Pennsylvania Department of Environmental Protection

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0014311**
Facility Type	**Industrial**	APS ID	**1126916**
Major / Minor	**Minor**	Authorization ID	**1508629**

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

Applicant and Facility Information

Applicant Name	**Keystone Profiles**	Facility Name	**Keystone Profiles Ltd Beaver Falls Plant**
Applicant Address	220 7th Avenue Beaver Falls, PA 15010-3274	Facility Address	220 7th Avenue Beaver Falls, PA 15010-3274
Applicant Contact	Mark Breedlove	Facility Contact	Eric Papa
Applicant Phone	(724) 506 - 1500	Facility Phone	(724) 506 - 1500
Client ID	213328	Site ID	247661
SIC Code	3316	Municipality	Beaver Falls City
SIC Description	Manufacturing – Cold-rolled Steel Sheet, Strip, and Bars	County	Beaver
Date Application Received	December 2, 2024	EPA Waived?	Yes
Date Application Accepted	February 21, 2025	If No, Reason	

Purpose of Application: Renewal NPDES Permit for Coverage of Treated IW Process Effluent with ELG.

Summary of Review

On December 2, 2024, Keystone Profiles submitted a Renewal NPDES Permit application to discharge Industrial Wastewater from the Beaver Falls Plant. Keystone Profiles Beaver Falls Plant is an industrial facility manufacturing cold finished steel bars.

Hot rolled bars and coils are received as starting material. They are then annealed to lower their hardness and increase ductility. The steel is then pickled to clean scale from the surface and given a coating of either lime or phosphate and soap to act as lubrication between the steel and the die. Zinc phosphate, lime, soap and permanganate are meant to stay on the steel during processing. Loads are held above the processing tanks until dripping stops. The steel is then drawn through a hardened steel or carbide die to reduce the cross section or impart a shape. Degreaser is also applied to the stainless coils. The processing can be repeated until the final dimensions or shape are achieved. The bars or rods are then straightened and cut to length before shipping.

The site has eight outfalls that discharge to Walnut Bottom Run, designated in 25 PA Code Chapter 93 as a Warm Water Fishery. Outfalls 002, 003, 004, 006, 007, 009, and 010 are stormwater only outfalls. Outfall 002 is identified as the representative sampling location for Outfalls 003, 004, and 009, all being roof runoff. Outfall 001 receives process wastewater and stormwater. An internal monitoring point, IMP 101, is used to monitor the process wastewater that discharges via Outfall 001. IMP 101 receives wastewater generated from acid pickling, alkaline degreasing, salt bath descaling, and boiler blowdown.

Water-Quality Management Permit Part II 0470204 permits the treatment system for the discharge of Outfall 101 consists of flow equalization, two-stage neutralization, polymer addition for solids, flocculation solids settling in clarifier, followed by a filter press. Adding the filter press to the treatment system is contained in an addendum currently being reviewed by the Department.

Approve	Deny	Signatures	Date
X		Curtis Holes, P.E. / Environmental Engineer	November 13, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	November 19, 2025

Summary of Review

The site was last inspected on March 5, 2024. Five violations were noted from the inspection, violations of effluent limits in Part A of permit, failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance, failure to monitor pollutants as required by the NPDES permit, and violations of Part C permit condition(s).

It is recommended that a Draft NPDES Permit be published for public comment in response to this application.

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.02
Latitude	40º 44' 40"	Longitude	-80º 19' 09"
Quad Name		Quad Code	
Wastewater Description:	IW Process Effluent with ELG, Stormwater		
Receiving Waters	Walnut Bottom Run (WWF)	Stream Code	34001
NHD Com ID	134449674	RMI	0.18
Drainage Area	3.7	Yield (cfs/mi^2)	0.0102
Q_{7-10} Flow (cfs)	0.0379	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	725	Slope (ft/ft)	0.0001
Watershed No.	20-B	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	FLOW REGIME MODIFICATION, FLOW REGIME MODIFICATION, SILTATION, SILTATION		
Source(s) of Impairment	HABITAT MODIFICATION - OTHER THAN HYDROMODIFICATION, URBAN RUNOFF/STORM SEWERS		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	Beaver Falls Municipal Authority		
PWS Waters	Beaver River	Flow at Intake (cfs)	640
PWS RMI	3.06	Distance from Outfall (mi)	0.65

Changes Since Last Permit Issuance:

Other Comments:

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 43"	Longitude	-80º 19' 11"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 42"	Longitude	-80º 19' 11"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 41"	Longitude	-80º 19' 11"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	006	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 39"	Longitude	-80º 19' 09"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information

Outfall No.	007	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 36"	Longitude	-80º 19' 10"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	009	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 41"	Longitude	-80º 19' 06"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	010	Design Flow (MGD)	0.0 (varies)
Latitude	40º 44' 37"	Longitude	-80º 19' 11"
Quad Name		Quad Code	
Wastewater Description:	Stormwater		

Treatment Facility Summary

Treatment Facility Name: Keystone Profiles Ltd Beaver Falls Plant

WQM Permit No.	Issuance Date
0470204	Amendment submitted 10/25
Su0470204	03/2020

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial			No Disinfection	

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
		Not Overloaded		

Changes Since Last Permit Issuance: The pending amendment is to incorporate the filter press that was installed in 2022.

Other Comments:

Compliance History

DMR Data for Outfall 002 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			< 5.0						5.0		
Total Aluminum (mg/L) Daily Maximum	**Report**			< 0.200						< 0.200		
Total Copper (mg/L) Daily Maximum	**Report**			< 0.00700						< 0.00700		
Total Iron (mg/L) Daily Maximum	**Report**			< 0.200						< 0.200		
Total Lead (mg/L) Daily Maximum	**Report**			< 0.007						< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**			0.056						0.168		

DMR Data for Outfall 003 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			5.5						10.0		
Total Aluminum (mg/L) Daily Maximum	**Report**			< 0.200						0.819		
Total Copper (mg/L) Daily Maximum	**Report**			< 0.0070						0.121		
Total Iron (mg/L) Daily Maximum	**Report**			0.877						32.4		
Total Lead (mg/L) Daily Maximum	**Report**			0.063						0.233		
Total Zinc (mg/L) Daily Maximum	**Report**			0.168						3.80		

DMR Data for Outfall 004 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			8.0						8.5		
Total Aluminum (mg/L) Daily Maximum	**Report**			< 0.200						< 0.200		
Total Copper (mg/L) Daily Maximum	**Report**			< 0.00700						< 0.00700		
Total Iron (mg/L) Daily Maximum	**Report**			0.280						0.365		
Total Lead (mg/L) Daily Maximum	**Report**			< 0.007						< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**			0.556						0.896		

DMR Data for Outfall 006 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**									< 5.0		
Total Aluminum (mg/L) Daily Maximum	**Report**									< 0.200		
Total Copper (mg/L) Daily Maximum	**Report**									< 0.00700		
Total Iron (mg/L) Daily Maximum	**Report**									< 0.200		
Total Lead (mg/L) Daily Maximum	**Report**									< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**									0.204		

DMR Data for Outfall 007 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			72.0						30.5		
Total Aluminum (mg/L) Daily Maximum	**Report**			0.259						0.931		
Total Copper (mg/L) Daily Maximum	**Report**			< 0.00700						0.00730		
Total Iron (mg/L) Daily Maximum	**Report**			0.424						2.08		
Total Lead (mg/L) Daily Maximum	**Report**			< 0.007						< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**			0.037						0.109		

DMR Data for Outfall 009 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			11.5						23.0		
Total Aluminum (mg/L) Daily Maximum	**Report**			0.400						0.813		
Total Copper (mg/L) Daily Maximum	**Report**			0.0130						0.00860		
Total Iron (mg/L) Daily Maximum	**Report**			0.659						1.15		
Total Lead (mg/L) Daily Maximum	**Report**			< 0.007						< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**			0.067						0.067		

DMR Data for Outfall 010 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
TSS (mg/L) Daily Maximum	**100.0**			39.0						6.5		
Total Aluminum (mg/L) Daily Maximum	**Report**			0.322						0.261		
Total Copper (mg/L) Daily Maximum	**Report**			< 0.0070						< 0.0070		
Total Iron (mg/L) Daily Maximum	**Report**			0.625						0.444		
Total Lead (mg/L) Daily Maximum	**Report**			< 0.007						< 0.007		
Total Zinc (mg/L) Daily Maximum	**Report**			0.029						0.023		

DMR Data for Outfall 101 (from October 1, 2024 to August 31, 2025)

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
Flow (MGD) Average Monthly	**Report**	0.00436	0.00828	E	0.00007	0.00387	0.00031	0.00003	0.00002	0.00498	0.00264	0.00796
Flow (MGD) Daily Maximum	**Report**	0.00864	0.01728	E	0.00007	0.00576	0.00031	0.00003	0.00003	0.00637	0.00791	0.00868
pH (S.U.) IMIN	**6.0**	7.3	8.5	E	7.2	6.9	8.0	7.9	8.0	7.9	7.8	7.4
pH (S.U.) IMAX	**9.0**	**9.2**	**9.8**	E	7.2	8.3	8.0	8.0	8.2	8.0	8.5	7.9
TRC (mg/L) Average Monthly	**0.5**	< 0.2	< 0.2	E	< 0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TRC (mg/L) Daily Maximum	**1.0**	< 0.2	< 0.2	E	< 0.1	< 0.1	0.1	< 0.1	0.2	< 0.1	< 0.1	0.2
Temperature (ºF) IMAX	**110**	86	91	E	74	74	55	56	59	63	84	81
TSS (lbs/day) Average Monthly	**1.43**	0.44	1.22	E	0.004	0.53	0.01	0.003	0.001	0.24	< 0.04	0.25
TSS (lbs/day) Daily Maximum	**3.34**	1.01	2.74	E	0.004	0.90	0.01	0.005	0.001	0.34	< 0.13	0.33
Oil and Grease (lbs/day) Average Monthly	**Report**	< 0.2	< 0.4	E	< 0.001	< 0.2	< 0.01	< 0.001	< 0.001	< 0.2	< 0.1	< 0.3

DMR Data for Outfall 101 (from October 1, 2024 to August 31, 2025) Cont.

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
Oil and Grease (lbs/day) Daily Maximum	**Report**	< 0.4	< 0.7	E	< 0.001	< 0.2	< 0.01	< 0.001	< 0.001	< 0.3	< 0.3	< 0.3
Oil and Grease (mg/L) Average Monthly	**5.0**	**< 5.1**	**< 5.3**	< 3.8	< 2.2	< 5.0	< 4.8	< 4.8	< 4.8	< 4.8	< 4.9	< 4.9
Oil and Grease (mg/L) Daily Maximum	**5.0**	**< 5.3**	**< 5.6**	< 5.0	< 2.2	< 5.0	< 4.8	< 4.8	< 4.8	< 4.8	< 5.0	< 5.0
Total Cadmium (mg/L) Average Monthly	**Report**	< 0.00050	< 0.00150	< 0.00350	< 0.00500	< 0.00500	< 0.00500	< 0.00200	< 0.00173	< 0.00160	< 0.00500	< 0.00500
Total Cadmium (mg/L) Daily Maximum	**Report**	< 0.00050	< 0.00200	< 0.00500	< 0.00500	< 0.00500	< 0.00500	< 0.00200	< 0.00200	< 0.00160	< 0.00500	< 0.00500
Total Chromium (lbs/day) Average Monthly	**0.024**	< 0.0002	< 0.0004	E	0.00001	0.0003	0.00006	< 0.000001	0.000001	0.0004	< 0.0001	< 0.0004
Total Chromium (lbs/day) Daily Maximum	**0.060**	0.0004	0.0009	E	0.00001	0.0006	0.00006	0.000002	0.000002	0.0006	< 0.0003	0.0006
Total Chromium (mg/L) Average Monthly	**0.44**	< 0.01	< 0.01	< 0.01	0.02	0.01	0.02	< 0.01	0.010	0.009	< 0.005	< 0.005
Total Chromium (mg/L) Daily Maximum	**0.68**	0.01	0.01	< 0.01	0.02	0.01	0.02	0.01	0.015	0.012	0.006	0.008
Total Copper (mg/L) Average Monthly	**Report**	0.0298	< 0.0143	0.0213	0.0479	0.0398	0.126	0.0364	0.0319	0.0332	0.0276	0.0333
Total Copper (mg/L) Daily Maximum	**Report**	0.0530	0.0210	0.0310	0.0479	0.0545	0.126	0.0438	0.0388	0.0484	0.0341	0.0379
Dissolved Iron (mg/L) Average Monthly	**Report**	0.055	0.285	0.325	< 0.200	< 0.623	0.795	0.823	0.547	0.232	< 0.207	< 0.200
Dissolved Iron (mg/L) Daily Maximum	**Report**	0.099	0.779	0.519	< 0.200	1.030	0.795	0.892	1.100	0.370	0.220	< 0.200
Total Lead (lbs/day) Average Monthly	**0.012**	< 0.00002	< 0.001	E	< 0.000001	< 0.00005	< 0.000003	< 0.00000003	< 0.00000001	< 0.00004	< 0.00002	< 0.00005
Total Lead (lbs/day) Daily Maximum	**0.038**	< 0.00004	< 0.001	E	< 0.000001	< 0.00008	< 0.000003	< 0.00000003	< 0.00000003	< 0.00005	< 0.00005	< 0.00006
Total Lead (mg/L) Average Monthly	**0.0162**	< 0.0005	< 0.0068	< 0.0035	< 0.0010	< 0.0013	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0008	< 0.0008
Total Lead (mg/L) Daily Maximum	**0.0252**	< 0.0005	< 0.0100	< 0.0050	< 0.0010	< 0.0020	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0008	< 0.0008

DMR Data for Outfall 101 (from October 1, 2024 to August 31, 2025) Cont.

Parameter	Limit	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24
Total Nickel (lbs/day) Average Monthly	**0.018**	0.003	0.003	E	< 0.00006	< 0.004	0.0002	< 0.00002	< 0.00001	0.006	0.002	0.010
Total Nickel (lbs/day) Daily Maximum	**0.054**	0.008	0.005	E	< 0.00006	0.006	0.0002	0.00003	< 0.00002	0.008	0.006	0.013
Total Nickel (mg/L) Average Monthly	**0.27**	0.06	0.04	0.20	< 0.10	< 0.11	0.06	< 0.10	< 0.11	0.15	0.17	0.14
Total Nickel (mg/L) Daily Maximum	**0.41**	0.16	0.05	0.28	< 0.10	0.15	0.06	0.10	0.11	0.19	0.22	0.18
Total Zinc (lbs/day) Average Monthly	**0.017**	0.012	0.005	E	0.00004	0.009	0.002	0.00005	< 0.00004	0.006	0.002	0.014
Total Zinc (lbs/day) Daily Maximum	**0.051**	0.044	0.011	E	0.00004	0.019	0.002	0.0001	< 0.0001	0.007	0.005	0.020
Total Zinc (mg/L) Average Monthly	**0.39**	0.27	0.05	0.16	0.07	0.23	**0.70**	0.21	< 0.23	0.15	0.20	0.21
Total Zinc (mg/L) Daily Maximum	**0.61**	**0.92**	0.08	0.26	0.07	0.49	**0.70**	0.25	< 0.41	0.16	0.27	0.28

Compliance History

Effluent Violations for Outfall 101, from: October 1, 2024 To: August 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
pH	07/31/25	IMAX	9.8	S.U.	9.0	S.U.
pH	08/31/25	IMAX	9.2	S.U.	9.0	S.U.
Oil and Grease	07/31/25	Avg Mo	< 5.3	mg/L	5.0	mg/L
Oil and Grease	08/31/25	Avg Mo	< 5.1	mg/L	5.0	mg/L
Oil and Grease	07/31/25	Daily Max	< 5.6	mg/L	5.0	mg/L
Oil and Grease	08/31/25	Daily Max	< 5.3	mg/L	5.0	mg/L
Total Zinc	03/31/25	Avg Mo	0.70	mg/L	.39	mg/L
Total Zinc	03/31/25	Daily Max	0.70	mg/L	.61	mg/L
Total Zinc	08/31/25	Daily Max	0.92	mg/L	.61	mg/L

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.02
Latitude	40º 44' 40"	**Longitude**	-80º 19' 09"

Wastewater Description: IW Process Effluent with ELG, Stormwater

Outfall 001 receives the discharge from the wastewater treatment plant and stormwater. The waste stream that Outfall 001 receives is mixed; therefore, an internal monitoring point is used to monitor the isolated wastewater. The Industrial wastewater discharge from the wastewater treatment plant will be monitored at IMP 101.

Development of Effluent Limitations

IMP. 101 **Design Flow (MGD)** 0.02
Latitude 40º 44' 39" **Longitude** -80º 19' 09"
Wastewater Description: IW Process Effluent with ELG

Technology-Based Limitations

Federal Effluent Limitation Guidelines (ELGs)

IMP 101 is subject to Federal Effluent Limitation Guidelines (ELGs) under 40 CFR 420.92 (a) (1) (Iron and Steel Manufacturing Subpart I- Sulfuric Acid Pickling Rod, Wire and Coil Subcategory), 40 CFR 420.92 (a) (1) (Iron and Steel Manufacturing Subpart I- Sulfuric Acid Pickling Bar, Billets and Bloom Subcategory), 40 CFR 420.82 (a)(2) (Iron and Steel Manufacturing Subpart H- Salt Bath Descaling Subcategory), and 40 CFR 420.112 (a) (Iron and Steel Manufacturing Subpart K- Alkaline Cleaning Subcategory). IMP 101 also receives boiler blowdown. Boiler blowdown is considered a low volume waste source and is subject to 40 CFR 423.12. Each subcategory is broken down below. The discharge from IMP 101 is from multiple sources, therefore the comingling of the wastewater must be considered when developing the effluent limitations. To do this, the final limitations from the ELGs were derived using the building block approach, taking each subpart that applies to the facility into consideration.

The limits in the ELG for 40 CFR 420.92 (a) (1) (Iron and Steel Manufacturing Subpart I- Acid Pickling Subcategory) are determined through production data. Based upon the average daily production that was included in the permit application, the effluent limits from the ELG for Sulfuric Acid Picking (Rod, wire, and coil) are shown below in Table 1. Keystone Profiles does not generate cold rolling wastewater; therefore, oil and grease limitations are not applicable.

Table 1: Mass Limitation Calculation – Iron and Steel – Sulfuric Acid Pickling (Rod, Wire and Coil)

Parameter	Limitations in ELGs (3)		Production Rate (lbs/day)	Mass-Based Effluent Limits (lbs/day)	
	Monthly Average	Maximum Daily		Monthly Average	Maximum Daily
Total Suspended Solids	0.0350(1)	0.0818(1)	11,000	0.385	0.900
~~Oil & Grease~~ (2)	~~0.0117~~(1)	~~0.0350~~(1)		~~0.129~~	~~0.385~~
Lead	0.000175(1)	0.000526(1)		0.002	0.006
Zinc	0.000234 1)	0.000701(1)		0.003	0.008
pH	Within the range of 6.0 to 9.0			Within the range of 6.0 to 9.0	

1. Pounds per 1000 lbs (or $^{g}/_{kg}$) of product.
2. The limitations for oil and grease shall be applicable when acid pickling wastewaters are treated with cold rolling wastewaters.
3. 40 CFR 420.92(a)(1)

The limits in the ELG for 40 CFR 420.92 (a) (2) (Iron and Steel Manufacturing Subpart I- Acid Pickling Subcategory) are determined through production data. Based upon the average daily production that was included in the permit application, the effluent limits from the ELG for Sulfuric Acid Picking (Bar, billet and bloom) are shown below in Table 2. Keystone Profiles does not generate cold rolling wastewater; therefore, oil and grease limitations are not applicable.

Table 2: Mass Limitation Calculation – Iron and Steel – Sulfuric Acid Pickling (Bars, Billets and Bloom)

Parameter	Limitations in ELGs (3)		Production Rate (lbs/day)	Mass-Based Effluent Limits (lbs/day)	
	Monthly Average	Maximum Daily		Monthly Average	Maximum Daily
Total Suspended Solids	0.0113(1)	0.0263(1)	60,000	0.678	1.578
~~Oil & Grease~~ (2)	~~0.00375~~(1)	~~0.0113~~(1)		~~0.225~~	~~0.678~~
Lead	0.0000563(1)	0.000169(1)		0.003	0.010
Zinc	0.0000751 1)	0.000225(1)		0.005	0.014
pH	Within the range of 6.0 to 9.0			Within the range of 6.0 to 9.0	

1. Pounds per 1000 lbs (or $^{g}/_{kg}$) of product.
2. The limitations for oil and grease shall be applicable when acid pickling wastewaters are treated with cold rolling wastewaters.
3. 40 CFR 420.92(a)(2)

The limits in the ELG for 40 CFR 420.82 (a) (2) (Iron and Steel Manufacturing Subpart H- Salt Bath Descaling Subcategory) are determined through production data. Based upon the average daily production that was included in the permit application, the effluent limits from the ELG for Salt bath descaling, oxidizing (Batch, rod, and wire) are shown below in Table 3. Keystone Profiles does not generate cold rolling wastewater; therefore, credit for oil and grease cannot be given for this waste stream.

Table 3: Mass Limitation Calculation – Iron and Steel – Salt Bath Descaling, Oxidizing (Batch, Rod, and Wire)

Parameter	Limitations in ELGs (2)		Production Rate (lbs/day)	Mass-Based Effluent Limits (lbs/day)	
	Monthly Average	Maximum Daily		Monthly Average	Maximum Daily
Total Suspended Solids	0.0526(1)	0.123(1)	4,000	0.210	0.492
Chromium	0.000701(1)	0.00175(1)		0.003	0.007
Nickel	0.000526(1)	0.00158(1)		0.002	0.006
pH	Within the range of 6.0 to 9.0			Within the range of 6.0 to 9.0	

1. Pounds per 1000 lbs (or $^{g}/_{kg}$) of product.
2. 40 CFR 420.92(a)(2)

The limits in the 40 CFR 420.112 (a) (Iron and Steel Manufacturing Subpart K- Alkaline Cleaning Subcategory) are determined through production data. Based upon the average annual production that was included in the permit application, the effluent limits from 40 CFR 420.112 (a) (Iron and Steel Manufacturing Subpart K- Alkaline Cleaning Subcategory) are shown below in Table 4.

Table 4: Mass Limitation Calculation – Iron and Steel - Alkaline Cleaning (Batch)

Parameter	Limitations in ELGs (2)		Production Rate (lbs/day)	Mass-Based Effluent Limits (lbs/day)	
	Monthly Average	Maximum Daily		Monthly Average	Maximum Daily
Total Suspended Solids	0.0313(1)	0.0730(1)	3,500	0.110	0.256
Oil & Grease	0.0104(1)	0.0313(1)		0.036	0.110
pH	Within the range of 6.0 to 9.0			Within the range of 6.0 to 9.0	

1. Pounds per 1000 lbs (or $^{g}/_{kg}$) of product.
2. 40 CFR 420.112 (a)

The limits in 40 CFR 423.12 for boiler blowdown is shown in Table 5 below. As discussed above, the boiler blowdown comingles with the other process wastewater, therefore, load allocations must be given to this waste stream for the pollutants that received allocations for the other waste streams and that have concentration limitations on the boiler blowdown. The load allocations were determined by converting the concentrations limits to mass-based limits using the average discharge flow of the boiler blowdown (0.00005 MGD) and a conversion factor (8.34).

Table 5. Boiler Blowdown Limitations

Parameter	Mass-Based Limitations (lbs/day)		Concentration Limitations (mg/l)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Total Suspended Solids	0.01251	0.0417	30.0	100.0
Oil and Grease	0.00626	0.00834	15.0	20.0

The waste waters are all combined together for treatment; therefore, the building block approach must be used to determine the total ELG effluent limits. Using the building block approach, by adding all subparts together, the total loading limitations were determined and are displayed below in Table 6.

The Department has determined that it is beneficial to include concentration-based limitations to supplement the mass-based limitations at IMP 101. Expression of limitations in terms of both concentration and mass encourages proper operation of a treatment facility at all times. Where limitations are expressed in more than one unit, the permittee must comply with both the mass-based limitations in the ELG that were developed using Production Normalizing Flow, and concentrations. The Production Normalizing Flow is an estimate of water use based on the quantity of “off-pounds” of product removed from a production line at the end of a specific process cycle. The EPA has studied the typical volume of wastewater generated at similar manufacturing facilities across the country to define the Production Normalizing Flow. The concentrations that were used to develop the mass-

based limitations are included in Attachment G and were taken from Table I-1 of the 1982 Iron and Steel ELG Development Document. The concentration limits are shown in Table 6 below.

Table 6: Proposed ELG Limitations

Parameter	Mass Based (lbs/day)		Concentration Based (mg/L)	
	Monthly Average	Maximum Daily	Monthly Average	Maximum Daily
Total Suspended Solids	1.39	3.27	30	70
Oil & Grease	0.0427	0.1179	10	30
Lead	0.0053	0.01593	0.15	0.45
Zinc	0.00708	0.02121	0.1	0.3
Chromium	0.00175	0.007	0.4	1.0
Nickel	0.002104	0.00632	0.3	0.9
pH (S.U.)	Within the range of 6.0 to 9.0			

Oil and Grease mass-based effluent limitations of 0.0427 lbs/day as an average monthly limit and 0.1179 lbs/day as a daily maximum limit were determined from the Federal Effluent Limitation Guidelines to be imposed at IMP 101. For compliance purposes, mass loads are calculated by multiplying the discharge concentration by the discharge flow and relevant conversion factors. Whenever discharge concentrations are "non-detect", the method detection limit is used to calculate the highest potential mass loading. However, if Keystone Profiles reports non-detect concentration values (<5.0 $^{mg}/_{L}$) using the most sensitive analytical method currently available, (EPA Method 1664), the mass-based results will exceed the mass-based limitations. This is true even when there are no detectible concentrations of oil and grease in the discharge. The concentration from the current most sensitive method is the lowest concentration achievable by approved laboratories and when converted to mass-loading, the results may be greater than the mass-based effluent limitations, leading to illegitimate violations of the permit limits. Therefore, for compliance purposes, if the permittee reports a non-detect concentration value using the current most sensitive method (i.e. less than 5.0 $^{mg}/_{L}$), the mass-based limitation will be considered to be in compliance and should be reported as non-detect. The Department believes that imposing a non-detect limitation at IMP 101 for Oil and Grease is more stringent that the mass-based limitations from the Federal ELGs, because it represents the lowest concentration the permittee can currently detect. Therefore, an effluent limitation of 5.0 mg/L will be maintained from the previous Permit, which was based on Best Professional Judgement (BPJ), and the BPJ justification is included below in this Fact Sheet. A Part C condition is included in the Draft NPDES permit which includes the applicable mass-based limitations; as well as, a condition requiring the permittee to use the most sensitive EPA approved analytical method when evaluating discharges of oil and grease. The Part C condition will also include a statement that states that if Keystone Profiles would like to continue to have an exclusion from the mass based effluent limitations a wastewater flow reduction study should be conducted.

Best Professional Judgement (BPJ)

The oil and grease effluent limitations of 5.0 $^{mg}/_{L}$ described above was determined based upon Best Professional Judgement (BPJ). In Accordance with 40 CFR § 125.3(c)(2), TBELs can be developed on a case-by-case basis using BPJ under Section 402(a)(1) of the Clean Water Act when pollutants are present in the wastewater at treatable concentrations. The current treatment system can achieve a non-detect concentration value of less than 5.0 $^{mg}/_{L}$ using the most sensitive analytical method currently available, (EPA Method 1664); because of this, the current treatment system constitutes Best Practicable Control Technology Currently Available (BPT).

As discussed above, based on the Federal ELGs, mass-based limitations were determined; however, they are currently unachievable due to the detection level of the current most sensitive analytical method for oil and grease. Therefore, based of BPJ, the Department will impose a non-detect concentration based effluent limitation at the most sensitive method (i.e. less than 5.0 $^{mg}/_{L}$), because this is the lowest achievable concentration Keystone Profiles (or any facility for that matter) can currently achieve.

Sections 304(b)(2)(B), 304(b)(4)(B), and 402(a)(1) of the Clean Water Act allow for the establishment of effluent limits on a case-by-case basis using Best Professional Judgment (BPJ). Regulations under 40 CFR § 125.3(d) require that certain factors be considered when developing case-by-case effluent limitations using BPJ for the levels of technology-based control described in the Clean Water Act (as amended) including: Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT) and Best Available Control Technology Economically Achievable (BAT). There is no BPJ for New Source Performance Standards. The required factors are listed below.

General Considerations; 40 CFR § 125.3(c):

(i) The appropriate technology for the category or class of point sources of which the applicant is a member, based upon all available information

(ii) Any unique factors relating to the applicant

Best Practicable Control Technology Currently Available (BPT); 40 CFR § 125.3(d)(1):

(i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application;

(ii) The age of equipment and facilities involved

(iii) The process employed

(iv) The engineering aspects of the application of various types of control techniques

(v) Process changes

(vi) Non-water quality environmental impact (including energy requirements)

Best Conventional Pollution Control Technology (BCT); 40 CFR § 125.3(d)(2):

(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived;

(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources;

(iii) The age of equipment and facilities involved;

(iv) The process employed;

(v) The engineering aspects of the application of various types of control techniques;

(vi) Process changes; and

(vii) Non-water quality environmental impact (including energy requirements).

Best Available Technology Economically Achievable (BAT); 40 CFR § 125.3(d)(3):

(i) The age of equipment and facilities involved

(ii) The process employed

(iii) The engineering aspects of the application of various types of control techniques

(iv) Process changes

(v) The cost of achieving such effluent reduction

(vi) Non-water quality environmental impact (including energy requirements).

Equipment and Facility Age

Facility age impacts the feasibility of modifying existing equipment to implement a technology. The older a facility is the more costly additions and upgrades can be. Keystone Profiles currently has a treatment system employed that meets the proposed limit, so no additions or upgrades are required.

Processes Employed

The treatment system currently employed at Keystone Profiles consists of flow equalization, neutralization, flocculation, and clarification. The system adequately treats the concentration of the pollutants of concern in the discharge. No additions or upgrades are required however Keystone Profiles should conduct a thorough wastewater flow reduction study during the next permit cycle in order to qualify for continued relief from the mass-based ELGs.

Engineering Aspects of Control Techniques

Requirements for BPT, BCT and BAT are limited to technologies or control techniques that are feasible from an engineering standpoint. From an Engineering standpoint the system currently employed is designed to treat the parameters in a way that effectively removes the pollutants of concern.

Process Changes

Consideration of process changes relates to the feasibility of modifying the processes that generate wastewater with the goal of reducing the volume and/or pollutant load of the wastewater before treatment, thus reducing the volume and toxicity of the discharge. At Keystone Profiles, the wastewater generated increases as the production increase. The site has the potential to increase the production. There are currently no process changes proposed that would reduce the quantity and quality of wastewaters generated from the industrial activities. However, it is suggested that Keystone Profiles conducts a flow reduction study to determine the most efficient way to utilize water in the industrial process.

Technology Cost v. Effluent Reduction Benefits

The intent of the cost-benefit analysis is to avoid requiring wastewater treatment when the amount of effluent reduction is disproportionate to the cost of the reduction. In balancing costs in relation to effluent reduction benefits, factors to consider include the volume and nature of existing discharges, the volume and nature of discharges expected after application of the technology, the general environmental effects of the pollutants and the cost and economic impact of the required pollution control. However, the permittee has a system currently installed that adequately treats the pollutants of concern in the discharge. Therefore, the cost applied would be the operational and maintenance cost, which is substantially less than constructing a new system and was previously considered when the plant was originally constructed.

Non-Water Quality Environmental Impacts (Including Energy Requirements)

Non-water quality impacts including air pollution, solid waste generation and energy consumption may present challenges for implementing treatment technology. The system includes solid waste generation via sedimentation that must be maintained to preserve the effectiveness of the system. These environmental concerns can be prevented with proper maintenance and disposal practices.

Economic Achievability

The cost analysis for BAT is an evaluation of the economic achievability of implementing pollution control technologies. The intent of the BAT economic achievability determination is to evaluate whether a technology can be implemented without forcing the facility to close due to the increased financial burden of operating and maintaining additional treatment systems (i.e., can the facility maintain profitability and remain in business while operating the pollution control technologies). To meet the BAT limitations above, the permittee does not need to install new treatment technology; so, no additional cost, other than maintenance and operational cost, are appropriate for consideration.

Best Professional Judgment of BPT, BCT and BAT

At a minimum the system currently employed is considered BCT based on the factors above. The system is currently employed and meeting the BPJ limitation of 5.0 mg/L for Oil and Grease. The cost of the system is only the operational and maintenance cost. The one concern with the current system is the potential to increase the concentration of the oil and grease in the discharge due to the increase in production. If the permittee has determined that the production has increased enough to increase the oil and grease in the discharge, the permittee may submit a permit amendment application to modify the permit so that the mass-based limitations and concentration-based limitations can be re-evaluated to reflect the change in production.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1).

As oil-bearing wastewaters, discharges from IMP 101 are subject to effluent standards for oil and grease from 25 Pa. Code § 95.2(2).

Industrial waste discharges cannot contain more than 7 milligrams per liter of dissolved iron per 25 Pa. Code § 95.2(4).

Temperature limits will be imposed per the Department's "*Implementation Guidance for Temperature Criteria*." As a policy, DEP normally imposes an Instantaneous maximum temperature limit of 110°F on discharges that contain residual heat.

The limit is intended as a safety measure to protect sampling personnel or anyone who may come into contact with the heated discharge where it enters the receiving water.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation.

Per- and Polyfluoroalkyl Substances (PFAS)

In February 2024, DEP implemented a new monitoring initiative for PFAS consistent with an EPA memorandum that provides guidance to states for addressing PFAS discharges. PFAS are a family of thousands of synthetic organic chemicals that contain a chain of strong carbon-fluorine bonds. Many PFAS are highly stable, water- and oil-resistant, and exhibit other properties that make them useful in a variety of consumer products and industrial processes. PFAS are resistant to biodegradation, photooxidation, direct photolysis, and hydrolysis and do not readily degrade naturally; thus, many PFAS accumulate over time. According to the United States Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), the environmental persistence and mobility of some PFAS, combined with decades of widespread use, have resulted in their presence in surface water, groundwater, drinking water, rainwater, soil, sediment, ice caps, outdoor and indoor air, plants, animal tissue, and human blood serum across the globe. ATSDR also reported that exposure to certain PFAS can lead to adverse human health impacts Due to their durability, toxicity, persistence, and pervasiveness, PFAS have emerged as potentially significant pollutants of concern.

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

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

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

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

The application data contained detections for PFBS 18.0 ng/L, therefore, monitoring requirements imposed will be quarterly monitoring per section (a) above.

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code § 95.2(1) as indicated in Table 7.

Table 7: Regulatory Effluent Standards and Monitoring Requirements for IMP 101

Parameter	Monthly Average	Daily Maximum	IMAX	Units
Flow	Monitor and Report		XXX	MGD
Dissolved Iron	XXX	7.0	XXX	mg/L
Oil & Grease	15	30	XXX	mg/L
Temperature	XXX	XXX	110	°F
Total Residual Chlorine	0.5	1.0	XXX	mg/L
PFOA	XXX	Report	XXX	ng/L
PFOS	XXX	Report	XXX	ng/L

PFBS	XXX	Report	XXX	ng/L
HFPO-DA	XXX	Report	XXX	ng/L
pH	Not less than 6.0 nor greater than 9.0			S.U.

Water Quality-Based Limitations

Toxics Management Analysis

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

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

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

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

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

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

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

Discharges from Outfall 101 are evaluated based on concentrations reported on the application and contained in the DMRs; data from those sources are used as inputs into the TMS. A summary of TMS Inputs is contained in Table 8 below.

Table 8: TMS Inputs – Outfall 101

Parameter	Value
Discharge Inputs	
Facility	Keystone Profile – Beaver Falls
Evaluation Type	Industrial
NPDES Permit No.	PA0014311
Wastewater Description	Treated Industrial Wastewater
Outfall ID	101
Design Flow (MGD)	0.02
Hardness (mg/L)	202
pH (S.U.)	9.3
Partial Mix Factors	Unknown – Calculated by TMS
Complete Mix Times	
Q_{7-10} (min)	
Q_h (min)	
Stream Inputs	
Receiving Surface Water	Walnut Bottom Run
Number of Reaches to Model	1
Stream Code	034001
RMI	0.18
Elevation (ft)	725/724*
Drainage Area (mi^2)	3.7/3.8*
Slope (ft/ft)	
PWS Withdrawal (MGD)	
Apply Fish Criteria	Yes
Low Flow Yield (cfs/mi^2)	
Flows	
Stream (cfs)	0.0379/0.0379*
Tributary (cfs)	N/A
Width (ft)	
Stream Hardness (mg/L)	

Stream pH (S.U.)

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

Below is a summary of the recommendations of the TMS at Outfall 101. Analysis Report from the TMS run is included in Attachment B.

Table 9: TMS Model WQBELs – Outfall 101

Parameter	Mass Load (lbs/day)		Concentration Limit ($^{\mu g}/_{L}$)	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Total Cadmium[1]	0.0001	0.0002	0.79	1.23
Total Copper	0.005	0.007	28.0	43.7
Total Iron	0.56	0.87	3,337	5,207
Dissolved Iron	0.11	0.17	667	1,041
Total Lead[3]	0.002	0.003	11.2	17.4
Total Manganese	0.37	0.58	2,225	3,471
Total Nickel[2]	0.026	0.041	157	245
Total Zinc	0.039	0.06	230	360
Total Antimony	Report	Report	Report	Report

1) Total Cadmium had non-detect concentration above the Department's Target QLs. The Department will allow the facility the opportunity to resample these parameters during the 30-day Draft permit comment period. If the new analytical results verify that the parameters are not present in its wastewater discharge at the Department's minimum quantitation limits, effluent limitations / monitoring requirements for these pollutants may be eliminated prior to Final permit issuance.
2) TMS recommends WQBEL for Total Nickel. The WQBEL Mass Loads are less stringent than the TBELs calculated from the ELG. The WQBEL Concentrations are more stringent than the concentrations contained in the previous permit. The WQBEL concentrations along with the TBEL mass loads will be imposed for Total Nickel. Since the TBEL mass loads are more stringent, the WQBEL concentrations will be imposed without a compliance schedule.
3) TMS recommends WQBELS for Total Lead that are more stringent than the TBELs calculated from the ELG. The new more stringent WQBELs will be imposed with a compliance schedule.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment C, indicate that no WQBELs are required for TRC.

Thermal WQBELs for Heated Discharges

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., municipal water supply). The determination of which case applies to a given discharge is determined by the input data which include the receiving stream flow rate ($Q_{7\text{-}10}$ or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life-uses—cold water fishes, warm water fishes and trout stocking—the program generates monthly

and semi-monthly limits for each use. 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 for the safety of sampling personnel and anyone who may come into contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended by the program.

Discharges from IMP 101 are classified under Case 2 because water is obtained from municipal water supply. The flow rate used for modeling is 0.00005 MGD, which is the boiler blowdown discharge flow from IMP 101. The boiler blowdown is the only thermal wastewater that discharge via IMP 101; therefore, it was the only flow analyzed. The results of the thermal analysis, included in Attachment D, indicate that no WQBELs for temperature are required at IMP 101. Therefore, the 110°F daily maximum temperature limit will be imposed at IMP 101.

Permittee Requested Monitoring Changes

KPL requests the removal of the WQBEL Studies and TRE that are outlined in Part C of the current NPDES Permit. The purpose of the WQBEL Studies and TRE requirement was to evaluate whether the facility can achieve the WQBEL permit limits. While the facility has not completed the WQBEL Studies and TRE, KPL proposes that these studies are not needed to prove the facility is able to achieve the WQBEL permit limits. To this date, KPL has demonstrated that they have been able to comply with the new permit limits imposed, with 98% compliance rate with Zinc permit limits, 99% with the Nickel permit limits, and 100% compliance with the Lead permit limits. Based on the past four years of reporting history under the current permit, KPL believes we have demonstrated that the facility's wastewater treatment plant will achieve compliance with the permit limits.

In addition to the removal of the WQBEL Studies and TRE and the use of representative stormwater outfalls requested with the original application, KPL requests dropping cadmium and chromium from the list of required parameters for routine monitoring in the permit or a reduced frequency of monitoring for these parameters. KPL also requests a reduced monitoring frequency for total residual chlorine. Based on the monitoring data from the current NPDES Permit term, cadmium has always been a non-detect, total residual chlorine was a non-detect in 136 out of 196 samples (69%), chromium was a non-detect in 154 of 197 samples (78%) and none of these parameters have ever exceeded the permit limit.

- The Part C WQBEL Studies and TRE requirements are added to permits with new or more stringent WQBELs. Since the Draft Permit contains new and/or more stringent WQBELs, Part C of the Draft Permit will contain a compliance schedule condition along with TRE requirements.
- The Department's Target Quantitative Level of 0.2 µg/L for Total Cadmium. The "non-detect" range reported during the previous permit cycle and renewal application is from 0.5 to 5 µg/L. The Department will allow the facility the opportunity to resample these parameters during the 30-day Draft permit comment period. If the new analytical results verify that the parameters are not present in its wastewater discharge at the Department's minimum quantitation limits, effluent limitations / monitoring requirements for these pollutants may be eliminated prior to Final permit issuance.
- Total Residual Chlorine (TRC) has resealable potential to be in the discharge since public water supply is used as the source water for NCCW. Although the level of TRC is safe for human consumption, this level is not safe for aquatic life and is the reason to maintain the BAT TRC effluent limits.
- Total Chromium is imposed from the ELG for 40 CFR 420.82 (a) (2) (Iron and Steel Manufacturing Subpart H- Salt Bath Descaling Subcategory) and will be maintained. The evaluation for Performance-Based Reduction of NPDES monitoring frequency compares the maximum concentration (0.02 mg/L) to the effluent limitation (0.44 mg/L). The maximum concentration is 22% of the effluent limitation, per the EPA's Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies the 1/week monitoring frequency can be reduced to 2/month.

Anti-Backsliding

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

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 *(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit*

(unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.

The Departments anti-backsliding policy prohibits the implementation of permit limits that are less stringent than those imposed under the previous permit cycle. The existing NPDES permit limits have been included in Table 11 except where a more stringent limitation has been proposed.

Existing Effluent Limitations IMP 101
The existing effluent limitation requires are summarized in Table 10 below.

Table 10: Existing Effluent limits and Monitoring Requirements for IMP 101

Parameter	Mass Loading ($^{lbs.}/_{day}$)		Concentration ($^{mg}/_{L}$)			Minimum Measurement Frequency
	Average Monthly	Daily Maximum	Daily Minimum	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	-	-	-	1/week
TRC	-	-	0.5	1.0	-	1/week
Oil & Grease	-	-	5.0	5.0	-	1/week
Temperature (°F)	-	-	-	-	110.0	1/week
TSS	1.43	3.34	-	-	-	1/week
Cadmium, Total	-	-	Report	Report	-	1/week
Chromium, Total	0.024	0.060	0.44	0.68	-	1/week
Copper, Total	-	-	Report	Report	-	1/week
Iron, Dissolved	-	-	Report	Report	-	1/week
Lead, Total	0.012	0.038	0.0162	0.0252	-	1/week
Nickel, Total	0.018	0.054	0.27	0.41	-	1/week
Zinc, Total	0.017	0.051	0.39	0.61	-	1/week
pH	-	-	6.0	-	9.0	1/week

Proposed Effluent Limitations and Monitoring Requirements

The interim effluent limitations for IMP 101 are displayed in Table 11 below, along with the final effluent limitations for IMP 101. The effluent limitations are the most stringent values from the above effluent limitation development. The Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance when 24-hr composite sampling is imposed. The permittee is not required to monitor for the instantaneous maximum limitations; however, if grab samples are collected by the permittee, the results must be reported. The instantaneous maximum limitation for total zinc was determined by multiplying the daily maximum limitation by a factor of 1.25. This was used instead of multiplying the average monthly limitation by a factor of 2.5 because the IMax limit would be less than the daily maximum limit. Therefore, the limit was determined by using the ratio between the factors used to determine the daily maximum limit and the Instantaneous limit from the average monthly limit. The ratio between the average monthly limit and the daily maximum limit was compared to the ratio of the Average monthly limit and the Instantaneous limit and a factor of 1.25 was determined to be the ratio between the Daily Maximum Limit and the Instantaneous Limit.

Table 11: Interim Effluent Limitations for IMP 101

Parameter	Average Monthly (lbs/day)	Daily Maximum (lbs/day)	Average Monthly (mg/L)	Daily Maximum (mg/L)	Instant. Maximum (mg/L)	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	1/week	Recorded
Total Suspended Solids	1.39	3.27	XXX	XXX	88	1/week	24-hr composite
Oil and Grease	XXX	XXX	5.0	5.0	XXX	1/week	Grab
Total Lead	0.012	0.038	0.0162	0.0252	0.0405	1/week	24-hr composite
Total Zinc	0.00708	0.02121	0.1	0.3	0.38	1/week	24-hr composite
Total Chromium	0.00175	0.007	0.4	0.68	1.0	2/month	24-hr composite
Total Nickel	0.002104	0.00632	0.16	0.24	0.39	1/week	24-hr composite
Total Cadmium($\mu g/L$)	XXX	XXX	Report	Report	XXX	1/week	24-hr composite
Total Copper	XXX	XXX	Report	Report	XXX	1/week	24-hr composite
Total Residual Chlorine	XXX	XXX	0.5	1.0	XXX	1/week	Grab
Total Iron	XXX	XXX	Report	Report	XXX	1/week	24-hr composite
Dissolved Iron	XXX	XXX	Report	Report	XXX	1/week	Grab
Total Manganese	XXX	XXX	Report	Report	XXX	1/week	24-hr composite
Total Antimony	XXX	XXX	Report	Report	XXX	1/week	24-hr composite
Temperature (°F)	XXX	XXX	XXX	XXX	110	1/week	I-S
PFOA	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
pH (S.U.)	Not less than 6.0 nor greater than 9.0					1/week	Grab

Table 12: Final Effluent Limitations for IMP 101

Parameter	Average Monthly (lbs/day)	Daily Maximum (lbs/day)	Average Monthly (mg/L)	Daily Maximum (mg/L)	Instant. Maximum (mg/L)	Sample Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	1/week	Recorded
Total Suspended Solids	1.39	3.27	XXX	XXX	88	1/week	24-hr composite
Oil and Grease	XXX	XXX	5.0	5.0	XXX	1/week	Grab
Total Lead	0.002	0.003	0.011	0.017	0.028	1/week	24-hr composite
Total Zinc	0.00708	0.02121	0.1	0.3	0.38	1/week	24-hr composite
Total Chromium	0.00175	0.007	0.4	0.68	1.0	2/month	24-hr composite
Total Nickel	0.002104	0.00632	0.16	0.24	0.39	1/week	24-hr composite
Total Cadmium($\mu g/L$)	Report	Report	0.79	1.23	1.96	1/week	24-hr composite
Total Copper	Report	Report	0.028	0.044	0.070	1/week	24-hr composite
Total Residual Chlorine	XXX	XXX	0.5	1.0	XXX	1/week	Grab
Total Iron	Report	Report	3.34	5.21	8.34	1/week	24-hr composite
Dissolved Iron	Report	Report	0.67	1.04	1.67	1/week	Grab
Total Manganese	Report	Report	2.23	3.47	5.56	1/week	24-hr composite
Total Antimony	Report	Report	Report	Report	XXX	1/week	24-hr composite
Temperature (°F)	XXX	XXX	XXX	XXX	110	1/week	I-S
PFOA	XXX	XXX	XXX	Report	XXX	1/year	Grab
PFOS	XXX	XXX	XXX	Report	XXX	1/year	Grab
PFBS	XXX	XXX	XXX	Report	XXX	1/year	Grab
HFPO-DA	XXX	XXX	XXX	Report	XXX	1/year	Grab
pH (S.U.)	Not less than 6.0 nor greater than 9.0					1/week	Grab

Development of Effluent Limitations

Outfall No.	002-004, 006, 007, 009, and 010	**Design Flow (MGD)**	0.0
Latitude	Varies	**Longitude**	Varies
Wastewater Description:	Stormwater		

Stormwater Technology Limits

Outfalls 002-004, 006, 007, 009, and 010 will be subject to PAG-03 General Stormwater Permit, updated December 2022, conditions as a minimum requirement because the outfalls receive stormwater. The SIC code for the site is 3316 and the corresponding appendix of the PAG-03 that would apply to the facility is Appendix B. The reporting requirements applicable to stormwater discharges are shown in Table 13 below.

Table 13: PAG-03 Appendix (B) Monitoring Requirements

Parameter	Max Daily Concentration	Measurement Frequency	Sample Type
Total Nitrogen	Monitor and Report	1/6 Months	Grab
Total Phosphorus	Monitor and Report	1/6 Months	Grab
Total Suspended Solids (TSS)	Monitor and Report	1/6 Months	Grab
Oil & Grease	Monitor and Report	1/6 Months	Grab
Total Aluminum	Monitor and Report	1/6 Months	Grab
Total Zinc	Monitor and Report	1/6 Months	Grab
Total Copper	Monitor and Report	1/6 Months	Grab
Total Iron	Monitor and Report	1/6 Months	Grab
Total Lead	Monitor and Report	1/6 Months	Grab

Outfall 002 is identified as the representative sampling location for Outfalls 003, 004, and 009.

Water Quality-Based Limitations

Stormwater WQBELs

Water quality analyses are typically performed under low-flow (Q_{7-10}) conditions. Stormwater discharges occur at variable rates and frequencies but not however during Q_{7-10} conditions. Since the discharges from the stormwater outfalls are composed entirely of stormwater, a formal water quality analysis cannot be accurately conducted. Accordingly, water quality-based effluent limitations based on water quality analyses are not proposed.

Proposed Effluent Limitations and Monitoring Requirements

The proposed effluent monitoring requirements for Outfalls 002 (representative for Outfalls 003, 004, and 009), 006, 007, and 010 are displayed in Table 13 below, they are the most stringent values from the above effluent limitation development. The Draft Permit requires submission of a Corrective Action Plan when there are two consecutive exceedances of the benchmark values, which are also included in the Part C condition. The benchmark values are displayed below in Table 14. These values are not effluent limitations, an exceedance of the benchmark value is not a violation. As described above, if there are two consecutive exceedances of the benchmark value, a Corrective Action Plan must be developed and submitted to the Department to evaluate site stormwater controls and BMPs. Benchmark monitoring is a feedback tool, along with routine inspections and visual assessments, for assessing the effectiveness of stormwater controls and BMPs. An exceedance of the benchmark provides permittees with an indication that the facility's controls may not be sufficiently controlling pollutants in stormwater.

Table 14. Proposed Effluent Monitoring Requirements

Parameter	Max Daily Concentration	Benchmark Values (mg/L)	Measurement Frequency	Sample Type
Total Nitrogen	Report	XXX	1/6 Months	Grab
Total Phosphorus	Report	XXX	1/6 Months	Grab
Total Suspended Solids (TSS)	Report	100	1/6 Months	Grab
Oil & Grease	Report	30	1/6 Months	Grab
Total Aluminum	Report	XXX	1/6 Months	Grab
Total Zinc	Report	XXX	1/6 Months	Grab
Total Copper	Report	XXX	1/6 Months	Grab
Total Iron	Report	XXX	1/6 Months	Grab
Total Lead	Report	XXX	1/6 Months	Grab

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

Attachment A – StreamStats Output for Outfall 001

Attachment B – TMS Model Output for Outfall 101

Attachment C – TRC Model Output for Outfall 101

Attachment D – Thermal Model Output for Outfall 101

Attachment E – Water Flow Diagram

Attachment A – StreamStats Output for Outfall 001

IMP 101 StreamStats Report

Region ID:	PA
Workspace ID:	PA20190604142737995000
Clicked Point (Latitude, Longitude):	40.74205, -80.32087
Time:	2019-06-04 10:27:56 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	3.7	square miles
ELEV	Mean Basin Elevation	1034	feet

Low-Flow Statistics Parameters[Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.7	square miles	2.26	1400
ELEV	Mean Basin Elevation	1034	feet	1050	2580

Low-Flow Statistics Disclaimers[Low Flow Region 4]

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

Low-Flow Statistics Flow Report[Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.11	ft^3/s
30 Day 2 Year Low Flow	0.198	ft^3/s
7 Day 10 Year Low Flow	0.0379	ft^3/s
30 Day 10 Year Low Flow	0.0726	ft^3/s
90 Day 10 Year Low Flow	0.135	ft^3/s

Low-Flow Statistics Citations

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

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

Attachment B – TMS Model Output for Outfall 101

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **Keystone Profiles - Beaver Falls** NPDES Permit No.: **PA0014311** Outfall No.: **101**

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

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.02	71	9.3						

					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		2550									
	Chloride (PWS)	mg/L		62.9									
	Bromide	mg/L		0.031									
	Sulfate (PWS)	mg/L		1660									
	Fluoride (PWS)	mg/L		0.45									
Group 2	Total Aluminum	µg/L		20									
	Total Antimony	µg/L		2.01									
	Total Arsenic	µg/L	<	2.5									
	Total Barium	µg/L		3.19									
	Total Beryllium	µg/L	<	0.2									
	Total Boron	µg/L		127									
	Total Cadmium	µg/L	<	0.5									
	Total Chromium (III)	µg/L		17.8									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L		3.53									
	Total Copper	µg/L		199									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		3700									
	Total Iron	µg/L		2550									
	Total Lead	µg/L		450									
	Total Manganese	µg/L		1170									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		900									
	Total Phenols (Phenolics) (PWS)	µg/L	<	9.4									
	Total Selenium	µg/L	<	1									
	Total Silver	µg/L	<	0.4									
	Total Thallium	µg/L	<	0.2									
	Total Zinc	mg/L		2820									
	Total Molybdenum	µg/L		237									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	2									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

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

	2,6-Dinitrotoluene	µg/L	<	5										
	Di-n-Octyl Phthalate	µg/L	<	5										
	1,2-Diphenylhydrazine	µg/L	<	5										
	Fluoranthene	µg/L	<	2.5										
	Fluorene	µg/L		2.5										
	Hexachlorobenzene	µg/L	<	5										
	Hexachlorobutadiene	µg/L	<	0.5										
	Hexachlorocyclopentadiene	µg/L	<	5										
	Hexachloroethane	µg/L	<	2.5										
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5										
	Isophorone	µg/L	<	5										
	Naphthalene	µg/L	<	0.5										
	Nitrobenzene	µg/L	<	5										
	n-Nitrosodimethylamine	µg/L	<	5										
	n-Nitrosodi-n-Propylamine	µg/L	<	5										
	n-Nitrosodiphenylamine	µg/L	<	5										
	Phenanthrene	µg/L	<	2.5										
	Pyrene	µg/L	<	2.5										
	1,2,4-Trichlorobenzene	µg/L	<	0.5										
Group 6	Aldrin	µg/L	<											
	alpha-BHC	µg/L	<											
	beta-BHC	µg/L	<											
	gamma-BHC	µg/L	<											
	delta BHC	µg/L	<											
	Chlordane	µg/L	<											
	4,4-DDT	µg/L	<											
	4,4-DDE	µg/L	<											
	4,4-DDD	µg/L	<											
	Dieldrin	µg/L	<											
	alpha-Endosulfan	µg/L	<											
	beta-Endosulfan	µg/L	<											
	Endosulfan Sulfate	µg/L	<											
	Endrin	µg/L	<											
	Endrin Aldehyde	µg/L	<											
	Heptachlor	µg/L	<											
	Heptachlor Epoxide	µg/L	<											
	PCB-1016	µg/L	<											
	PCB-1221	µg/L	<											
	PCB-1232	µg/L	<											
	PCB-1242	µg/L	<											
	PCB-1248	µg/L	<											
	PCB-1254	µg/L	<											
	PCB-1260	µg/L	<											
	PCBs, Total	µg/L	<											
	Toxaphene	µg/L	<											
	2,3,7,8-TCDD	ng/L	<											
Group 7	Gross Alpha	pCi/L												
	Total Beta	pCi/L	<											
	Radium 226/228	pCi/L	<											
	Total Strontium	µg/L	<											
	Total Uranium	µg/L	<											
	Osmotic Pressure	mOs/kg												

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

Keystone Profiles - Beaver Falls, NPDES Permit No. PA0014311, Outfall 101

Instructions | Discharge | *Stream*

Receiving Surface Water Name: Walnut Bottom Run

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	034001	0.18	725	3.7			Yes
End of Reach 1	034001	0.1	724	3.8			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	0.18	0.1	0.0379		10							202	7		
End of Reach 1	0.1	0.1													

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	0.18														
End of Reach 1	0.1														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

Keystone Profiles - Beaver Falls, NPDES Permit No. PA0014311, Outfall 101

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

☑ ***Hydrodynamics***

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

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.18	0.04		0.04	0.031	0.002	0.345	3.455	10.	0.033	0.148	0.502
0.1	0.05		0.048								

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)
0.18	0.43		0.43	0.031	0.002	0.794	3.455	4.351	0.095	0.051	0.413
0.1	0.522		0.52								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.502 PMF: 1 Analysis Hardness (mg/l): 143.12 Analysis pH: 7.26

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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	1,669	
Total Antimony	0	0		0	1,100	1,100	2,447	
Total Arsenic	0	0		0	340	340	756	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	46,724	
Total Boron	0	0		0	8,100	8,100	18,022	
Total Cadmium	0	0		0	2.853	3.07	6.83	Chem Translator of 0.929 applied
Total Chromium (III)	0	0		0	764.221	2,418	5,381	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	36.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	211	

Total Copper	0	0		0	18.840	19.6	43.7	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	95.203	129	287	Chem Translator of 0.739 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	3.66	Chem Translator of 0.85 applied
Total Nickel	0	0		0	634.151	635	1,414	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	5.960	7.01	15.6	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	145	
Total Zinc	0	0		0	158.776	162	361	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	6.67	
Acrylonitrile	0	0		0	650	650	1,446	
Benzene	0	0		0	640	640	1,424	
Bromoform	0	0		0	1,800	1,800	4,005	
Carbon Tetrachloride	0	0		0	2,800	2,800	6,230	
Chlorobenzene	0	0		0	1,200	1,200	2,670	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	40,049	
Chloroform	0	0		0	1,900	1,900	4,227	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	33,374	
1,1-Dichloroethylene	0	0		0	7,500	7,500	16,687	
1,2-Dichloropropane	0	0		0	11,000	11,000	24,474	
1,3-Dichloropropylene	0	0		0	310	310	690	
Ethylbenzene	0	0		0	2,900	2,900	6,452	
Methyl Bromide	0	0		0	550	550	1,224	
Methyl Chloride	0	0		0	28,000	28,000	62,299	
Methylene Chloride	0	0		0	12,000	12,000	26,699	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	2,225	
Tetrachloroethylene	0	0		0	700	700	1,557	
Toluene	0	0		0	1,700	1,700	3,782	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	15,130	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	6,675	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	7,565	
Trichloroethylene	0	0		0	2,300	2,300	5,117	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	1,246	
2,4-Dichlorophenol	0	0		0	1,700	1,700	3,782	
2,4-Dimethylphenol	0	0		0	660	660	1,468	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	178	
2,4-Dinitrophenol	0	0		0	660	660	1,468	
2-Nitrophenol	0	0		0	8,000	8,000	17,800	
4-Nitrophenol	0	0		0	2,300	2,300	5,117	
p-Chloro-m-Cresol	0	0		0	160	160	356	
Pentachlorophenol	0	0		0	11.299	11.3	25.1	

Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	460	460	1,023
Acenaphthene	0	0		0	83	83.0	185
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	300	300	667
Benzo(a)Anthracene	0	0		0	0.5	0.5	1.11
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	66,749
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	10,012
4-Bromophenyl Phenyl Ether	0	0		0	270	270	601
Butyl Benzyl Phthalate	0	0		0	140	140	311
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	1,824
1,3-Dichlorobenzene	0	0		0	350	350	779
1,4-Dichlorobenzene	0	0		0	730	730	1,624
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	4,000	4,000	8,900
Dimethyl Phthalate	0	0		0	2,500	2,500	5,562
Di-n-Butyl Phthalate	0	0		0	110	110	245
2,4-Dinitrotoluene	0	0		0	1,600	1,600	3,560
2,6-Dinitrotoluene	0	0		0	990	990	2,203
1,2-Diphenylhydrazine	0	0		0	15	15.0	33.4
Fluoranthene	0	0		0	200	200	445
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	22.2
Hexachlorocyclopentadiene	0	0		0	5	5.0	11.1
Hexachloroethane	0	0		0	60	60.0	133
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	10,000	10,000	22,250
Naphthalene	0	0		0	140	140	311
Nitrobenzene	0	0		0	4,000	4,000	8,900
n-Nitrosodimethylamine	0	0		0	17,000	17,000	37,824
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A
n-Nitrosodiphenylamine	0	0		0	300	300	667
Phenanthrene	0	0		0	5	5.0	11.1
Pyrene	0	0		0	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0	0		0	130	130	289

☑ *CFC* CCT (min): 0.502 PMF: 1 Analysis Hardness (mg/l): 143.12 Analysis pH: 7.26

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total 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	489	
Total Arsenic	0	0		0	150	150	334	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	9,122	
Total Boron	0	0		0	1,600	1,600	3,560	
Total Cadmium	0	0		0	0.316	0.35	0.79	Chem Translator of 0.894 applied
Total Chromium (III)	0	0		0	99.409	116	257	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	23.1	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	42.3	
Total Copper	0	0		0	12.166	12.7	28.2	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	3,337	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.710	5.02	11.2	Chem Translator of 0.739 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	2.02	Chem Translator of 0.85 applied
Total Nickel	0	0		0	70.435	70.6	157	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	11.1	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	28.9	
Total Zinc	0	0		0	160.075	162	361	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	6.67	
Acrylonitrile	0	0		0	130	130	289	
Benzene	0	0		0	130	130	289	
Bromoform	0	0		0	370	370	823	
Carbon Tetrachloride	0	0		0	560	560	1,246	
Chlorobenzene	0	0		0	240	240	534	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	7,787	
Chloroform	0	0		0	390	390	868	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	6,897	
1,1-Dichloroethylene	0	0		0	1,500	1,500	3,337	
1,2-Dichloropropane	0	0		0	2,200	2,200	4,895	
1,3-Dichloropropylene	0	0		0	61	61.0	136	
Ethylbenzene	0	0		0	580	580	1,290	
Methyl Bromide	0	0		0	110	110	245	
Methyl Chloride	0	0		0	5,500	5,500	12,237	
Methylene Chloride	0	0		0	2,400	2,400	5,340	

1,1,2,2-Tetrachloroethane	0	0		0	210	210	467	
Tetrachloroethylene	0	0		0	140	140	311	
Toluene	0	0		0	330	330	734	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	3,115	
1,1,1-Trichloroethane	0	0		0	610	610	1,357	
1,1,2-Trichloroethane	0	0		0	680	680	1,513	
Trichloroethylene	0	0		0	450	450	1,001	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	245	
2,4-Dichlorophenol	0	0		0	340	340	756	
2,4-Dimethylphenol	0	0		0	130	130	289	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	35.6	
2,4-Dinitrophenol	0	0		0	130	130	289	
2-Nitrophenol	0	0		0	1,600	1,600	3,560	
4-Nitrophenol	0	0		0	470	470	1,046	
p-Chloro-m-Cresol	0	0		0	500	500	1,112	
Pentachlorophenol	0	0		0	8.669	8.67	19.3	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	202	
Acenaphthene	0	0		0	17	17.0	37.8	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	131	
Benzo(a)Anthracene	0	0		0	0.1	0.1	0.22	
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	13,350	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	2,025	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	120	
Butyl Benzyl Phthalate	0	0		0	35	35.0	77.9	
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	356	
1,3-Dichlorobenzene	0	0		0	69	69.0	154	
1,4-Dichlorobenzene	0	0		0	150	150	334	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	1,780	
Dimethyl Phthalate	0	0		0	500	500	1,112	
Di-n-Butyl Phthalate	0	0		0	21	21.0	46.7	
2,4-Dinitrotoluene	0	0		0	320	320	712	
2,6-Dinitrotoluene	0	0		0	200	200	445	
1,2-Diphenylhydrazine	0	0		0	3	3.0	6.67	
Fluoranthene	0	0		0	40	40.0	89.0	

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	4.45	
Hexachlorocyclopentadiene	0	0		0	1	1.0	2.22	
Hexachloroethane	0	0		0	12	12.0	26.7	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	4,672	
Naphthalene	0	0		0	43	43.0	95.7	
Nitrobenzene	0	0		0	810	810	1,802	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	7,565	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	131	
Phenanthrene	0	0		0	1	1.0	2.22	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	57.8	

☑ ***THH*** CCT (min): 0.502 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	12.5	
Total Arsenic	0	0		0	10	10.0	22.2	
Total Barium	0	0		0	2,400	2,400	5,340	
Total Boron	0	0		0	3,100	3,100	6,897	
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	300	300	667	
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	2,225	
Total Mercury	0	0		0	0.050	0.05	0.11	
Total Nickel	0	0		0	610	610	1,357	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.53	

Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	6.67	
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	222	
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	12.7	
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	73.4	
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	151	
Methyl Bromide	0	0		0	100	100.0	222	
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	127	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	222	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	22,250	
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	66.7	
2,4-Dichlorophenol	0	0		0	10	10.0	22.2	
2,4-Dimethylphenol	0	0		0	100	100.0	222	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	4.45	
2,4-Dinitrophenol	0	0		0	10	10.0	22.2	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	8,900	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	156	
Anthracene	0	0		0	300	300	667	
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	445	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	0.22	
2-Chloronaphthalene	0	0		0	800	800	1,780	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	2,225	
1,3-Dichlorobenzene	0	0		0	7	7.0	15.6	
1,4-Dichlorobenzene	0	0		0	300	300	667	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	1,335	
Dimethyl Phthalate	0	0		0	2,000	2,000	4,450	
Di-n-Butyl Phthalate	0	0		0	20	20.0	44.5	
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	44.5	
Fluorene	0	0		0	50	50.0	111	
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	8.9	
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	75.6	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	22.2	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	44.5	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.16	

☑ *CRL* CCT (min): 0.413 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
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	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	0.88	
Benzene	0	0		0	0.58	0.58	8.55	
Bromoform	0	0		0	7	7.0	103	
Carbon Tetrachloride	0	0		0	0.4	0.4	5.9	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	11.8	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	14.0	
1,2-Dichloroethane	0	0		0	9.9	9.9	146	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	13.3	
1,3-Dichloropropylene	0	0		0	0.27	0.27	3.98	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	295	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	2.95	
Tetrachloroethylene	0	0		0	10	10.0	147	
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	8.11	
Trichloroethylene	0	0		0	0.6	0.6	8.85	

Vinyl Chloride	0	0		0	0.02	0.02	0.29	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	0.44	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	22.1	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.001	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.015	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.001	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.015	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.15	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	0.44	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	4.72	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	1.77	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.001	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	0.74	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	0.74	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	0.74	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	0.44	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.001	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.15	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	1.47	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.015	
Isophorone	0	0		0	N/A	N/A	N/A	

Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.01	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.074	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	48.7	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Antimony	Report	Report	Report	Report	Report	µg/L	12.5	THH	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.0001	0.0002	0.79	1.23	1.96	µg/L	0.79	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	0.005	0.007	28.0	43.7	70.0	µg/L	28.0	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Dissolved Iron	0.11	0.17	667	1,041	1,669	µg/L	667	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Iron	0.56	0.87	3,337	5,207	8,344	µg/L	3,337	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	0.002	0.003	11.2	17.4	27.9	µg/L	11.2	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Manganese	0.37	0.58	2,225	3,471	5,562	µg/L	2,225	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Nickel	0.026	0.041	157	245	393	µg/L	157	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	0.039	0.06	0.23	0.36	0.58	mg/L	0.23	AFC	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	1,070	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	5,340	µg/L	Discharge Conc ≤ 10% WQBEL

Total Beryllium	N/A	N/A	No WQS
Total Boron	3,560	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	257	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	23.1	µg/L	Discharge Conc < TQL
Total Cobalt	42.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Mercury	0.11	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	11.1	µg/L	Discharge Conc < TQL
Total Silver	10.0	µg/L	Discharge Conc < TQL
Total Thallium	0.53	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	4.28	µg/L	Discharge Conc < TQL
Acrylonitrile	0.88	µg/L	Discharge Conc < TQL
Benzene	8.55	µg/L	Discharge Conc < TQL
Bromoform	103	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	5.9	µg/L	Discharge Conc < TQL
Chlorobenzene	222	µg/L	Discharge Conc < TQL
Chlorodibromomethane	11.8	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	7,787	µg/L	Discharge Conc < TQL
Chloroform	12.7	µg/L	Discharge Conc < TQL
Dichlorobromomethane	14.0	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	146	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	73.4	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	13.3	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	3.98	µg/L	Discharge Conc < TQL
1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	151	µg/L	Discharge Conc < TQL
Methyl Bromide	222	µg/L	Discharge Conc < TQL
Methyl Chloride	12,237	µg/L	Discharge Conc < TQL
Methylene Chloride	295	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	2.95	µg/L	Discharge Conc < TQL
Tetrachloroethylene	147	µg/L	Discharge Conc < TQL
Toluene	127	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	222	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	1,357	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	8.11	µg/L	Discharge Conc < TQL
Trichloroethylene	8.85	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.29	µg/L	Discharge Conc < TQL
2-Chlorophenol	66.7	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	22.2	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	222	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	4.45	µg/L	Discharge Conc < TQL

2,4-Dinitrophenol	22.2	µg/L	Discharge Conc < TQL
2-Nitrophenol	3,560	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,046	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	228	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.44	µg/L	Discharge Conc < TQL
Phenol	8,900	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	22.1	µg/L	Discharge Conc < TQL
Acenaphthene	37.8	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	667	µg/L	Discharge Conc < TQL
Benzidine	0.001	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.015	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.001	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.015	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.15	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.44	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	445	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	4.72	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	120	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.22	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	1,780	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	1.77	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.001	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	356	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	15.6	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	334	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.74	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,335	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,112	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	44.5	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.74	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.74	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.44	µg/L	Discharge Conc < TQL
Fluoranthene	44.5	µg/L	Discharge Conc < TQL
Fluorene	111	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachlorobenzene	0.001	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.15	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	2.22	µg/L	Discharge Conc < TQL
Hexachloroethane	1.47	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.015	µg/L	Discharge Conc < TQL
Isophorone	75.6	µg/L	Discharge Conc < TQL

Naphthalene	95.7	µg/L	Discharge Conc < TQL
Nitrobenzene	22.2	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.01	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.074	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	48.7	µg/L	Discharge Conc < TQL
Phenanthrene	2.22	µg/L	Discharge Conc < TQL
Pyrene	44.5	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.16	µg/L	Discharge Conc < TQL

Attachment C – TRC Model Output for Outfall 101

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.0379	= Q stream (cfs)	0.5	= CV Daily
0.006	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.322	1.3.2.iii	WLA cfc = 1.281
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.492	5.1d	LTA_cfc = 0.745

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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 D – Thermal Model Output for Outfall 101

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Instructions | *Inputs*

Facility: **Keystone Profiles - Beaver Falls Plant**

Permit No.: **PA0014311**

Stream Name: **Walnut Bottom Run**

Analyst/Engineer: **Curt Holes**

Stream Q7-10 (cfs)*: **0.0**

Outfall No.: **101**

Analysis Type*: **WWF**

Facility Flows

Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)
Jan 1-31	0	0.00005	0	0.00005
Feb 1-29	0	0.00005	0	0.00005
Mar 1-31	0	0.00005	0	0.00005
Apr 1-15	0	0.00005	0	0.00005
Apr 16-30	0	0.00005	0	0.00005
May 1-15	0	0.00005	0	0.00005
May 16-31	0	0.00005	0	0.00005
Jun 1-15	0	0.00005	0	0.00005
Jun 16-30	0	0.00005	0	0.00005
Jul 1-31	0	0.00005	0	0.00005
Aug 1-15	0	0.00005	0	0.00005
Aug 16-31	0	0.00005	0	0.00005
Sep 1-15	0	0.00005	0	0.00005
Sep 16-30	0	0.00005	0	0.00005
Oct 1-15	0	0.00005	0	0.00005
Oct 16-31	0	0.00005	0	0.00005
Nov 1-15	0	0.00005	0	0.00005
Nov 16-30	0	0.00005	0	0.00005
Dec 1-31	0	0.00005	0	0.00005

Stream Flows

Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)
3.2	1.00	0.12	0.12
3.5	1.00	0.13	0.13
7	1.00	0.27	0.27
9.3	1.00	0.35	0.35
9.3	1.00	0.35	0.35
5.1	1.00	0.19	0.19
5.1	1.00	0.19	0.19
3	1.00	0.11	0.11
3	1.00	0.11	0.11
1.7	1.00	0.06	0.06
1.4	1.00	0.05	0.05
1.4	1.00	0.05	0.05
1.1	1.00	0.04	0.04
1.1	1.00	0.04	0.04
1.2	1.00	0.05	0.05
1.2	1.00	0.05	0.05
1.6	1.00	0.06	0.06
1.6	1.00	0.06	0.06
2.4	1.00	0.09	0.09

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

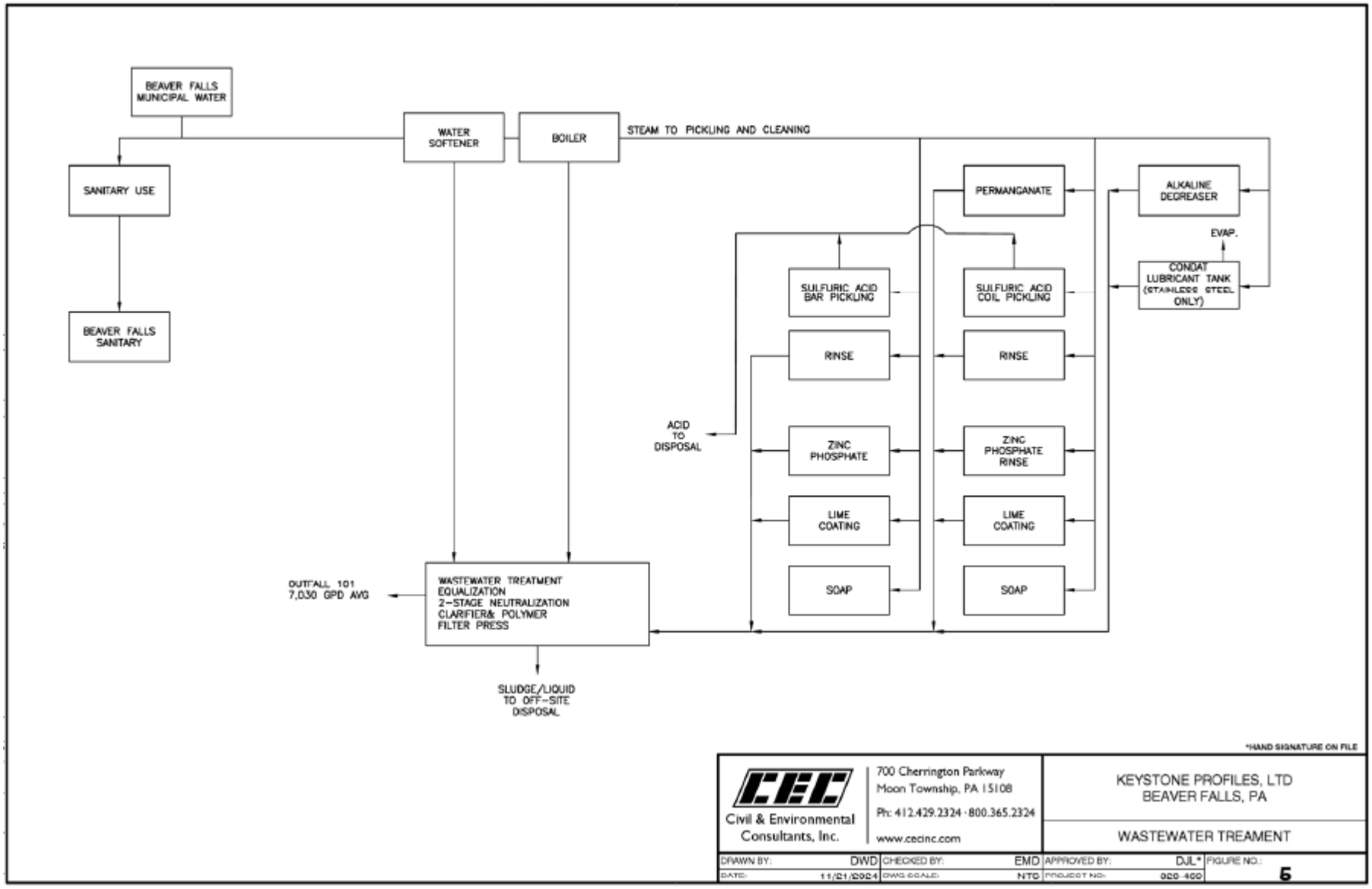
Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | *WWF Results*

Recommended Limits for Case 1 or Case 2

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

Attachment E – Water Flow Diagram


BEAVER FALLS MUNICIPAL WATER
WATER SOFTENER
BOILER
STEAM TO PICKLING AND CLEANING
SANITARY USE
BEAVER FALLS SANITARY
PERMANGANATE
ALKALINE DEGREASER
EVAP.
CONDAT LUBRICANT TANK (STAINLESS STEEL ONLY)
SULFURIC ACID BAR PICKLING
SULFURIC ACID COIL PICKLING
RINSE
RINSE
ACID TO DISPOSAL
ZINC PHOSPHATE
ZINC PHOSPHATE RINSE
LIME COATING
LIME COATING
SOAP
SOAP
OUTFALL 101
7,030 GPD AVG
WASTEWATER TREATMENT
EQUALIZATION
2-STAGE NEUTRALIZATION
CLARIFIER& POLYMER
FILTER PRESS
SLUDGE/LIQUID TO OFF-SITE DISPOSAL
*HAND SIGNATURE ON FILE
Civil & Environmental Consultants, Inc.
700 Cherrington Parkway
Moon Township, PA 15108
Ph: 412.429.2324 · 800.365.2324
www.cecinc.com
KEYSTONE PROFILES, LTD
BEAVER FALLS, PA
WASTEWATER TREAMENT
DRAWN BY: DWD
CHECKED BY: EMD
APPROVED BY: DJL*
FIGURE NO.: 5
DATE: 11/21/2024
DWG SCALE: NTS
PROJECT NO: 020-400