines (ELGs) promulgated under 40 CFR Part 433 – Metal Finishing Point Source Category. That determination was based on the applicability description given in 40 CFR § 433.10(a), which states:

> Except as noted in paragraphs (b) and (c), of this section, the provisions of this subpart apply to plants which perform any of the following six metal finishing operations on any basis material: Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling, and Printed Circuit Board Manufacture. If any of those six operations are present, then this part applies to discharges from those operations and also to discharges from any of the following 40 process operations: Cleaning, Machining, Grinding, Polishing, Tumbling, Burnishing, Impact Deformation, Pressure Deformation, Shearing, Heat Treating, Thermal Cutting, Welding, Brazing, Soldering, Flame Spraying, Sand Blasting, Other Abrasive Jet Machining, Electric Discharge Machining, Electrochemical Machining, Electron Beam Machining, Laser Beam Machining, Plasma Arc Machining, Ultrasonic Machining, Sintering, Laminating, Hot Dip Coating, Sputtering, Vapor Plating, Thermal Infusion, Salt Bath Descaling, Solvent Degreasing, Paint Stripping, Painting, Electrostatic Painting, Electropainting, Vacuum Metalizing, Assembly, Calibration, Testing, and Mechanical Plating.

Eaton's activities include cleaning, tumbling, welding, and brazing, which are among the list of 40 process operations identified in § 433.10(a), but Eaton does not perform any of the six metal finishing operations (Electroplating, Electroless Plating, Anodizing, Coating, Chemical Etching and Milling, and Printed Circuit Board Manufacture). The interpretation of the portion of the applicability description that states, "If any of those six operations are present, then this part applies to discharges from those operations and also to discharges from any of the following 40 process operations…" was that wastewaters from any of the 40 process operations would only be subject to the Metal Finishing ELGs if those operations were conducted in conjunction with one of the six metal finishing operations.

Eaton ceased heat treating in 2001 and electroplating operations ceased in 2002. All process tanks, treatment tanks, and piping associated with the electroplating operations were removed. In December 2005, Eaton shut down its painting line and associated phosphating operations. With the cessation of electroplating and phosphating (coating)—two of the six metal finishing operations that subject facilities to Part 433—Eaton was no longer subject to the requirements of Part 433.

[1] 40 CFR § 122.45(h)(1): "When permit effluent limitations or standards imposed at the point of discharge are impractical or infeasible, effluent limitations or standards for discharges of pollutants may be imposed on internal waste streams before mixing with other waste streams or cooling water streams."

Effluent Limitations Guidelines for the Metal Products and Machinery Point Source Category

ELGs for the Metal Products and Machinery (MP&M) Point Source Category under 40 CFR Part 438 were applied to Eaton's discharges in 2007 following DEP's determination that Part 433 does not apply. The MP&M ELGs regulate discharges from a broad group of industrial sectors' process operations (operations such as the forty operations listed in § 433.10(a)) that are not conducted in conjunction with another activity that is subject to another existing ELG.

The general applicability description for the MP&M ELGs under 40 CFR § 438.1(a) states:

> As defined more specifically in subpart A, except as provided in paragraphs (b) through (e) of this section, this part applies to process wastewater discharges from oily operations (as defined at §438.2(f) and appendix B of this part) to surface waters from existing or new industrial facilities (including facilities owned and operated by Federal, State, or local governments) engaged in manufacturing, rebuilding, or maintenance of metal parts, products, or machines for use in the Metal Product & Machinery (MP&M) industrial sectors listed in this section. The MP&M industrial sectors consist of the following:
>
> Aerospace; Aircraft; Bus and Truck; Electronic Equipment; Hardware; Household Equipment; Instruments; Miscellaneous Metal Products; Mobile Industrial Equipment; Motor Vehicle; Office Machine; Ordnance; Precious Metals and Jewelry; Railroad; Ships and Boats; or Stationary Industrial Equipment.

The 16 industrial sectors regulated by the MP&M ELGs include facilities that manufacture, maintain, and rebuild metal products under more than 200 different Standard Industrial Classification (SIC) codes. Eaton operates under NAICS Code 335313 (SIC 3613) – Switchgear and Switchboard Apparatus Manufacturing.

Pursuant to Appendix A of EPA's "Development Document For the Final Effluent Limitations Guidelines and Standards for the Metal Products and Machinery Point Source Category", Eaton's NAICS/SIC code is covered under the Stationary Industrial Equipment MP&M industrial sector (see **Attachment A** of this Fact Sheet for the relevant page from Appendix A of the Development Document).

As described in § 438.1, the MP&M ELGs apply to process wastewater discharges from "oily operations" conducted at facilities within one of the 16 MP&M industrial sectors. "Oily operations" is defined in § 438.2(f):

> *Oily operations* means one or more of the following: abrasive blasting; adhesive bonding; alkaline cleaning for oil removal; alkaline treatment without cyanide; aqueous degreasing; assembly/disassembly; burnishing; calibration; corrosion preventive coating (as defined in paragraph (c) of this section); electrical discharge machining; floor cleaning (in process area); grinding; heat treating; impact deformation; iron phosphate conversion coating; machining; painting-spray or brush (including water curtains); polishing; pressure deformation; solvent degreasing; steam cleaning; testing (e.g., hydrostatic, dye penetrant, ultrasonic, magnetic flux); thermal cutting; tumbling/barrel finishing/mass finishing/vibratory finishing; washing (finished products); welding; wet air pollution control for organic constituents; and numerous sub-operations within those listed in this paragraph. In addition, process wastewater also results from associated rinses that remove materials that the preceding processes deposit on the surface of the workpiece. These oily operations are defined in appendix B of this part.

As stated previously, Eaton conducts tumbling, washing, and welding, so Eaton conducts "oily operations" as defined in § 438.2(f). Wastewaters from oily operations are subject to the limitations under Subpart A of 40 CFR Part 438. Section 438.12 imposes the following Best Practicable Control Technology (BPT) effluent limitations on process wastewaters from oily operations:

Table 1. BPT/BCT Effluent Limits for Oily Wastes

Parameter	Maximum Daily (mg/L)
Total Suspended Solids	62
O&G (as HEM)[1]	46
pH	within the range of 6 to 9

[1] Total recoverable oil and grease measured as n-hexane extractable material

Effluent limits for the Best Control Technology for Conventional Pollutants (BCT) under § 438.13 are equivalent to those specified in § 438.12. There are no Best Available Technology (BAT) limits because Part 438 only controls conventional pollutants.

Regulatory Effluent Standards, Best Professional Judgment (BPJ) Effluent Limitations, and Anti-backsliding

In the current permit that was issued in 2007, IMP 302 was subject to the effluent limits and monitoring requirements listed in Table 2.

Table 2. Current Effluent Limits at IMP 302

Parameter	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instant Max (mg/L)
Flow (MGD)	Report	Report	—
Total Suspended Solids	31	62	—
Oil and Grease	15	30	—
Total Residual Chlorine	0.5	—	1.0
pH (S.U.)	6.0 (minimum)	—	9.0 (maximum)

Flow monitoring was required pursuant to 25 Pa. Code § 92.41(c)(1) and will continued to be required pursuant to the same regulatory requirement in DEP's updated regulation: 25 Pa. Code § 92a.61(d)(1).

The average monthly limit for TSS was imposed pursuant to 40 CFR § 122.45(d)(1), which states:

> (d) For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as:
>
> (1) Maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works

IMP 302's discharges are continuous discharges and require average monthly discharge limitations. Therefore, an average monthly limit was calculated for TSS by dividing the maximum daily limit from Part 438 by a factor of 2.0 based on the multipliers used to calculate industrial waste effluent limits identified in Chapter 2, Section C, Page 16 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001, October 1, 1997] and in the absence of case-specific statistical analyses. DEP has the authority to impose more stringent limits than those required by the Federal ELGs pursuant to Sections 304(b)(2)(B), 304(b)(4)(B), and 402(a)(1) of the Clean Water Act and corresponding regulations under 40 CFR § 125.3 (incorporated by reference at 25 Pa. Code § 92a.48(a)(3)), which allow for the establishment of effluent limits on a case-by-case basis using Best Professional Judgment (BPJ).

The pH and Oil and Grease limits in Table 2 were imposed pursuant to 25 Pa. Code § 92.2c(c)—now 25 Pa. Code § 92a.48(a)(2)—regarding the requirement for industrial wastes to comply with § 95.2) and 25 Pa. Code §§ 95.2(1) and 95.2(2), which specify 6.0 s.u. minimum and 9.0 s.u. maximum pH limits for industrial wastes and the 15 mg/L average and 30 mg/L maximum Oil and Grease limits for oil-bearing wastewaters, respectively. As more stringent requirements specified by Pennsylvania, the Oil and Grease limits of § 95.2(2) supersede the 46 mg/L Oil and Grease limit of Part 438.

As explained at the beginning of this section, off-spec wastewaters that do not meet pH limits are directed to an onsite lagoon. The application states that the lagoon is dosed with up to 300 gallons of sodium hypochlorite once or twice per year to control algae in the lagoon. Pursuant to 25 Pa. Code § 92a.48(b)(2), for facilities or activities using chlorination, an effluent limitation for TRC of 0.5 mg/L (30-day average) constitutes the Best Available Technology. To be consistent with 40 CFR § 122.45(d)(1), the existing 1.0 mg/L instantaneous maximum limit will be imposed as a maximum daily limit in addition to the 0.5 mg/L average monthly limit from § 92a.48(b)(2).

The effluent limitations in Table 2 will be maintained at IMP 302 pursuant to EPA's anti-backsliding regulation at 40 CFR § 122.44(l)(1) (incorporated by reference in Pennsylvania regulations at 25 Pa. Code § 92a.44), which requires that "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."

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

Wastewaters monitored at IMP 302 are the only wastewaters discharging through Outfall 002. Since TBELs and monitoring requirements for those wastewaters are imposed at IMP 302, WQBELs will be developed for Outfall 002's discharge location but will be imposed at IMP 302. In addition, Eaton generally does not collect samples at the end of the Outfall 002 pipeline.

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

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

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP's TOXCONC spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling. Ammonia-nitrogen, CBOD-5, and dissolved oxygen are analyzed separately using DEP's WQM 7.0 model.

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

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

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

Ohio River Valley Water Sanitation Commission (ORSANCO) Requirements for Mercury

ORSANCO's 2019 Pollution Control Standards include a non-carcinogenic human health criterion for mercury of 0.000012 mg/L (0.012 µg/L or 12 nanograms/liter). Pursuant to Chapter 4.F.6 of ORSANCO's Standards, Mercury is a Bioaccumulative Chemical of Concern (BCC). Pursuant to Chapter 4.F.1 of ORSANCO's Standards, facilities with direct discharges to the Ohio River that existed on or before October 16, 2003, must have mixing zones eliminated for any BCC as soon as practicable. In short, any ongoing discharges to the Ohio River that commenced on or before October 16, 2003 must comply with ORSANCO's 12 ng/L mercury criterion at the point of discharge as soon as practicable.

The Toxics Management Spreadsheet accounts for ORSANCO's limitations on BCCs subject to the aforementioned TMS modeling step that eliminates pollutants as candidates for water quality modeling if the pollutants are not detected at laboratory Reporting Limits that are equivalent to DEP's Target Quantitation Limits (Target QLs). DEP's normal Target QL for mercury is 0.2 µg/L (200 ng/L) based on the use of EPA-approved Cold Vapor-Atomic Absorption Spectroscopy (CVAAS) analytical methodologies (e.g., EPA Method 245.1, 245.2, Standard Methods 3112 B, etc.).

In 2014, EPA promulgated the Sufficiently Sensitive Methods Rule, which requires facilities to use EPA-approved analytical methods that are capable of detecting and measuring pollutants at, or below, the applicable water quality criteria or permit limits. The rule is codified in 40 CFR § 122.21(e)(3) (regarding application completeness) and at 40 CFR § 122.44(i)(1)(iv) (regarding permit monitoring requirements). EPA also modified 40 CFR § 136.1 (regarding the applicability of test procedures for the analysis of pollutants) by adding a new paragraph (c), which is simply a cross-reference to the changes promulgated in 40 CFR § 122.21(e)(3) and 40 CFR § 122.44(i)(1)(iv).

Table IB in 40 CFR § 136.3 identifies additional EPA-approved analytical methods that employ Cold Vapor-Atomic Fluorescence Spectroscopy (CVAFS) (e.g., EPA Methods 245.7 and 1631 Revision E). EPA Method 1631 Revision E has a detection level on the order of 1 ng/L and is capable of quantifying mercury at a level low enough to evaluate compliance with the ORSANCO standard for mercury.

DEP has not incorporated EPA's Sufficient Sensitive Methods Rule—as it applies to application completeness—into Pennsylvania's regulations, so achieving the Target QLs for the application is optional, but not without consequence.

Reasonable Potential Analysis and WQBEL Development for Outfall 002 (via IMP 302)

Table 3. TMS Inputs for 002 (302)

Parameter	Value
River Mile Index	952.9
Discharge Flow (MGD)	0.016
Discharge Hardness (mg/L)	264
Discharge pH (s.u.)	7.23
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	22,800
Q_{7-10} (cfs)	4,730
Low-flow yield (cfs/mi^2)	0.081
Elevation (ft)	682
Slope	0.0001

Discharges from Outfall 002 (via IMP 302) are evaluated based on the maximum concentrations reported on the permit renewal application. The TMS model is run with the modeled discharge and receiving stream characteristics shown in Table 3. Pursuant to 25 Pa. Code § 93.2(b), water quality criteria developed by ORSANCO for the Ohio River are used in the TMS modeling to the extent that ORSANCO's water quality criteria are more stringent than Pennsylvania's statewide water quality criteria in 25 Pa. Code Chapter 93.

The modeled discharge flow is the average of the average monthly flows reported on DMRs between December 2020 and December 2022. The Q_{7-10} flow of the Ohio River is 4,730 cfs, which is the Q_{7-10} for the portion of the Ohio River downstream of the Montgomery Lock and Dam per Appendix C of ORSANCO's 2019 Pollution Control Standards. The width of the Ohio River – 1,200 feet – was estimated by measuring the width of the river at various points downstream of Eaton on USGS's Beaver 7.5 Minute Quad Map. The river's average depth is estimated as 15.0 feet. Since the Ohio River is comparable to a series of pools between dams, the slope is estimated as 0.0001. Hardness is the average hardness reported on the permit application and pH is the minimum long-term average pH reported on the permit application. Based on the results of DEP's preliminary TMS modeling, the permit requirements listed in Table 4 apply at IMP 302.

Table 4. Preliminary Water Quality-Based Effluent Limits for IMP 302 (Outfall 002)

Parameter	Permit Limits			Reported Result (µg/L)	Target QL (µg/L)	Governing WQBEL Basis†
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Mercury, Total	0.012	0.019	0.03	<0.2	0.002 ‡	THH
Benzidine	20.9	32.6	52.3	<63.8	50	CRL
Benzo(a)Pyrene	24.3	37.9	60.8	<12.8	2.5	CRL
Dibenzo(a,h)Anthracene	24.3	37.9	60.8	<12.8	2.5	CRL
Hexachlorobenzene	0.00008	0.0001	0.0002	<12.8	5.0	CRL
Hexachlorobutadiene	0.01	0.016	0.025	<12.8	0.5	CRL

† THH = Threshold Human Health; CRL = Cancel Risk Level
‡ Target QL for direct discharges to the Ohio River based on EPA Method 1631 Revision E

The WQBELs and reporting requirements for benzidine, benzo(a)pyrene, dibenzo(a,h)anthracene, hexachlorobenzene, and hexachlorobutadiene are the result of the applicant's attainment of analytical reporting limits that are higher than DEP's Target QLs. Even though the results were reported as less than laboratory Reporting Limits, those Reporting Limits are too high to rule out the possibility that discharges will result in excursions above Pennsylvania's water quality criteria. In these situations, DEP allows dischargers to collect additional samples and analyze them using methods with Reporting Limits equivalent to the Target QLs specified in the Instructions for DEP's "NPDES Application for Individual Permit to Discharge Industrial Wastewater". New analytical results allow DEP to reevaluate whether reasonable potential exists with the possibility of removing WQBELs and/or water quality-based reporting requirements before publishing a draft permit.

Permittees are notified of the allowance for additional sampling and analyses using more sensitive methods via a pre-draft survey that is sent to permittees before a permit is published for public comment. The survey requests permittees to report the following for pollutants that will be subject to WQBELs: 1) the suspected sources of the pollutants in the effluent; 2) what studies, if any, the permittee has completed to control or treat the pollutants; 3) the activities, upgrades, and process changes that would be necessary to achieve the WQBELs if the WQBELs cannot be achieved immediately; and 4) the estimated date by which the permittee could achieve the WQBELs. Responses to the survey are used to justify the need for and duration of a compliance schedule.

DEP sent Eaton a pre-draft survey letter on April 13, 2022. Eaton returned the survey on April 29, 2022 and reported on the survey that: 1) Eaton was not aware of the source of the pollutants; 2) that no past studies had been conducted to control or treat the pollutants; 3) that Eaton was uncertain whether the proposed WQBELs could be achieved upon permit issuance; and 4) Eaton was uncertain when the proposed WQBELs can be achieved. Eaton also indicated its intention to collect additional samples for analyses using Reporting Limits equal to or less than DEP's Target QLs.

In May and June of 2022, Eaton collected four 24-hour composite samples and analyzed the samples for the six parameters listed in Table 4. The organic pollutants were not detected in those samples, but mercury concentrations exceeded the proposed mercury WQBELs. Following the sampling, Eaton implemented what amounts to a Toxics Reduction Evaluation (TRE) for mercury. A TRE is normally implemented as part of a permit's compliance schedule with the goal of identifying pollutant sources; evaluating options to reduce and/or eliminate those sources; and evaluating options for treatment that will result in compliance with WQBELs. During the latter half of 2022, Eaton identified the primary source of mercury in the facility's operations, as explained in Eaton's "WQBEL Pre-Draft Survey Update" dated May 10, 2023 (see **Attachment C**):

> [I]t was determined that the low levels of mercury in the tumble barrel operation water [were] likely associated with the use of powder cleaning agents in the facility's tumble barrel operation. The powder cleaning agents do not contain detectable concentrations of mercury themselves. However, when combined with the metal parts and water in the tumble barrels, the powder cleaning agents bind with trace amounts of naturally occurring mercury on the surface of the parts and concentrate the mercury in the process water discharge.
>
> Upon becoming aware of the effects of powder cleaning agents, Eaton worked with the product supplier to replace the powder cleaning agents with liquid agents, which still function to clean the parts but do not concentrate mercury. Eaton also worked with the product supplier to retrofit the cleaning agent distribution systems on the tumble barrels. Following the replacement of the powder cleaning agents, Eaton contracted a third-party company to clean the tumble barrel equipment and discharge conveyance system to IMP 302 to remove any mercury that may have accumulated over time.

Subsequently, Eaton collected and analyzed effluent samples to confirm the reduction of mercury in the effluent. Since Eaton's TRE for mercury involved the modification of facility operations, additional sample analyses were performed for the five organics to ensure that results represent current and future operations. Eaton's analytical results for the organic parameters are summarized in Table 5.

Table 5. Additional Effluent Analytical Results for Organics (January 5, 2023 through 19, 2023)

Parameter	1/5/2023	1/12/2023	1/19/2023
Benzidine	< 25	< 19	< 20
Benzo(a)Pyrene	< 0.24	< 0.18	< 0.19
Dibenzo(a,h)Anthracene	< 0.24	< 0.18	< 0.19
Hexachlorobenzene	< 0.24	< 0.18	< 0.19
Hexachlorobutadiene	< 0.24	< 0.18	< 0.19

All results are reported in units of µg/L.

Three low-level mercury samples were collected and analyzed in January 2023, but the third of those results was higher than expected, which was determined to be caused by the unintentional reintroduction of the powder cleaning agent. After the tumble barrel system was cleaned again, staff were retrained, and all remaining powder cleaning agent was removed from the Beaver Plant, Eaton collected additional effluent samples and analyzed them for mercury using EPA Method 1631 E. All mercury results from samples collected in 2023 are summarized in Table 6.

Table 6. Additional Effluent Analytical Results for Total Mercury (January 5, 2023 through April 20, 2023)

1/5/2023	1/12/2023	1/19/2023	3/9/2023	3/30/2023	4/6/2023	4/13/2023	4/20/2023
0.0069	0.0064	0.014	0.0051	0.0076	0.0076	0.0070	0.0077

All results are reported in units of µg/L.

Based on the updated results, DEP again modeled IMP 302's (Outfall 002's) discharges using the TMS. Output from the model is summarized in **Attachment D**. Based on the results of DEP's modeling, the permit requirements listed in Table 7 apply at IMP 302.

Table 7. Water Quality-Based Requirements for IMP 302 (Outfall 002)

Parameter	Permit Limits			Reported Result (µg/L)	Target QL (µg/L)	Governing WQBEL Basis†
	Avg Mo. (µg/L)	Max Daily (µg/L)	IMAX (µg/L)			
Mercury, Total	0.012	0.019	0.03	0.0077	0.002 ‡	Threshold Human Health

‡ Target QL for direct discharges to the Ohio River based on EPA Method 1631 Revision E

DEP used the highest of the results from the second set of samples collected after the powder cleaning agent was completely removed from the facility and the tumble barrel system was cleaned for a second time because the higher result from the January 19, 2023 sample does not represent current/future operations that exclude the powder cleaning agent. Nevertheless, the mercury WQBELs apply because the discharge concentration of 0.0077 µg/L exceeds 0.006 µg/L (i.e., 50% of the average monthly WQBEL of 0.012 µg/L).

Pursuant to Eaton's May 10, 2023 "WQBEL Pre-Draft Survey Update", Eaton believes that it can comply with the mercury WQBELs now. Therefore, the mercury WQBELs will take effect on the permit effective date.

As explained previously, there is an EPA-approved analytical method for mercury that can quantify the presence of mercury at a level sufficient to evaluate compliance with ORSANCO's 12 ng/L end-of-pipe standard, so Eaton will be required to collect samples to determine compliance with the more stringent ORSANCO limits using the more sensitive EPA-approved method as Eaton did for its supplemental application sampling (see Table 6).

Total Residual Chlorine

To determine if WQBELs are required for discharges containing 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 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 TRC_CALC program include flow rates and chlorine demands for the receiving stream and the discharge (default chlorine demands of 0.3 and 0.0, respectively), 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 waste load allocations 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 most stringent average monthly TRC limit is recommended by the spreadsheet.

The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 4,730 cfs and 0.016 MGD, respectively. A partial mix factor of 0.066 is input for the acute criteria based on the TMS analysis of IMP 302 and a PMF of 0.46 is input for the chronic criteria. The results of the analysis included in **Attachment E** indicate that no TRC WQBELs are required.

Ohio River Use Impairments

The Ohio River has two use impairments: 1) recreational use impairment caused by pathogens (listed in 2004); and 2) fish consumption use impairment caused by PCBs, chlordane, and dioxins (listed in 1996). There is a final TMDL addressing PCBs and chlordane dated April 9, 2001. There is no final TMDL for the recreational use impairment.

Outfall 002—the only direct discharge from Eaton to the Ohio River—does not discharge PCBs, chlordane, or dioxins, so Eaton will not contribute to the Ohio River's fish consumption use impairment. However, to ensure the permit reflects the requirements of the Ohio River TMDL with its 'zero' wasteload allocations for PCBs and chlordane, the following narrative limitation will be included as a condition in Part C of the permit.

There shall be no point source discharges of Polychlorinated Biphenyls (PCBs) or Chlordane to the Ohio River.

The condition does not impose monitoring obligations on Eaton. However, it does allow DEP or Eaton to analyze effluent samples for PCBs and chlordane at DEP's discretion to determine whether Eaton complies with the TMDL. The condition also allows DEP to require Eaton to implement corrective actions to comply with the permit condition and, by extension, the TMDL's wasteload allocations if PCBs and chlordane are detected in point source discharges from the Beaver Plant.

The maximum fecal coliform count reported on the application was elevated (>2420/100mL), so a reporting requirement for fecal coliform bacteria will be added to IMP 302 based on 25 Pa. Code § 92a.61(b).

302.C. Effluent Limitations and Monitoring Requirements for IMP 302

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) [2] (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits at IMP 302 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal; and effluent limits and monitoring requirements from the previous permit, subject to any exceptions to anti-backsliding discussed previously in this Fact Sheet. Applicable effluent limits and monitoring requirements are summarized in the table below.

Table 8. Effluent Limits and Monitoring Requirements for IMP 302

Parameter	Mass (pounds/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)
Total Suspended Solids	—	—	31.0	62.0	—	40 CFR §§ 438.12, 125.3 (BPJ), 122.44(l), & 122.45(d)(1)
Oil and Grease	—	—	15.0	30.0	—	25 Pa. Code §§ 92a.48(a)(2) & 95.2(2); 40 CFR § 122.44(l)
Fecal Coliform (No./100mL)	—	—	—	—	Report	25 Pa. Code § 92a.61(b)
Total Residual Chlorine	—	—	0.5	1.0	—	25 Pa. Code § 92a.48(b)(2); 40 CFR § 122.44(l)
Mercury, Total (µg/L)	—	—	0.012 Avg. Qtly	0.019	0.03	WQBELs; 25 Pa. Code § 92a.12; ORSANCO Pol. Ctrl. Std.
pH	within the range of 6.0 to 9.0					40 CFR §§ 438.12 & 122.44(l); 25 Pa. Code §§ 92a.48(a)(2) & 95.2(2)

Guidelines for monitoring frequencies and sample types for industrial dischargers are specified in Table 6-4 – "Self-Monitoring Requirements for Industrial Dischargers" in DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001]. Pursuant to Section IV.E.2 of DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications" [SOP No. BPNPSM-PMT-001, Version 1.5], existing facilities for which there is no history of non-compliance with effluent limitations over the past two years according to DMR data, and for which the existing monitoring frequencies are less stringent than those in Table 6-4, the existing frequencies may be continued in the renewed permit.

Table 6-4 requires daily metered sampling for flow, 1/week 24-hour composite sampling for TSS, and daily grab sampling for Oil and Grease and pH. Total Residual Chlorine has no minimum requirements in Table 6-4. The current NPDES permit requires daily (continuous) measurement of flow, 2/month grab sampling for Oil and Grease and Total Residual Chlorine, and 1/week grab sampling for pH. Eaton has not reported any effluent violations for TSS, Oil and Grease, Total Residual Chlorine, or pH in at least the last six years. Therefore, the existing monitoring frequencies and sample types for those pollutants will remain in effect in the renewed permit.

Fecal coliform will require 1/quarter reporting to monitor Eaton's contributions to the Ohio River's pathogen impairment. Mercury will require 2/quarter 4-grab/24 hours sampling. This deviates from Table 6-4's requirement for 24-hour composite sampling, but is consistent with EPA's recommendations for low-level sampling for mercury in EPA's "Guidance for Implementation and Use of EPA Method 1631 for the Determination of Low-Level Mercury (40 CFR part 136)" [EPA 821-R-01-023, March 2001].[3] Since quarterly sampling is specified for mercury, the "Average Monthly" limit will be expressed as an "Average Quarterly" limit.

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

[3] EPA Method 1631 Guidance: "To date, we have not collected a sufficient amount of data to demonstrate that composite sampling systems can collect mercury samples that are free of contamination and that do not lose mercury via volatilization. For this reason, EPA strongly suggests that samples for mercury be collected using one of the four sampling procedures given in Section 8.2 of Method 1669. If a composite measurement is needed, four (or more) samples (as required by the regulations or in the permit) should be collected. These samples should be composited in the laboratory or, alternatively, the grab samples may be analyzed individually, and the results mathematically composited."

Development of Effluent Limitations

Outfall Nos. 001, 003, 004, 005, 007, & 009 **Design Flow (MGD)** Variable
Wastewater Description: Storm water

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

Outfalls 001, 003, 004, 005, 007, and 009 discharge storm water associated with industrial activities. There are no Federal Effluent Limitations Guidelines (ELGs) that apply to those discharges.

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in DEP's PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity will be applied to Eaton's storm water discharges. Based on Eaton's SIC Code of 3613, the facility would be classified under Appendix J – "Additional Facilities" of the PAG-03 General Permit.[4] To ensure that there is consistency across the state for all facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix J of the PAG-03 will be imposed at Outfalls 001, 003, 004, 005, 007, and 009. The Appendix J monitoring requirements are shown in Table 9.

Table 9. PAG-03 Appendix J – Minimum Monitoring Requirements

Pollutant	Units	Sample Type	Measurement Frequency	Benchmark Value
Total Nitrogen	mg/L	Calculation†	1/6 months	—
Total Phosphorus	mg/L	1 Grab	1/6 months	—
Total Suspended Solids	mg/L	1 Grab	1/6 months	100
Oil and Grease	mg/L	1 Grab	1/6 months	30
pH	S.U.	1 Grab	1/6 months	9.0
Chemical Oxygen Demand	mg/L	1 Grab	1/6 months	120

† Total Nitrogen is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO2+NO3-N), where TKN and NO2+NO3-N are measured in the same sample.

To the extent that effluent limits are necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, effluent limits are developed for industrial storm water discharges based on a determination of Best Available Technology (BAT) using Best Professional Judgment (BPJ). BPJ of BAT typically involves the evaluation of end-of-pipe wastewater treatment technologies, but DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control.

Table 10 summarizes the maximum effluent concentrations reported for the general chemistry pollutants listed on Module 1 of the NPDES permit application for storm water discharges—Oil and Grease, Biochemical Oxygen Demand (5-day), Chemical Oxygen Demand, Total Suspended Solids, Total Nitrogen, Total Phosphorus, and pH—plus Nitrate-Nitrite as N, Aluminum, Iron, and Zinc. For reference, DEP's benchmark values that are indicative of "No Exposure" conditions are shown in the table. The benchmark values from Appendix J of the PAG-03 also are shown. The No Exposure thresholds indicate that some of the storm water discharges might be eligible for No Exposure certification, but that certification is not solely based on effluent quality. Highlighted values in the table exceed corresponding "No Exposure" thresholds. Eaton did not claim that any of the storm water discharges are not exposed to industrial activities.

Table 10. Maximum Effluent Concentrations at Outfalls 001, 003, 004, 005, 007, and 009

Parameter	Long-Term Average Concentrations (mg/L) [pH in standard units] †						No Exposure Threshold	PAG-03 Benchmark Value
	Outfall 001	Outfall 003	Outfall 004	Outfall 005	Outfall 007	Outfall 009		
Oil and Grease	1.5	2.6	1.8	2.4	51.8	<1.4	≤5.0	30
BOD5	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	≤10	—
COD	<4.66	<4.66	10.3	12.3	6.64	16.4	≤30	120
TSS	1.5	3	18	6.5	19	23	≤30	100
Total Nitrogen	<1.13	<1.56	<0.71	<1.63	<0.85	<2.17	≤2	—
Total Phosphorus	0.02	0.03	0.02	0.02	0.03	0.03	≤1 ‡	—

[4] The determination of which of the PAG-03 General Permit's appendices applies to a facility is based on a facility's SIC Code.

Table 10 (cont'd). Maximum Effluent Concentrations at Outfalls 001, 003, 004, 005, 007, and 009

Parameter	Long-Term Average Concentrations (mg/L) [pH in standard units] †						No Exposure Threshold	PAG-03 Benchmark Value
	Outfall 001	Outfall 003	Outfall 004	Outfall 005	Outfall 007	Outfall 009		
pH	8	7.8	7.9	7.7	7.8	7.8	6.0 to 9.0	9.0
Nitrate-Nitrite as N	<0.69	<1.12	<0.27	<1.19	<0.41	<1.73	≤2	—
Aluminum, Total	1.21	0.05	0.26	0.04	0.28	0.06	0.75	—
Iron, Total	0.427	0.108	0.773	0.256	0.588	0.197	≤7.0	—
Zinc, Total	0.023	0.076	0.051	0.072	0.056	0.035	0.112 ‡	—

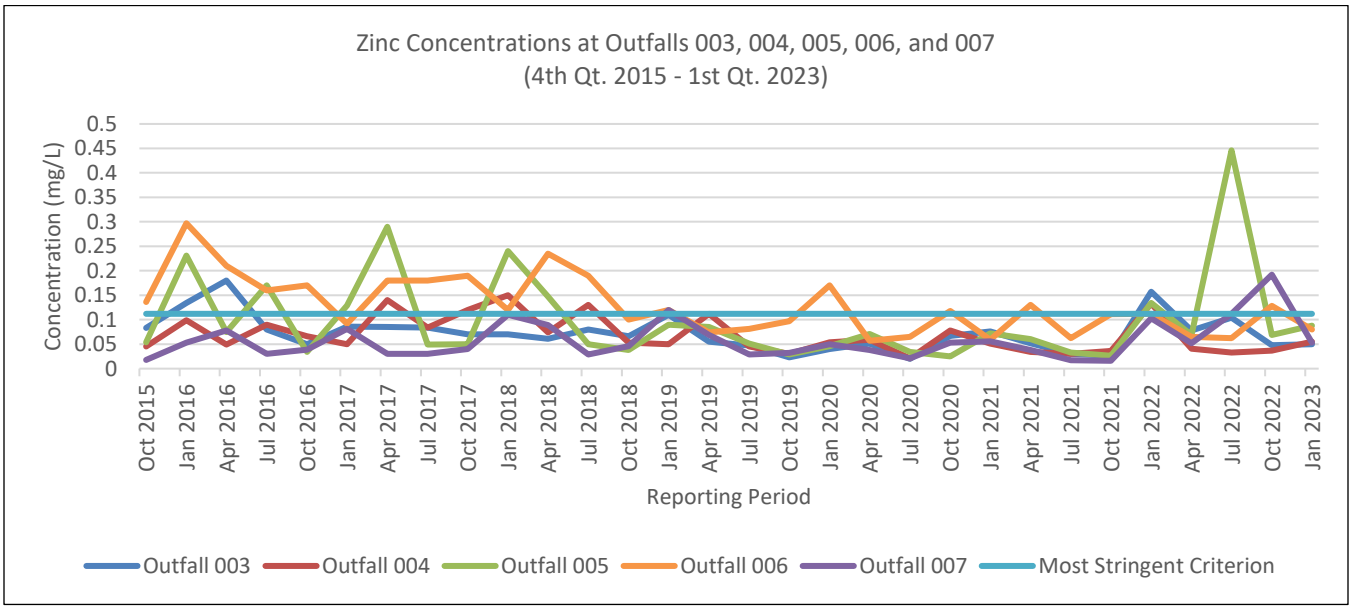
† Hardness-dependent criteria are calculated based on a default stream hardness of 100 mg/L.

Based on the results in Table 10, no TBELs will be imposed at Outfalls 001, 003, 004, 005, 007, and 009. Oil and Grease was elevated in Outfall 007's discharge, but Oil and Grease already must be analyzed pursuant to the baseline analytical requirements imposed from Appendix J of the PAG-03. Aluminum was elevated at Outfall 001, so a semi-annual reporting requirement for aluminum will be imposed at Outfall 001 pursuant to 25 Pa. Code § 92a.61(h).

Even though no TBELs are imposed on Eaton's storm water discharges, TBELs may be warranted in the future if pollutant concentrations in storm water consistently exceed the benchmark values from Appendix J of the PAG-03. DEP uses benchmark monitoring in the PAG-03 as an indicator of the ongoing effectiveness of a facility's best management practices. The storm water benchmark values in the PAG-03 differ from the "No Exposure" thresholds because the PAG-03's benchmark values presume that storm water is exposed to industrial activities. The benchmark values represent values achievable by storm water controls as opposed to storm water that is not exposed to industrial activities that is generally free of contamination and therefore does not require controls. As stated above, some of Eaton's storm water discharges may qualify as discharges that are not exposed to industrial activities, but Eaton did not certify any of them as such in the updated permit application.

Consistent with the PAG-03, the benchmark values for Eaton's discharges will be set at 100.0 mg/L for TSS; 30.0 mg/L for Oil and Grease; 9.0 s.u. for pH; and 120 mg/L for COD. The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two or more consecutive monitoring periods, then Eaton must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. The corrective action plan requirement and the benchmark values will be specified in a condition in Part C of the permit.

Quarterly reporting of zinc concentrations is required by the current permit at Outfalls 003, 004, 005, and 007. Monitoring for zinc will be maintained in the renewed permit, but at a reduced sampling frequency of 1/6 months. The sampling frequency reduction is supported by a general downward trend in zinc concentrations reported at those outfalls.



Refer to Section 006.A of this Fact Sheet for a discussion of Outfall 006's zinc concentrations.

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

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q_{7-10} low flow conditions. Precipitation-induced discharges generally do not occur at Q_{7-10} conditions because the precipitation that causes a storm water discharge also will increase the receiving stream's flow and that increased stream flow will provide additional assimilative capacity during a storm event. However, that does not preclude the development of WQBELs for storm water discharges to prevent adverse impacts from intermittent exposures or the imposition of WQBELs based on a TMDL's waste load allocations.

Even though no mathematical modeling is performed, conditions in Part C of the permit will ensure compliance with water quality standards through a combination of BMPs including pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

SWO.C. Effluent Limitations and Monitoring Requirements for Outfalls 001, 003, 004, 005, 007, and 009

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits for Outfalls 001, 003, 004, 005, 007, and 009 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements. No TBELs are imposed at these outfalls (other than BMPs), so TMDL requirements and semi-annual monitoring based on Appendix B of the PAG-03 will control at NAHHA's storm water outfalls.

Table 8. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Semi-Annual Average	Daily Maximum	Semi-Annual Average	Daily Maximum	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Chemical Oxygen Demand (COD)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Oil and Grease	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Aluminum, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Nitrogen, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Phosphorus, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
pH (S.U.)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)

Table 9. Effluent Limits and Monitoring Requirements for Outfalls 003, 004, 005, and 007

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Semi-Annual Average	Daily Maximum	Semi-Annual Average	Daily Maximum	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Chemical Oxygen Demand (COD)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Oil and Grease	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Nitrogen, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Phosphorus, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Zinc, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
pH (S.U.)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)

Table 10. Effluent Limits and Monitoring Requirements for Outfall 009

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Semi-Annual Average	Daily Maximum	Semi-Annual Average	Daily Maximum	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Chemical Oxygen Demand (COD)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)

Table 10 (cont'd). Effluent Limits and Monitoring Requirements for Outfall 009

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Semi-Annual Average	Daily Maximum	Semi-Annual Average	Daily Maximum	Instant Maximum	
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Oil and Grease	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Nitrogen, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Phosphorus, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
pH (S.U.)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)

In accordance with Appendix J of the PAG-03, which is the basis for some of the storm water monitoring requirements, sampling for Chemical Oxygen Demand, TSS, Oil and Grease, Total Nitrogen, Total Phosphorus, and pH must be conducted 1/6 months using grab sampling. Aluminum at Outfall 001 will require 1/6 months grab sampling and the requirements for Zinc at Outfalls 003, 004, 005, and 007 will be adjusted from 2/quarter grab sampling to 1/6 months grab sampling. Discharge flow should be estimated at the time of sampling.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0.011 (avg.); 0.019 (max)
Latitude	40° 40' 51"	**Longitude**	-80° 20' 02"

Wastewater Description: Sources monitored at IMP 302

Discharges from Outfall 002 consist solely of sources monitored at IMP 302. Outfall 002 will remain in the permit as the authorized discharge point for IMP 302's wastewaters, but all effluent limits that apply to those wastewaters are imposed at IMP 302.

Development of Effluent Limitations

Outfall No.	006	**Design Flow (MGD)**	Variable; 0.0000144
Latitude	40° 41' 36"	**Longitude**	-80° 19' 05"

Wastewater Description: Non-contact cooling water from cleaning activities associated with the administrative building's cooling tower and storm water runoff from roof drains located on the east side of the manufacturing building and from the employee parking lot

Eaton provided the following description of Outfall 006's discharges in its most recent application update.

Process Description

The Eaton Corporation facility features a chiller on the roof of the administrative building on the facility. The chiller is used in the summer months to provide air conditioning to the offices within the building. The rooftop of the administrative building falls within the Outfall 006 drainage area. The chiller unit operates in the months of June through September.

Batch – Intermittent

As part of the chiller operations, there is an infrequent discharge of non-contact cooling water from cleaning activities. The discharge is a small quantity of non-contact cooling water that occurs only once or twice per year. The discharge flows from the rooftop of the administrative building, down the roof drains, and out of Outfall 006.

Quantitative Analysis of NCCW from Roof Top Chiller

The rooftop chiller that discharges to Outfall 006 gets stabilized by bromine tablets for microorganisms at a rate of 0.5 to 1 ppm free halogen or 2 to 4 ppm of total halogen. In addition, the rooftop chiller gets fed organo-phosphate for corrosion control at a concentration of 10-20 ppm. The chiller operates from June through September and does not have a continuous blowdown.

The blowdown flow rate for the chiller will be around 0.01 gpm based on a 3 gpm evaporation rate, per the manufacturer. The chiller blows down approximately twice per year.

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

Non-Contact Cooling Water (NCCW)

In accordance with the recommendations given in Chapter 6, Table 6-4 of DEP's Permit Writers' Manual, self-monitoring requirements for NCCW discharges should include the following parameters: flow, pH, and temperature. Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b). Limits for pH (6.0 minimum and 9.0 maximum) will be imposed at Outfall 006 based on 25 Pa. Code § 92a.48(a)(2) and § 95.2(1).

Pursuant to Section VI, p.16 of DEP's "Implementation Guidance For Temperature Criteria" dated April 11, 2009 [Document No. 391-2000-017], a maximum temperature limit of 110°F is imposed on heated discharges as a public safety measure to protect sampling personnel and anyone who might encounter heated wastewaters at their point of discharge. The 110°F limit will be imposed at Outfall 006 if thermal water quality-based effluent limitations do not apply (see Section 006.B of this Fact Sheet).

The chiller operates from June through September, so discharges of NCCW are only authorized during those times.

Storm Water

Storm water discharges from Outfall 006 are subject to the same baseline monitoring requirements as Outfalls 003, 004, 005, and 007 including semi-annual monitoring for Chemical Oxygen Demand, TSS, Oil and Grease, Total Nitrogen, and Total Phosphorus based on Appendix J of the PAG-03 General Permit. Like those other storm water outfalls, Outfall 006 currently requires zinc reporting 2/quarter. As depicted in Chart 1 above, the concentrations of zinc at Outfall 006 have trended downward but are generally more variable than at other outfalls. The downward trend supports a reduction in the sampling frequency for zinc from 2/quarter to 1/6 months.

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

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

Outfall 006 is currently subject to the following temperature limits.

Table 11. Temperature Limits at Outfall 006

Effective Period	Maximum Daily Limit (°F)	Measurement Frequency
June 1 – 15	110	2/month
June 16 – 30	110	2/month
July 1 – 31	106	2/month
August 1 – 31	104	2/month
September 1 – 15	97	2/month
September 16 – 30	91	2/month

The WQBELs for temperature currently imposed at Outfall 006 were developed for the NPDES permit renewal issued on January 29, 2001. The limits have not been updated since 2001 to reflect revised discharge and receiving stream characteristics. The discharge and receiving stream flow rates used to develop the temperature WQBELs were 0.038 MGD and 0.055 cfs, respectively. For comparison, the current discharge and receiving stream flow rates are 0.0000144 MGD (0.01 gpm) and 0.048 cfs.

Thermal WQBELs are evaluated using a DEP 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., a 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_{7-10} 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. DEP 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 Section 006.A of this Fact Sheet) 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, then an instantaneous maximum limit of 110°F is recommended by the program.

DEP'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. DEP is not aware of any adverse factors, so the full Q_{7-10} flow of Twomile Run is used for modeling.

Discharges from Outfall 006 are classified under Case 2 because Eaton's water is obtained from the local municipal supply. The flow rate used for modeling is 0.0000144 MGD (0.01 gpm). The results of the thermal analysis, included in **Attachment F**, indicate that no WQBELs for temperature are required at Outfall 006. Therefore, a maximum daily limit of 110°F is imposed from June 1 through September 30.

The removal of monthly and semi-monthly temperature WQBELs for July, August, and September is consistent with the exceptions to anti-backsliding given in sections 402(o) and 303(d)(4)(b) of the Clean Water Act. Outfall 006's existing temperature WQBELs for July, August, and September were established pursuant to section 301(b)(1)(C) of the Clean Water Act because the WQBELs were based on state water quality standards. Chapter 7 of the NPDES Permit Writers' Manual provides a detailed discussion of how the anti-backsliding provisions are to be applied. The Permit Writers' Manual explains that for state WQBELs, relaxation of limits is allowed in either case of a section 402(o)(2) exception being satisfied or if water quality provisions of section 303(d)(4) are satisfied—satisfying either provision allows for backsliding.

Section 303(d)(4) is divided between: (A) waters where the applicable water quality standard has not been attained, and (B) waters where the "quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards." Section 303(d)(4)(A) is the relevant requirement because the receiving stream—Twomile Run—is currently not attaining its designated uses. Section 303(d)(4)(B) states:

> For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section."

Removing the temperature WQBELs and imposing the 110°F temperature standard will not contribute to Twomile Run's nonattainment status because temperature is not understood to be the cause of the stream's impairment and, as the updated modeling shows, the discharge does not require WQBELs for temperature.

006.C. Effluent Limitations and Monitoring Requirements for Outfall 006

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under Section 402(o) of the Clean Water Act and 40 CFR § 122.44(l) (incorporated in Pennsylvania's regulations at 25 Pa. Code § 92a.44), effluent limits for Outfall 006 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in the table below. No TBELs are imposed at these outfalls (other than BMPs), so TMDL requirements and semi-annual monitoring based on Appendix J of the PAG-03 will control at Eaton's storm water outfalls.

Table 12. Effluent Limits and Monitoring Requirements for Outfall 006

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Semi-Annual Average	Maximum Daily	Semi-Annual Average	Maximum Daily	Instant Maximum	
Flow (MGD)	—	Report	—	—	—	25 Pa. Code § 92a.61(h)
Chemical Oxygen Demand (COD)	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Oil and Grease	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Temperature (°F) June 1 – September 30	—	—	—	110		40 CFR § 122.44(l); 25 Pa. Code § 92a.48(a)(3); 40 CFR § 125.3
Nitrogen, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Phosphorus, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
Zinc, Total	—	—	—	Report	—	PAG-03, App. J; § 92a.61(h)
pH	within the range of 6.0 to 9.0					40 CFR § 122.44(l); 25 Pa. Code §§ 92a.48(a)(2) & 95.2(2)
The discharge of non-contact cooling water is allowed from June 1 through September 30.						

In accordance with Appendix J of the PAG-03, which is the basis for some of the storm water monitoring requirements, sampling for Chemical Oxygen Demand, TSS, Oil and Grease, Total Nitrogen, Total Phosphorus must be conducted 1/6 months using grab sampling. Zinc will require 1/6 months grab sampling as explained previously. Flow must be measured 2/month; temperature must be measured 2/month using immersion stabilization sampling; and pH must be sampled 2/month using grab samples.

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

ATTACHMENT A

SIC Codes Covered by the Metal Products and Machinery Effluent Limitations Guidelines

Table A-1 (Continued)

Example NAICS and SIC Codes for the MP&M Industrial Sectors		
NAICS Code	SIC Code	Standard Industrial Classification Groups
Stationary Industrial Equipment (Continued)		
33341200 33341100	3564	Blowers and Exhaust and Ventilation Fans
33399300	3565	Industrial Patterns
33361200	3566	Speed Changers, High Speed Drivers and Gears
33399400	3567	Industrial Process Furnaces and Ovens
33361300	3568	Mechanical Power Transmission Equipment, N.E.C.
33399910	3569	General Industrial Machinery, N.E.C.
33331100	3581	Automatic Merchandising Machines
33331200	3582	Commercial Laundry Equipment
33639100	3585	Refrigeration and Air and Heating Equipment
33391300	3586	Measuring and Dispensing Pumps
33331920	3589	Service Industry Machines, N.E.C.
33399510	3593	Fluid Power Cylinders and Actuators
33399610	3594	Fluid Power Pumps and Motors
33399700	3596	Scales and Balances, Except Laboratory
33399920	3599	Machinery, Except Electrical, N.E.C.
33531120	3612	Transformers
33531300	3613	Switchgear and Switchboard Apparatus
33531210	3621	Motors and Generators
33599910	3629	Electric Industrial Apparatus, N.E.C.
53241210	7353	Heavy Construction Equipment Rental, Leasing
53221000 53229990 53231000 53241190 53241290 53242010 53249020 56299120	7359	Equipment Rental, Leasing, N.E.C.

ATTACHMENT B

PAG-03 Appendix J

APPENDIX J

ADDITIONAL FACILITIES

I. APPLICABILITY

The requirements in Appendix J apply to stormwater discharges associated with industrial activity from facilities whose industrial activity is not described by any other appendix in this General Permit and are designated as needing a permit in accordance with the Pennsylvania Clean Streams Law and/or 40 CFR § 122.26.

Stormwater discharges associated with mining activity (i.e., ore mining and dressing (SIC Code 10), coal mining and related activities (SIC Code 12) and mineral mining and dressing (SIC Code 14)) must apply for NPDES permit coverage through DEP's Bureau of Mining Programs.

II. SECTOR-SPECIFIC DISCHARGE PROHIBITIONS

This General Permit does not cover the following discharges in this sector and an individual NPDES permit is required for such discharges:

A. Runoff from coal mining and related facilities, subject to effluent limitation guidelines in 40 CFR Part 434.

B. Runoff from non-metallic mineral mining and dressing, subject to effluent limitation guidelines in 40 CFR Part 436.

C. Runoff from ore mining and dressing, subject to effluent limitation guidelines in 40 CFR Part 440.

III. MONITORING REQUIREMENTS

The permittee must monitor and report analytical results for the pollutants listed below on Discharge Monitoring Reports (DMRs) for representative outfalls, subject to footnotes provided. The benchmark values listed below are not effluent limitations, and exceedances do not constitute permit violations. However, if the permittee's sampling demonstrates exceedances of benchmark values for two or more consecutive monitoring periods, the permittee shall take action in accordance with Part C V.I of this General Permit.

Pollutant	Monitoring Requirements [1],[2]		Benchmark Values
	Minimum Measurement Frequency	Sample Type	
Total Nitrogen (mg/L) [3]	1 / 6 months	Calculation	XXX
Total Phosphorus (mg/L)	1 / 6 months	Grab	XXX
Total Suspended Solids (TSS) (mg/L)	1 / 6 months	Grab	100
Oil and Grease (mg/L)	1 / 6 months	Grab	30
pH (S.U.)	1 / 6 months	Grab	9.0
Chemical Oxygen Demand (COD)	1 / 6 months	Grab	120

Footnotes

(1) In accordance with Part C V.C, the permittee shall conduct additional monitoring if specified by DEP in the letter authorizing permit coverage or other correspondence.

(2) This is the minimum number of sampling events required. Permittees may optionally perform additional sampling.

(3) Total Nitrogen is the sum of Total Kjeldahl-N (TKN) plus Nitrite-Nitrate as N (NO_2+NO_3-N), where TKN and NO_2+NO_3-N are measured in the same sample.

IV. SECTOR-SPECIFIC BMPs

In addition to the BMPs contained in Part C II of the General Permit, the permittee shall implement, at a minimum, all of the following BMPs that are applicable to the processes in place at the facility for which coverage under this General Permit is approved.

The following Oil and Gas Extraction BMPs are applicable to facilities with SIC Code 13 that are required to obtain permit coverage:

A. Perform periodic inspections and maintenance on all transfer areas, piping, pumps, valves, compressors, and other equipment where failure/leaks could cause petroleum releases.

B. Ensure secondary containment and leak detection for all petroleum product tanks and produced water tanks at exploration sites.

C. Develop and implement a detailed spill response plan, including immediate clean-up of petroleum residues and contaminated soils potentially exposed to stormwater.

D. Reclaim produced water pits and other disturbed areas at extraction sites immediately upon well closure.

E. Provide for oil/water separators to treat runoff from all areas where there is potential exposure to petroleum products.

ATTACHMENT C

Eaton's May 10, 2023
WQBEL Pre-Draft Permit Survey Update

May 10, 2023

Submitted via email to: rydecker@pa.gov

Ryan C. Decker, P.E.
Environmental Engineer
Pennsylvania Department of Environmental Protection
Southwest Regional Office, Clean Water Program
400 Waterfront Drive
Pittsburgh, PA 15201

RE: WQBEL Pre-Draft Permit Survey Update
Addendum to Pending NPDES Permit Renewal Application No. PA0001236
Authorization ID No. 909772
Eaton Electrical - Beaver Plant
1 Tuscarawas Road, Beaver, Pennsylvania 15009
Vanport Township, Beaver County

Dear Ryan:

On behalf of Eaton Electrical (Eaton), this letter serves as a follow-up to the water quality-based effluent limitation (WQBEL) Pre-Draft NPDES Permit Survey submitted to you by email on April 29, 2022. In the April 2022 survey response, Eaton had indicated that it was not aware of a source of the following pollutants in the discharge of Outfall 002, for which the PADEP had anticipated issuing WQBELs: mercury, benzidine, benzo(a)Pyrene, dibenzo(a,h)Anthracene, hexachlorobenzene or hexachlorobutadiene. Eaton also communicated in this response that they had intended to conduct additional sampling for these pollutants. The sampling following the submission of the pre-draft survey on April 29, 2022 began May 25, 2022 and concluded April 20, 2023.

The Target Quantitation Limits ("Target QL") for the "Group 5" pollutants benzidine, benzo(a)Pyrene, dibenzo(a,h)Anthracene, hexachlorobenzene or hexachlorobutadiene have been met during the sampling events following the pre-draft survey submittal. Analytical results of these five pollutants are summarized in Table 1 below. The Target QL for mercury was likewise met. Eaton contracted with a laboratory with the ability to analyze mercury samples by Method 1631E CVAFS (Cold Vapour Atomic Fluorescence Spectroscopy), which has a reporting limit of 0.0005 ug/L. The analytical results for mercury are presented in Table 2.

Enclosed, please find an updated WQBEL pre-draft permit survey (Attachment A), as well as a summary below of the additional sampling, analysis and investigation that has been conducted regarding the effluent at Outfall 002, which discharges to the Ohio River (samples collected at IMP 302). Analytical reports of the data summarized in Tables 1 and 2 are provided in Attachment B.

SAMPLING, ANALYSIS AND INVESTIGATION TIMELINE

April 29, 2022

As indicated above, in the pre-draft survey submitted on April 29, 2022, Eaton planned to carry out additional sampling events for the pollutants identified in the department's pre-draft survey letter as needing WQBELs. The pollutants with preliminary WQBEL's were total mercury, benzidine, benzo(a)pyrene, dibenzo(a,h)anthracene, hexachlorobenzene, and hexachlorobutadiene. For these select pollutants, the analyses for the initial NPDES application submittal were not conducted down to the DEP's desired quantification limits. The goal of the follow-up sampling was to achieve the desired quantification limits.

May through June 2022

The follow-up sampling at IMP302 consisted of four 24-hour composite sampling events for all six parameters discussed above and occurred from May through June of 2022.

The results of this sampling revealed non-detect concentrations for all pollutants except mercury. The average and maximum results for total mercury exceeded the Ohio River Valley Water Sanitation Commission's (ORSANCO's) Pollution Control Standard, which PADEP implements, and which requires direct discharges to the Ohio River to meet an end-of-pipe effluent limit of 0.012 µg/L for total mercury as soon as practicable.

June 2022 through December 2022

As Eaton does not use mercury in any product or raw material, Eaton had not been aware of the existence of mercury at the facility. Therefore, an investigation as to the source of mercury in the IMP 302 discharge immediately followed the May-June 2022 sampling. The investigation that occurred during this timeframe included the activities presented below, in chronological order:

1. Analysis of facility operations (both present and historic) to determine if there were any operational practices that would have involved the use of mercury or mercury compounds;
2. Review of safety data sheets of raw materials and parts to determine the existence of mercury or mercury compounds;
3. Discussions with raw material suppliers;
4. Sample collection and analysis to evaluate potential sources of mercury from facility operations that direct wastewater to IMP302, including:
    a. Tumble barrel operations;
    b. Ultrasonic parts washer;
    c. Cyclojet parts washer;
    d. Brazing water;
    e. City water
5. Continued sampling at IMP 302, where approximately 20 low-level mercury samples were analyzed;
6. Contracting a third-party mercury specialist to perform a 2-day long on-site assessment of potential mercury sources. During this investigation, over 60 solid and over 80 air samples were collected and analyzed from throughout the facility.

As a result of these efforts, it was determined the most likely significant source of mercury was the tumble barrel operation, which entails the deburring and cleaning of small metal parts in barrels that vibrate. The tumble barrel operation is a batch manual operation where small metal parts, cleaning agent and city

water are added by Eaton employees. Eaton operates two main tumble barrels and two to three smaller tumble barrels at the facility.

While discovering the source, it was not yet concluded as to where or how mercury was being found in the tumble barrel wastewater discharge until conversations with a product supplier occurred in late December 2022. From these conversations, it was determined that the low levels of mercury in the tumble barrel operation water was likely associated with the use of powder cleaning agents in the facility's tumble barrel operation. The powder cleaning agents do not contain detectable concentrations of mercury themselves. However, when combined with the metal parts and water in the tumble barrels, the powder cleaning agents bind with trace amounts of naturally occurring mercury on the surface of the parts and concentrate the mercury in the process water discharge.

Upon becoming aware of the effects of powder cleaning agents, Eaton worked with the product supplier to replace the powder cleaning agents with liquid agents, which still function to clean the parts but do not concentrate mercury. Eaton also worked with the product supplier to retrofit the cleaning agent distribution systems on the tumble barrels. Following the replacement of the powder cleaning agents, Eaton contracted a third-party company to clean the tumble barrel equipment and discharge conveyance system to IMP 302 to remove any mercury that may have accumulated over time.

January 2023 through April 2023

Once the source of mercury was believed to have been removed, and equipment cleaned, Eaton collected three composite samples in the first three weeks of January 2023 for the six pollutants preliminarily identified as requiring WQBEL's in the department's 2022 pre-draft survey letter. The samples were collected one week apart. The pollutants with preliminary WQBEL's were total mercury, benzidine, benzo(a)pyrene, dibenzo(a,h)anthracene, hexachlorobenzene, and hexachlorobutadiene. The results from these analyses conducted in January 2023 are incorporated into Tables 1 and 2 below. The laboratory analytical supporting Tables 1 and 2 is provided in Attachment B.

Table 1. Additional Effluent Samples of Analyzed for Group 5 Pollutants (January 5-19, 2023)[1]

Outfall No	Pollutant	Average Monthly (ug/L)	Maximum Daily (ug/L)	Instantaneous Maximum (ug/L)	Maximum Reported Result (ug/L)	Target QL (ug/L)	Laboratory QL[2] (ug/L)
002 (IMP 302)	Benzidine	<21.3	<25	<25	<25	50	21.3
002 (IMP 302)	Benzo(a)Pyrene	<0.20	<0.24	<0.24	<0.24	2.5	0.20
002 (IMP 302)	Dibenzo(a,h) Anthracene	<0.20	<0.24	<0.24	<0.24	2.5	0.20
002 (IMP 302)	Hexachlorobenzene	<0.20	<0.24	<0.24	<0.24	5.0	0.20
002 (IMP 302)	Hexachlorobutadiene	<0.20	<0.24	<0.24	<0.24	0.5	0.20

[1]Samples of these five pollutants were collected in the May-June 2022 timeframe as part of the follow-up sampling in response to the department's April 2022 pre-draft survey letter. Due to the ongoing mercury investigation at the facility, these pollutants (along with mercury) were again sampled in early 2023 to demonstrate results from IMP 302 taken at the same time.

[2]The "Laboratory QL" column in the table depicts the average quantification limit for the analyses across the three sampling events.

As observed from the data in Table 1, the Department's Target quantitation limit (QL) was achieved for each of the "Group 5" pollutants. Each of the pollutants in Table 1 was non-detect over the course of the three sampling events.

Table 2. Additional Effluent Samples Analyzed for Mercury (January – April 2023)

Outfall No	Pollutant	Average Monthly (ug/L)	Maximum Daily (ug/L)	Instantaneous Maximum (ug/L)	Maximum Reported Result (ug/L)	Target QL (ug/L)	Laboratory QL[1] (ug/L)
002 (IMP 302)	Mercury, Total	0.0069	0.0077	0.0077	0.0077	0.002	0.0005

[1]The "Laboratory QL" column in the table depicts the average quantification limit for the analyses across the seven sampling events.

While three low-level mercury samples were collected and analyzed during the weeks of January 5 through 19, additional sampling was required. The first two mercury results demonstrated a significant reduction of mercury at IMP302 as a result of the switch to liquid cleaning agent and the cleaning of the tumble barrel system as described above. However, the third result was higher than expected. Eaton immediately investigated, and it was discovered that powder that had not been removed from the facility had been used in the tumble barrel operation. An operational stand-down was conducted and instructions provided that only liquid agents are to be used in the tumble barrel operations and all remaining powder cleaning agent was removed from the facility. After the stand-down, the mercury results from IMP 302 began to decrease; however, as an added precaution, Eaton cleaned the tumble barrel system a second time.

The seven 24-hour composite low-level mercury sample results presented in Table 2 were collected from IMP 302 from January through April 2023 and are representative of the current status of operations at the facility. The results range from 0.0051 to 0.0077 µg/L. The Department's target quantitation limit (QL) for mercury was achieved in each instance. The mercury results indicate that the average value and maximum values from the first and second quarter 2023 sampling period is less than ORSANCO's end-of-pipe mercury standard (0.012 µg/L) for direct dischargers to the Ohio River.

Eaton would also like to communicate that the oldest of the two large tumble barrels is scheduled for replacement in the next several weeks. While the tumble barrel operation has been cleaned and liquid cleaning agents are now being used, it is anticipated that the use of a new tumble barrel, to which powder cleaning agent has never been added, may further lower the concentration of low-level mercury in the IMP 302 discharge.

SUMMARY

The data summarized in Tables 1 and 2 show the target QLs have been met and represents current operations at the facility. Table 2 mercury results represent a measurable improvement over samples taken during the May-June of 2022 timeframe, where the ORSANCO limit was exceeded. Current data

shows the total mercury concentrations at IMP 302 are well below the ORSANCO end-of-pipe limit of 0.012 µg/L yet slightly greater than 50% of the limit (0.006 ug/L). Eaton has invested significant effort over the previous twelve months to reduce the mercury load in IMP 302. Therefore, in drafting the renewed NPDES permit, Eaton kindly requests that the department provide for a low-level mercury sampling frequency at IMP 302 of no more than one sampling event per month.

We appreciate your patience, time and input as Eaton has progressed through this mercury investigation. If you should have any questions about this response, I can be reached at 412-221-1100 extension 2225 or myingling@se-env.com.

Sincerely,

SE TECHNOLOGIES, LLC

Meghan Yingling
Director of Operations

Joseph Westrick, EIT
Engineer-in-Training

Attachments:

A- PADEP WQBEL Survey for NPDES Permit - Update 1
B- Laboratory Analysis

CC: Samantha Wedekind, Eaton

ATTACHMENT D

Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Eaton Corporation - Beaver Plant** NPDES Permit No.: **PA0001236** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Process wastewaters**

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
0.016	264	7.23						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		1450									
	Chloride (PWS)	mg/L		414									
	Bromide	mg/L		0.134									
	Sulfate (PWS)	mg/L		328									
	Fluoride (PWS)	mg/L		1.57									
Group 2	Total Aluminum	µg/L		121									
	Total Antimony	µg/L		4.22									
	Total Arsenic	µg/L		3.39									
	Total Barium	µg/L		111									
	Total Beryllium	µg/L	<	0.148									
	Total Boron	µg/L		19000									
	Total Cadmium	µg/L		0.228									
	Total Chromium (III)	µg/L		6.15									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		0.521									
	Total Copper	µg/L		297									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	6.1									
	Dissolved Iron	µg/L	<	223									
	Total Iron	µg/L		1620									
	Total Lead	µg/L		4.64									
	Total Manganese	µg/L		336									
	Total Mercury	µg/L		0.0077									
	Total Nickel	µg/L		12.5									
	Total Phenols (Phenolics) (PWS)	µg/L		5.2									
	Total Selenium	µg/L		1.12									
	Total Silver	µg/L		8									
	Total Thallium	µg/L	<	0.21									
	Total Zinc	µg/L		1400									
	Total Molybdenum	µg/L		37.2									
	Acrolein	µg/L	<	1.9									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2.5									
	Benzene	µg/L	<	0.1									
	Bromoform	µg/L		1.66									

Group 3	Carbon Tetrachloride	µg/L	<	0.19										
	Chlorobenzene	µg/L	<	0.14										
	Chlorodibromomethane	µg/L		3.66										
	Chloroethane	µg/L	<	0.38										
	2-Chloroethyl Vinyl Ether	µg/L	<	1										
	Chloroform	µg/L		4.18										
	Dichlorobromomethane	µg/L		2.07										
	1,1-Dichloroethane	µg/L	<	0.21										
	1,2-Dichloroethane	µg/L	<	0.2										
	1,1-Dichloroethylene	µg/L	<	0.2										
	1,2-Dichloropropane	µg/L	<	0.21										
	1,3-Dichloropropylene	µg/L	<	0.22										
	1,4-Dioxane	µg/L	<	10										
	Ethylbenzene	µg/L	<	0.29										
	Methyl Bromide	µg/L	<	0.3										
	Methyl Chloride	µg/L	<	0.2										
	Methylene Chloride	µg/L	<	0.21										
	1,1,2,2-Tetrachloroethane	µg/L	<	0.14										
	Tetrachloroethylene	µg/L	<	0.14										
	Toluene	µg/L	<	0.1										
	1,2-trans-Dichloroethylene	µg/L	<	0.24										
	1,1,1-Trichloroethane	µg/L	<	0.2										
	1,1,2-Trichloroethane	µg/L	<	0.1										
	Trichloroethylene	µg/L	<	0.49										
	Vinyl Chloride	µg/L	<	0.16										
Group 4	2-Chlorophenol	µg/L	<	12.8										
	2,4-Dichlorophenol	µg/L	<	12.8										
	2,4-Dimethylphenol	µg/L	<	12.8										
	4,6-Dinitro-o-Cresol	µg/L	<	63.8										
	2,4-Dinitrophenol	µg/L	<	63.8										
	2-Nitrophenol	µg/L	<	12.8										
	4-Nitrophenol	µg/L	<	25.5										
	p-Chloro-m-Cresol	µg/L	<	12.8										
	Pentachlorophenol	µg/L	<	63.8										
	Phenol	µg/L	<	1.8										
	2,4,6-Trichlorophenol	µg/L	<	12.8										
Group 5	Acenaphthene	µg/L	<	12.8										
	Acenaphthylene	µg/L	<	12.8										
	Anthracene	µg/L	<	12.8										
	Benzidine	µg/L	<	25										
	Benzo(a)Anthracene	µg/L	<	12.8										
	Benzo(a)Pyrene	µg/L	<	0.24										
	3,4-Benzofluoranthene	µg/L	<	12.8										
	Benzo(ghi)Perylene	µg/L	<	12.8										
	Benzo(k)Fluoranthene	µg/L	<	12.8										
	Bis(2-Chloroethoxy)Methane	µg/L	<	12.8										
	Bis(2-Chloroethyl)Ether	µg/L	<	12.8										
	Bis(2-Chloroisopropyl)Ether	µg/L	<	12.8										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	23.6										
	4-Bromophenyl Phenyl Ether	µg/L	<	12.8										
	Butyl Benzyl Phthalate	µg/L	<	12.8										
	2-Chloronaphthalene	µg/L	<	12.8										
	4-Chlorophenyl Phenyl Ether	µg/L	<	12.8										
	Chrysene	µg/L	<	12.8										
	Dibenzo(a,h)Anthrancene	µg/L	<	0.24										
	1,2-Dichlorobenzene	µg/L	<	12.8										
	1,3-Dichlorobenzene	µg/L	<	12.8										
	1,4-Dichlorobenzene	µg/L	<	12.8										
	3,3-Dichlorobenzidine	µg/L	<	12.8										
	Diethyl Phthalate	µg/L	<	12.8										
	Dimethyl Phthalate	µg/L	<	12.8										
	Di-n-Butyl Phthalate	µg/L	<	12.8										
	2,4-Dinitrotoluene	µg/L	<	12.8										

	2,6-Dinitrotoluene	µg/L	<	12.8										
	Di-n-Octyl Phthalate	µg/L	<	12.8										
	1,2-Diphenylhydrazine	µg/L	<	12.8										
	Fluoranthene	µg/L		15.1										
	Fluorene	µg/L	<	12.8										
	Hexachlorobenzene	µg/L	<	0.24										
	Hexachlorobutadiene	µg/L	<	0.24										
	Hexachlorocyclopentadiene	µg/L	<	25.5										
	Hexachloroethane	µg/L	<	12.8										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	12.8										
	Isophorone	µg/L	<	12.8										
	Naphthalene	µg/L	<	12.8										
	Nitrobenzene	µg/L	<	12.8										
	n-Nitrosodimethylamine	µg/L	<	12.8										
	n-Nitrosodi-n-Propylamine	µg/L	<	12.8										
	n-Nitrosodiphenylamine	µg/L	<	12.8										
	Phenanthrene	µg/L	<	12.8										
	Pyrene	µg/L	<	12.8										
	1,2,4-Trichlorobenzene	µg/L	<	12.8										
Group 6	Aldrin	µg/L	<	0.01										
	alpha-BHC	µg/L	<	0.01										
	beta-BHC	µg/L	<	0.01										
	gamma-BHC	µg/L	<	0.01										
	delta BHC	µg/L	<	0.01										
	Chlordane	µg/L	<	0.01										
	4,4-DDT	µg/L	<	0.01										
	4,4-DDE	µg/L	<	0.01										
	4,4-DDD	µg/L	<	0.01										
	Dieldrin	µg/L	<	0.01										
	alpha-Endosulfan	µg/L	<	0.01										
	beta-Endosulfan	µg/L	<	0.01										
	Endosulfan Sulfate	µg/L	<	0.01										
	Endrin	µg/L	<	0.01										
	Endrin Aldehyde	µg/L	<	0.01										
	Heptachlor	µg/L	<	0.01										
	Heptachlor Epoxide	µg/L	<	0.01										
	PCB-1016	µg/L	<	0.25										
	PCB-1221	µg/L	<	0.25										
	PCB-1232	µg/L	<	0.25										
	PCB-1242	µg/L	<	0.25										
	PCB-1248	µg/L	<	0.25										
	PCB-1254	µg/L	<	0.25										
	PCB-1260	µg/L	<	0.25										
	PCBs, Total	µg/L	<	0.25										
	Toxaphene	µg/L	<	0.3										
	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												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Eaton Corporation - Beaver Plant, NPDES Permit No. PA0001236, Outfall 002

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	952.9	682	22772.85	0.0001		Yes
End of Reach 1	032317	951.71	681.9	22800	0.0001	216	Yes

Q_{7-10}

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	952.9	0.1				1200	15					98	7.33		
End of Reach 1	951.71	0.1				1200	15								

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	952.9														
End of Reach 1	951.71														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Eaton Corporation - Beaver Plant, NPDES Permit No. PA0001236, Outfall 002

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

☑ ***Hydrodynamics***

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
952.9	2277.29		2277.29	0.025	0.0001	15.	1200.	80.	0.127	0.575	3397.377
951.71	2280.00	334.152	1945.848								

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)
952.9	6388.10		6388.10	0.025	0.0001	23.615	1200.	50.815	0.225	0.323	1719.895
951.71	6394.754	334.152	6060.60								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.066 Analysis Hardness (mg/l): 98.027 Analysis pH: 7.33

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	4,585,779	
Total Antimony	0	0		0	1,100	1,100	6,725,809	
Total Arsenic	0	0		0	340	340	2,078,887	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	#########	
Total Boron	0	0		0	8,100	8,100	49,526,415	
Total Cadmium	0	0		0	1.975	2.09	12,782	Chem Translator of 0.945 applied
Total Chromium (III)	0	0		0	560.541	1,774	10,846,062	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	99,623	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	580,865	
Total Copper	0	0		0	13.189	13.7	84,004	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	63.195	79.6	486,705	Chem Translator of 0.794 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	10,071	Chem Translator of 0.85 applied
Total Nickel	0	0		0	460.409	461	2,820,752	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.108	3.66	22,360	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	397,434	
Total Zinc	0	0		0	115.219	118	720,337	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	18,343	
Acrylonitrile	0	0		0	650	650	3,974,342	
Benzene	0	0		0	640	640	3,913,198	
Bromoform	0	0		0	1,800	1,800	11,005,870	
Carbon Tetrachloride	0	0		0	2,800	2,800	17,120,242	
Chlorobenzene	0	0		0	1,200	1,200	7,337,247	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	#########	
Chloroform	0	0		0	1,900	1,900	11,617,307	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	91,715,583	
1,1-Dichloroethylene	0	0		0	7,500	7,500	45,857,792	
1,2-Dichloropropane	0	0		0	11,000	11,000	67,258,095	
1,3-Dichloropropylene	0	0		0	310	310	1,895,455	
Ethylbenzene	0	0		0	2,900	2,900	17,731,679	
Methyl Bromide	0	0		0	550	550	3,362,905	
Methyl Chloride	0	0		0	28,000	28,000	#########	
Methylene Chloride	0	0		0	12,000	12,000	73,372,467	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	6,114,372	
Tetrachloroethylene	0	0		0	700	700	4,280,061	
Toluene	0	0		0	1,700	1,700	10,394,433	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	41,577,731	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	18,343,117	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	20,788,866	
Trichloroethylene	0	0		0	2,300	2,300	14,063,056	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	3,424,048	
2,4-Dichlorophenol	0	0		0	1,700	1,700	10,394,433	
2,4-Dimethylphenol	0	0		0	660	660	4,035,486	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	489,150	
2,4-Dinitrophenol	0	0		0	660	660	4,035,486	
2-Nitrophenol	0	0		0	8,000	8,000	48,914,978	
4-Nitrophenol	0	0		0	2,300	2,300	14,063,056	
p-Chloro-m-Cresol	0	0		0	160	160	978,300	
Pentachlorophenol	0	0		0	12.154	12.2	74,312	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	2,812,611	

Acenaphthene	0	0		0	83	83.0	507,493	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	1,834,312	
Benzo(a)Anthracene	0	0		0	0.5	0.5	3,057	
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	#########	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	27,514,675	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	1,650,881	
Butyl Benzyl Phthalate	0	0		0	140	140	856,012	
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	5,013,785	
1,3-Dichlorobenzene	0	0		0	350	350	2,140,030	
1,4-Dichlorobenzene	0	0		0	730	730	4,463,492	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	24,457,489	
Dimethyl Phthalate	0	0		0	2,500	2,500	15,285,931	
Di-n-Butyl Phthalate	0	0		0	110	110	672,581	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	9,782,996	
2,6-Dinitrotoluene	0	0		0	990	990	6,053,229	
1,2-Diphenylhydrazine	0	0		0	15	15.0	91,716	
Fluoranthene	0	0		0	200	200	1,222,874	
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	61,144	
Hexachlorocyclopentadiene	0	0		0	5	5.0	30,572	
Hexachloroethane	0	0		0	60	60.0	366,862	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	61,143,722	
Naphthalene	0	0		0	140	140	856,012	
Nitrobenzene	0	0		0	4,000	4,000	24,457,489	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	#########	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	1,834,312	
Phenanthrene	0	0		0	5	5.0	30,572	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	794,868	
Aldrin	0	0		0	3	3.0	18,343	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.95	0.95	5,809	
Chlordane	0	0		0	2.4	2.4	14,674	
4,4-DDT	0	0		0	1.1	1.1	6,726	
4,4-DDE	0	0		0	1.1	1.1	6,726	

4,4-DDD	0	0		0	1.1	1.1	6,726	
Dieldrin	0	0		0	0.24	0.24	1,467	
alpha-Endosulfan	0	0		0	0.22	0.22	1,345	
beta-Endosulfan	0	0		0	0.22	0.22	1,345	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.086	0.086	526	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.52	0.52	3,179	
Heptachlor Epoxide	0	0		0	0.5	0.5	3,057	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	0.73	0.73	4,463	

☑ ***CFC*** CCT (min): 720 PMF: 0.460 Analysis Hardness (mg/l): 98.004 Analysis pH: 7.33

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	9,318,251	
Total Arsenic	0	0		0	150	150	6,353,353	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	#########	
Total Boron	0	0		0	1,600	1,600	67,769,096	
Total Cadmium	0	0		0	0.243	0.27	11,292	Chem Translator of 0.91 applied
Total Chromium (III)	0	0		0	72.901	84.8	3,590,418	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	440,288	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	804,758	
Total Copper	0	0		0	8.803	9.17	388,383	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	#########	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.462	3.1	131,344	Chem Translator of 0.794 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	38,369	Chem Translator of 0.85 applied
Total Nickel	0	0		0	51.127	51.3	2,172,033	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	211,319	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	550,624	
Total Zinc	0	0		0	116.138	118	4,988,944	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	127,067	
Acrylonitrile	0	0		0	130	130	5,506,239	
Benzene	0	0		0	130	130	5,506,239	
Bromoform	0	0		0	370	370	15,671,604	
Carbon Tetrachloride	0	0		0	560	560	23,719,184	

Chlorobenzene	0	0		0	240	240	10,165,364	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	#########	
Chloroform	0	0		0	390	390	16,518,717	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	#########	
1,1-Dichloroethylene	0	0		0	1,500	1,500	63,533,528	
1,2-Dichloropropane	0	0		0	2,200	2,200	93,182,508	
1,3-Dichloropropylene	0	0		0	61	61.0	2,583,697	
Ethylbenzene	0	0		0	580	580	24,566,297	
Methyl Bromide	0	0		0	110	110	4,659,125	
Methyl Chloride	0	0		0	5,500	5,500	#########	
Methylene Chloride	0	0		0	2,400	2,400	#########	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	8,894,694	
Tetrachloroethylene	0	0		0	140	140	5,929,796	
Toluene	0	0		0	330	330	13,977,376	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	59,297,959	
1,1,1-Trichloroethane	0	0		0	610	610	25,836,968	
1,1,2-Trichloroethane	0	0		0	680	680	28,801,866	
Trichloroethylene	0	0		0	450	450	19,060,058	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	4,659,125	
2,4-Dichlorophenol	0	0		0	340	340	14,400,933	
2,4-Dimethylphenol	0	0		0	130	130	5,506,239	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	677,691	
2,4-Dinitrophenol	0	0		0	130	130	5,506,239	
2-Nitrophenol	0	0		0	1,600	1,600	67,769,096	
4-Nitrophenol	0	0		0	470	470	19,907,172	
p-Chloro-m-Cresol	0	0		0	500	500	21,177,843	
Pentachlorophenol	0	0		0	9.324	9.32	394,940	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	3,854,367	
Acenaphthene	0	0		0	17	17.0	720,047	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	2,498,985	
Benzo(a)Anthracene	0	0		0	0.1	0.1	4,236	
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	#########	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	38,543,674	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	2,287,207	
Butyl Benzyl Phthalate	0	0		0	35	35.0	1,482,449	
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	6,776,910	
1,3-Dichlorobenzene	0	0		0	69	69.0	2,922,542	
1,4-Dichlorobenzene	0	0		0	150	150	6,353,353	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	33,884,548	
Dimethyl Phthalate	0	0		0	500	500	21,177,843	
Di-n-Butyl Phthalate	0	0		0	21	21.0	889,469	
2,4-Dinitrotoluene	0	0		0	320	320	13,553,819	
2,6-Dinitrotoluene	0	0		0	200	200	8,471,137	
1,2-Diphenylhydrazine	0	0		0	3	3.0	127,067	
Fluoranthene	0	0		0	40	40.0	1,694,227	
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	84,711	
Hexachlorocyclopentadiene	0	0		0	1	1.0	42,356	
Hexachloroethane	0	0		0	12	12.0	508,268	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	88,946,939	
Naphthalene	0	0		0	43	43.0	1,821,294	
Nitrobenzene	0	0		0	810	810	34,308,105	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	#########	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	2,498,985	
Phenanthrene	0	0		0	1	1.0	42,356	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,101,248	
Aldrin	0	0		0	0.1	0.1	4,236	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0043	0.004	182	
4,4-DDT	0	0		0	0.001	0.001	42.4	
4,4-DDE	0	0		0	0.001	0.001	42.4	
4,4-DDD	0	0		0	0.001	0.001	42.4	
Dieldrin	0	0		0	0.056	0.056	2,372	
alpha-Endosulfan	0	0		0	0.056	0.056	2,372	
beta-Endosulfan	0	0		0	0.056	0.056	2,372	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	0.036	0.036	1,525	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.0038	0.004	161	
Heptachlor Epoxide	0	0		0	0.0038	0.004	161	
PCBs, Total	0	0		0	0.014	0.014	593	

Toxaphene	0	0		0	0.0002	0.0002	8.47	

☑ ***THH*** CCT (min): 720 THH PMF: 0.460 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 0.4936

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	#########	WQC applied at RMI 951.71 with a design stream flow of 2280 cfs
Chloride (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 951.71 with a design stream flow of 2280 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	#########	WQC applied at RMI 951.71 with a design stream flow of 2280 cfs
Fluoride (PWS)	0	0		0	1,000	1,000	42,355,685	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	237,192	
Total Arsenic	0	0		0	10	10.0	423,557	
Total Barium	0	0		0	1,000	1,000	42,355,685	
Total Boron	0	0		0	3,100	3,100	#########	
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	55,062,391	
Dissolved Iron	0	0		0	300	300	12,706,706	
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	42,355,685	
Total Mercury	0	0		0	0.012	0.012	508	
Total Nickel	0	0		0	610	610	25,836,968	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	227,338	WQC applied at RMI 951.71 with a design stream flow of 2280 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	10,165	
Total Zinc	0	0		0	7,400	7,400	#########	
Acrolein	0	0		0	3	3.0	127,067	
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	4,235,569	
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	241,427	
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	1,397,738	
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	2,880,187	
Methyl Bromide	0	0		0	47	47.0	1,990,717	
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	2,414,274	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	4,235,569	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	#########	
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	1,270,671	
2,4-Dichlorophenol	0	0		0	10	10.0	423,557	
2,4-Dimethylphenol	0	0		0	100	100.0	4,235,569	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	84,711	
2,4-Dinitrophenol	0	0		0	10	10.0	423,557	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	#########	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	2,964,898	
Anthracene	0	0		0	300	300	12,706,706	
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	8,471,137	
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	4,236	
2-Chloronaphthalene	0	0		0	800	800	33,884,548	
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	17,789,388	
1,3-Dichlorobenzene	0	0		0	7	7.0	296,490	
1,4-Dichlorobenzene	0	0		0	63	63.0	2,668,408	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	25,413,411	
Dimethyl Phthalate	0	0		0	2,000	2,000	84,711,370	
Di-n-Butyl Phthalate	0	0		0	20	20.0	847,114	

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	847,114	
Fluorene	0	0		0	50	50.0	2,117,784	
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	169,423	
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	1,440,093	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	423,557	
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	847,114	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	2,965	
Aldrin	0	0		0	N/A	N/A	N/A	
alpha-BHC	0	0		0	N/A	N/A	N/A	
beta-BHC	0	0		0	N/A	N/A	N/A	
gamma-BHC	0	0		0	0.98	0.98	41,509	
Chlordane	0	0		0	N/A	N/A	N/A	
4,4-DDT	0	0		0	N/A	N/A	N/A	
4,4-DDE	0	0		0	N/A	N/A	N/A	
4,4-DDD	0	0		0	N/A	N/A	N/A	
Dieldrin	0	0		0	N/A	N/A	N/A	
alpha-Endosulfan	0	0		0	20	20.0	847,114	
beta-Endosulfan	0	0		0	20	20.0	847,114	
Endosulfan Sulfate	0	0		0	20	20.0	847,114	
Endrin	0	0		0	0.03	0.03	1,271	
Endrin Aldehyde	0	0		0	0.29	0.29	12,283	
Heptachlor	0	0		0	N/A	N/A	N/A	
Heptachlor Epoxide	0	0		0	N/A	N/A	N/A	
PCBs, Total	0	0		0	N/A	N/A	N/A	
Toxaphene	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.647 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	8,349,282	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.051	0.051	8,516	
Benzene	0	0		0	0.58	0.58	96,852	
Bromoform	0	0		0	4.3	4.3	718,038	
Carbon Tetrachloride	0	0		0	0.4	0.4	66,794	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.4	0.4	66,794	
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	91,842	
1,2-Dichloroethane	0	0		0	0.38	0.38	63,455	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.5	0.5	83,493	
1,3-Dichloropropylene	0	0		0	0.27	0.27	45,086	
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	768,134	
1,1,2,2-Tetrachloroethane	0	0		0	0.17	0.17	28,388	
Tetrachloroethylene	0	0		0	0.69	0.69	115,220	
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	91,842	
Trichloroethylene	0	0		0	0.6	0.6	100,191	
Vinyl Chloride	0	0		0	0.02	0.02	3,340	
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	5,010	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.4	1.4	233,780	
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	14.4	
Benzo(a)Anthracene	0	0		0	0.001	0.001	167	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	16.7	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	167	
Benzo(k)Fluoranthene	0	0		0	0.0038	0.004	635	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	5,010	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	53,435	
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	635	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	16.7	
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	3,507	
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	8,349	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	8,349	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	5,010	
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	13.4	
Hexachlorobutadiene	0	0		0	0.01	0.01	1,670	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	16,699	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	167	
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	115	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	835	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	551,053	
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	
Aldrin	0	0		0	0.0000008	8.00E-07	0.13	
alpha-BHC	0	0		0	0.0004	0.0004	66.8	
beta-BHC	0	0		0	0.008	0.008	1,336	
gamma-BHC	0	0		0	N/A	N/A	N/A	
Chlordane	0	0		0	0.0003	0.0003	50.1	
4,4-DDT	0	0		0	0.00003	0.00003	5.01	
4,4-DDE	0	0		0	0.00002	0.00002	3.34	
4,4-DDD	0	0		0	0.0001	0.0001	16.7	
Dieldrin	0	0		0	0.000001	0.000001	0.17	
alpha-Endosulfan	0	0		0	N/A	N/A	N/A	
beta-Endosulfan	0	0		0	N/A	N/A	N/A	
Endosulfan Sulfate	0	0		0	N/A	N/A	N/A	
Endrin	0	0		0	N/A	N/A	N/A	
Endrin Aldehyde	0	0		0	N/A	N/A	N/A	
Heptachlor	0	0		0	0.000006	0.000006	1.0	
Heptachlor Epoxide	0	0		0	0.00003	0.00003	5.01	
PCBs, Total	0	0		0	0.000064	0.00006	10.7	
Toxaphene	0	0		0	0.00028	0.0003	46.8	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Mercury	0.000002	0.000002	0.012	0.019	0.03	µg/L	0.012	THH	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	22,733,811	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	11,366,905	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	11,366,905	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	42,356	mg/L	Discharge Conc ≤ 10% WQBEL
Total Aluminum	2,939,299	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	237,192	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	423,557	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	42,355,685	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	31,744,432	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	8,192	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	3,590,418	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	63,854	µg/L	Discharge Conc < TQL
Total Cobalt	372,311	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	53,843	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	12,706,706	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	#########	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	131,344	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	42,355,685	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	1,807,988	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	227,338	µg/L	Discharge Conc ≤ 10% WQBEL
Total Selenium	211,319	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	14,332	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	10,165	µg/L	Discharge Conc < TQL
Total Zinc	461,707	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	11,757	µg/L	Discharge Conc < TQL
Acrylonitrile	8,516	µg/L	Discharge Conc < TQL
Benzene	96,852	µg/L	Discharge Conc < TQL
Bromoform	718,038	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	66,794	µg/L	Discharge Conc < TQL
Chlorobenzene	4,235,569	µg/L	Discharge Conc < TQL
Chlorodibromomethane	66,794	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	70,543,183	µg/L	Discharge Conc < TQL
Chloroform	241,427	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	91,842	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS

1,2-Dichloroethane	63,455	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	1,397,738	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	83,493	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	45,086	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	2,880,187	µg/L	Discharge Conc < TQL
Methyl Bromide	1,990,717	µg/L	Discharge Conc < TQL
Methyl Chloride	#########	µg/L	Discharge Conc < TQL
Methylene Chloride	768,134	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	28,388	µg/L	Discharge Conc < TQL
Tetrachloroethylene	115,220	µg/L	Discharge Conc < TQL
Toluene	2,414,274	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	4,235,569	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	11,757,197	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	91,842	µg/L	Discharge Conc < TQL
Trichloroethylene	100,191	µg/L	Discharge Conc < TQL
Vinyl Chloride	3,340	µg/L	Discharge Conc < TQL
2-Chlorophenol	1,270,671	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dichlorophenol	423,557	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dimethylphenol	2,586,583	µg/L	Discharge Conc ≤ 25% WQBEL
4,6-Dinitro-o-Cresol	84,711	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrophenol	423,557	µg/L	Discharge Conc ≤ 25% WQBEL
2-Nitrophenol	31,352,526	µg/L	Discharge Conc ≤ 25% WQBEL
4-Nitrophenol	9,013,851	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	627,051	µg/L	Discharge Conc ≤ 25% WQBEL
Pentachlorophenol	5,010	µg/L	Discharge Conc ≤ 25% WQBEL
Phenol	#########	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	233,780	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	325,282	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	12,706,706	µg/L	Discharge Conc ≤ 25% WQBEL
Benzidine	14.4	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	167	µg/L	Discharge Conc ≤ 25% WQBEL
Benzo(a)Pyrene	16.7	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	167	µg/L	Discharge Conc ≤ 25% WQBEL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	635	µg/L	Discharge Conc ≤ 25% WQBEL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	5,010	µg/L	Discharge Conc ≤ 25% WQBEL
Bis(2-Chloroisopropyl)Ether	8,471,137	µg/L	Discharge Conc ≤ 25% WQBEL
Bis(2-Ethylhexyl)Phthalate	53,435	µg/L	Discharge Conc ≤ 25% WQBEL
4-Bromophenyl Phenyl Ether	1,058,148	µg/L	Discharge Conc ≤ 25% WQBEL
Butyl Benzyl Phthalate	4,236	µg/L	Discharge Conc ≤ 25% WQBEL
2-Chloronaphthalene	33,884,548	µg/L	Discharge Conc ≤ 25% WQBEL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS

Chrysene	635	µg/L	Discharge Conc ≤ 25% WQBEL
Dibenzo(a,h)Anthrancene	16.7	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	3,213,634	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	296,490	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	2,668,408	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	3,507	µg/L	Discharge Conc ≤ 25% WQBEL
Diethyl Phthalate	15,676,263	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	9,797,664	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	431,097	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	8,349	µg/L	Discharge Conc ≤ 25% WQBEL
2,6-Dinitrotoluene	8,349	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	5,010	µg/L	Discharge Conc ≤ 25% WQBEL
Fluoranthene	783,813	µg/L	Discharge Conc ≤ 25% WQBEL
Fluorene	2,117,784	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.00008	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.01	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	19,595	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachloroethane	16,699	µg/L	Discharge Conc ≤ 25% WQBEL
Indeno(1,2,3-cd)Pyrene	167	µg/L	Discharge Conc ≤ 25% WQBEL
Isophorone	1,440,093	µg/L	Discharge Conc ≤ 25% WQBEL
Naphthalene	548,669	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	423,557	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodimethylamine	115	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodi-n-Propylamine	835	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodiphenylamine	551,053	µg/L	Discharge Conc ≤ 25% WQBEL
Phenanthrene	19,595	µg/L	Discharge Conc ≤ 25% WQBEL
Pyrene	847,114	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	2,965	µg/L	Discharge Conc ≤ 25% WQBEL
Aldrin	0.13	µg/L	Discharge Conc < TQL
alpha-BHC	66.8	µg/L	Discharge Conc < TQL
beta-BHC	1,336	µg/L	Discharge Conc < TQL
gamma-BHC	0.95	µg/L	Discharge Conc < TQL
delta BHC	N/A	N/A	No WQS
Chlordane	0.0003	µg/L	Discharge Conc < TQL
4,4-DDT	0.00003	µg/L	Discharge Conc < TQL
4,4-DDE	0.00002	µg/L	Discharge Conc < TQL
4,4-DDD	0.0001	µg/L	Discharge Conc < TQL
Dieldrin	0.000001	µg/L	Discharge Conc < TQL
alpha-Endosulfan	862	µg/L	Discharge Conc < TQL
beta-Endosulfan	862	µg/L	Discharge Conc < TQL
Endosulfan Sulfate	847,114	µg/L	Discharge Conc < TQL
Endrin	337	µg/L	Discharge Conc < TQL
Endrin Aldehyde	12,283	µg/L	Discharge Conc < TQL
Heptachlor	1.0	µg/L	Discharge Conc < TQL

Heptachlor Epoxide	5.01	µg/L	Discharge Conc < TQL
PCB-1016	N/A	N/A	No WQS
PCB-1221	N/A	N/A	No WQS
PCB-1232	N/A	N/A	No WQS
PCB-1242	N/A	N/A	No WQS
PCB-1248	N/A	N/A	No WQS
PCB-1254	N/A	N/A	No WQS
PCB-1260	N/A	N/A	No WQS
PCBs, Total	0.00006	µg/L	Discharge Conc < TQL
Toxaphene	0.0002	µg/L	Discharge Conc < TQL

ATTACHMENT E

TRC Modeling Results

TRC EVALUATION – Outfall 002 (302)

4730	**= Q stream (cfs)**	**0.5**	**= CV Daily**
0.016	**= Q discharge (MGD)**	**0.5**	**= CV Hourly**
4	**= no. samples**	**0.066**	**= AFC_Partial Mix Factor**
0.3	**= Chlorine Demand of Stream**	**0.46**	**= 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 =	4023.347	**1.3.2.iii**	WLA cfc =	27338.157
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	1499.195	**5.1d**	LTA_cfc =	15893.122

Source	Reference	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)**

ATTACHMENT F

Temperature Modeling Results for Outfall 006

Facility: Eaton Corporation - Beaver Plant
Permit Number: PA0001236 **PMF** 1.000
Stream Name: Twomile Run
Analyst/Engineer: Ryan Decker
Stream Q7-10 (cfs): 0.048

	Facility Flows				Stream Flows		
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	0	0.0000144	0	0.0000144	0.15	0.15	0.15
Feb 1-29	0	0.0000144	0	0.0000144	0.17	0.17	0.17
Mar 1-31	0	0.0000144	0	0.0000144	0.34	0.34	0.34
Apr 1-15	0	0.0000144	0	0.0000144	0.45	0.45	0.45
Apr 16-30	0	0.0000144	0	0.0000144	0.45	0.45	0.45
May 1-15	0	0.0000144	0	0.0000144	0.24	0.24	0.24
May 16-30	0	0.0000144	0	0.0000144	0.24	0.24	0.24
Jun 1-15	0	0.0000144	0	0.0000144	0.14	0.14	0.14
Jun 16-30	0	0.0000144	0	0.0000144	0.14	0.14	0.14
Jul 1-31	0	0.0000144	0	0.0000144	0.08	0.08	0.08
Aug 1-15	0	0.0000144	0	0.0000144	0.07	0.07	0.07
Aug 16-31	0	0.0000144	0	0.0000144	0.07	0.07	0.07
Sep 1-15	0	0.0000144	0	0.0000144	0.05	0.05	0.05
Sep 16-30	0	0.0000144	0	0.0000144	0.05	0.05	0.05
Oct 1-15	0	0.0000144	0	0.0000144	0.06	0.06	0.06
Oct 16-31	0	0.0000144	0	0.0000144	0.06	0.06	0.06
Nov 1-15	0	0.0000144	0	0.0000144	0.08	0.08	0.08
Nov 16-30	0	0.0000144	0	0.0000144	0.08	0.08	0.08
Dec 1-31	0	0.0000144	0	0.0000144	0.12	0.12	0.12

Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Facility: **Eaton Corporation – Beaver Plant**
Permit Number: PA0001236
Stream: Twomile Run

	WWF Criteria (ºF)	CWF Criteria (ºF)	TSF Criteria (ºF)	316 Criteria (ºF)	Q7-10 Multipliers (Used in Analysis)	Q7-10 Multipliers (Default - Info Only)
Jan 1-31	40	38	40	0	3.2	3.2
Feb 1-29	40	38	40	0	3.5	3.5
Mar 1-31	46	42	46	0	7	7
Apr 1-15	52	48	52	0	9.3	9.3
Apr 16-30	58	52	58	0	9.3	9.3
May 1-15	64	54	64	0	5.1	5.1
May 16-31	72	58	68	0	5.1	5.1
Jun 1-15	80	60	70	0	3	3
Jun 16-30	84	64	72	0	3	3
Jul 1-31	87	66	74	0	1.7	1.7
Aug 1-15	87	66	80	0	1.4	1.4
Aug 16-31	87	66	87	0	1.4	1.4
Sep 1-15	84	64	84	0	1.1	1.1
Sep 16-30	78	60	78	0	1.1	1.1
Oct 1-15	72	54	72	0	1.2	1.2
Oct 16-31	66	50	66	0	1.2	1.2
Nov 1-15	58	46	58	0	1.6	1.6
Nov 16-30	50	42	50	0	1.6	1.6
Dec 1-31	42	40	42	0	2.4	2.4

Notes:
WWF = Warm water fishes
CWF = Cold water fishes
TSF = Trout stocking

Facility: **Eaton Corporation – Beaver Plant**
Permit Number: PA0001236 **PMF**
Stream: Twomile Run 1.00

	WWF Ambient Stream Temperature (ºF) (Default)	Ambient Stream Temperature (ºF) (Site-specific data)	Target Maximum Stream Temp.[1] (ºF)	**WWF** Daily WLA[2] (Million BTUs/day)	**WWF** Daily WLA[3] (ºF)	at Discharge Flow (MGD)
Jan 1-31	35	0	40	N/A -- Case 2	110.0	0.0000144
Feb 1-29	35	0	40	N/A -- Case 2	110.0	0.0000144
Mar 1-31	40	0	46	N/A -- Case 2	110.0	0.0000144
Apr 1-15	47	0	52	N/A -- Case 2	110.0	0.0000144
Apr 16-30	53	0	58	N/A -- Case 2	110.0	0.0000144
May 1-15	58	0	64	N/A -- Case 2	110.0	0.0000144
May 16-31	62	0	72	N/A -- Case 2	110.0	0.0000144
Jun 1-15	67	0	80	N/A -- Case 2	110.0	0.0000144
Jun 16-30	71	0	84	N/A -- Case 2	110.0	0.0000144
Jul 1-31	75	0	87	N/A -- Case 2	110.0	0.0000144
Aug 1-15	74	0	87	N/A -- Case 2	110.0	0.0000144
Aug 16-31	74	0	87	N/A -- Case 2	110.0	0.0000144
Sep 1-15	71	0	84	N/A -- Case 2	110.0	0.0000144
Sep 16-30	65	0	78	N/A -- Case 2	110.0	0.0000144
Oct 1-15	60	0	72	N/A -- Case 2	110.0	0.0000144
Oct 16-31	54	0	66	N/A -- Case 2	110.0	0.0000144
Nov 1-15	48	0	58	N/A -- Case 2	110.0	0.0000144
Nov 16-30	42	0	50	N/A -- Case 2	110.0	0.0000144
Dec 1-31	37	0	42	N/A -- Case 2	110.0	0.0000144

[1] This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.