pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0034916**
Facility Type	**Industrial**	APS ID	**1066833**
Major / Minor	**Minor**	Authorization ID	**1402043**

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

Applicant and Facility Information

Applicant Name	**ILSCO Extrusions, Inc.**	Facility Name	**ILSCO Extrusions**
Applicant Address	93 Werner Road	Facility Address	93 Werner Road
	Greenville, PA 16125-9434		Greenville, PA 16125-9434
Applicant Contact	John Thigpen (President)	Facility Contact	Howard Swartz (Dir of Engineering)
Applicant Phone	(724) 589-5888 (john.thigpen@ecmindustries.com)	Facility Phone	(724-59-588 Ext 5690
Client ID	281769	Site ID	242147
SIC Code	3354	Municipality	Sugar Grove Township
SIC Description	Manufacturing - Aluminum Extruded Products	County	Mercer
Date Application Received	July 1, 2022	EPA Waived?	Yes
Date Application Accepted	July 11, 2022	If No, Reason	

Purpose of Application: Renewal of an NPDES Permit for existing discharges of IW, Sewage and Stormwater.

Summary of Review

This facility is primarily engaged in in aluminum extrusion and aluminum casting operations. The facility also has an onsite sewage treatment plant for plant personnel. Process wastewater discharged from this facility is subject to 40 CFR 436 Subpart C ELGs.

No major process changes were reported as part of this NPDES Permit renewal.

The facility discharges to the Little Shenango River, which has been found to contain threatened and endangered mussel species. A summary of threatened and endangered mussel species concerns and considerations is included on Page 15 of this Fact Sheet.

There are currently no open violations listed in EFACTS for this permittee (7/29/2025).

Public Participation

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

Approve	Deny	Signatures	Date
X		Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager	July 29, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	July 30, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.06608
Latitude	41º 26' 19"	Longitude	-80º 21' 59"
Quad Name	Greenville East	Quad Code	03021
Wastewater Description:	Suboutfalls 103 (IW) & 203 (Sewage) and Stormwater		
Receiving Waters	Little Shenango River (TSF)	Stream Code	56167
NHD Com ID	130027031	RMI	3.68
Drainage Area	98.8	Yield (cfs/mi^2)	0.0527
Q_{7-10} Flow (cfs)	5.20676	Q_{7-10} Basis	L. Shenango R. @ Greenville gage (1915-2008)
Elevation (ft)	970	Slope (ft/ft)	0.00175
Watershed No.	20-A	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.41	WQN #913 (Jul-Sept)(2000-2015)(Geo Mean)
Temperature (°C)	25	Default (TSF)
Hardness (mg/L)	139	WQN #913 (2000-2016)(90th percentile)
Other: NH3-N	0.04	WQN #913 (Jul-Sept)(2000-2015)(Median)

Nearest Downstream Public Water Supply Intake		Greenville Mun. Water Authority	
PWS Waters	Shenango River	Flow at Intake (cfs)	10.6
PWS RMI	8.0	Distance from Outfall (mi)	3.68

Changes Since Last Permit Issuance: PWS Intake on Little Shenango River was abandoned.

Other Comments:

Discharge Information

Outfall No.	103 (suboutfall)	Design Flow (MGD)	0.04608
Latitude	---	Longitude	---
Quad Name	Greenville East	Quad Code	03021
Wastewater Description:	Aluminum forming-core, extrusion press leakage, press heat treatment and misc. wastewaters.		

Outfall No.	203 (suboutfall)	Design Flow (MGD)	0.02
Latitude	---	Longitude	---
Quad Name	Greenville East	Quad Code	03021
Wastewater Description:	Treated sewage		

Other Comments: The design flow for Suboutfall 103 was derived from a 32 GPM discharge rate during batch discharge

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0
Latitude	41º 26' 12"	Longitude	-80º 22' 00"
Outfall No.	006	Design Flow (MGD)	0
Latitude	41º 26' 01"	Longitude	-80º 22' 01"
Outfall No.	007	Design Flow (MGD)	0
Latitude	41º 25' 54"	Longitude	-80º 21' 48"
Outfall No.	008	Design Flow (MGD)	0
Latitude	41º 26' 08"	Longitude	-80º 21' 44"
Outfall No.	009	Design Flow (MGD)	0
Latitude	41º 26' 13"	Longitude	-80º 21' 56"
Outfall No.	010	Design Flow (MGD)	0
Latitude	41º 25' 06"	Longitude	-80º 21' 48"
Outfall No.	011	Design Flow (MGD)	0
Latitude	41º 26' 06"	Longitude	-80º 21' 47"
Quad Name	Greenville East	Quad Code	03021
Wastewater Description:	Stormwater		

Receiving Waters	Little Shenango River (TSF)	Stream Code	56167
NHD Com ID	130027177	RMI	---
Drainage Area	98.8 (approx.)	Yield (cfs/mi^2)	0.0527
Q_{7-10} Flow (cfs)	5.20676 (approx.)	Q_{7-10} Basis	L. Shenango R. @ Greenville gage (1915-2008)
Elevation (ft)	970 (approx.)	Slope (ft/ft)	0.00175
Watershed No.	20-A	Chapter 93 Class.	TSF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Nearest Downstream Public Water Supply Intake	Greenville Municipal Water Authority		
PWS Waters	Shenango River	Flow at Intake (cfs)	10.5
PWS RMI	8.0	Distance from Outfall (mi)	3.68

Changes Since Last Permit Issuance:

Other Comments:

Treatment Facility Summary

Treatment Facility Name: ILSCO Extrusions

WQM Permit No.	Issuance Date
4383201-T3	12/29/10
4399415-T3	12/29/10

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Activated Sludge with Solids Removal	Ultraviolet	0.02

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.02				Other WWTP

Suboutfall 103 – Wastewater sources are separated into three wastestreams (W.S.). WS #1 (boiler blowdown and recycle cooling water blowdown) receives pH adjustment to 8.5, hex. chromium destruction with sodium hydrosulfuric, ferric sulfate and soda ash additives, flocculation and tube settling. WS #2 (die cleaning rinsewater and extrusion press quench water spillage) receives pH adjustment from 12.5 to 7.0 and settling. WS #3 (oil water from hydraulic oil leakage from the extrusion press and air compressor) receives gravity and high permeability media filtration **(WQM #4383201)**.

Suboutfall 203 – Flow equalization, activated sludge, clarification, fixed media filters and chlorination. Clarifiers were added after the filters along with an alum feed system (phos. removal) and UV disinfection (replacing chlorination). **(WQM #4399415)** – The original treatment system was permitted under WQM # 4383402 but when the changes/additions were made the entire, remaining treatment units were all incorporated under #4399415.

Former owners include Werner Co., WXP Inc. and Signature Aluminum.

Compliance History	
Summary of DMRs:	12 effluent violations have been reported since October 2020. Five are contributed to the treated sewage discharge, one from the internal outfall 101 for pH, and the other six at the main outfall for either pH (1) or O&G (5),
Summary of Inspections:	The last facility inspection was conducted on 1/8/2021. The inspection report did not report any violations, but it did point out some sampling issues and recordkeeping requirements.

Other Comments:

Compliance History

DMR Data for Outfall 003 (from January 1, 2024 to December 31, 2024)

Parameter	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24
Flow (MGD) Average Monthly	0.0049	0.007	0.0064	0.0074	0.0077	0.0056	0.0057	0.0053	0.0087	0.0092	0.0075	0.0082
pH (S.U.) Minimum	6.4	6.4	6.7	6.6	6.6	6.6	6.2	6.5	6.8	7.0	6.7	7.0
pH (S.U.) Maximum	8.7	7.7	7.8	7.3	7.3	7.7	7.4	8.1	7.7	7.7	7.8	7.8
Oil and Grease (mg/L) Average Monthly	< 2.15	2.85	4.1	2.55	13	< 3.9	< 4.9	< 5.2	< 4.9	< 5.1	< 5.7	< 5.6
Oil and Grease (mg/L) Instantaneous Maximum	2.9	3.1	6	2.6	22.8	< 5.1	< 4.9	< 5.4	< 4.9	< 5.3	< 5.7	< 6.0

DMR Data for Outfall 103 (from January 1, 2024 to December 31, 2024)

Parameter	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24
Flow (MGD) Average Monthly	0.0034	0.005	0.0055	0.0064	0.0063	0.0046	0.0047	0.0039	0.0026	0.004	0.0046	0.0031
Flow (MGD) Daily Maximum	0.01	0.0082	0.0068	0.0105	0.0117	0.0081	0.0089	0.0087	0.0126	0.0079	0.0084	0.0084
pH (S.U.) Instantaneous Minimum	6.4	6.4	6.7	6.3	6.8	6.8	6.9	7.0	6.9	6.8	6.9	6.8
pH (S.U.) Instantaneous Maximum	7.4	8.3	7.3	6.5	7.1	7.1	7.4	7.7	7.1	7.0	7.9	7.4
TSS (lbs/day) Average Monthly	7.7	< 0.2	< 0.2	< 0.2	< 0.3	1.6	0.3	0.6	13.5	< 0.3	0.4	0.4
TSS (lbs/day) Daily Maximum	15.4	< 0.2	< 0.2	0.2	< 0.3	2.6	0.4	0.6	13.5	0.4	0.5	0.4
TSS (mg/L) Average Monthly	94	< 5	< 5	< 5.0	< 5	68	10.5	12.8	0.4	< 7.5	11.5	17.5
TSS (mg/L) Daily Maximum	182	< 5	< 5	5.0	< 5	127	12.5	13	0.4	10	12	18
Oil and Grease (lbs/day) Average Monthly	< 1.9	< 0.2	< 0.3	< 0.2	< 0.3	0.6	< 0.2	< 0.3	< 4.9	< 0.2	< 0.2	0.2

Oil and Grease (lbs/day) Daily Maximum	3.6	< 0.2	0.4	< 0.3	< 0.3	0.7	< 0.2	< 0.3	< 4.9	< 0.2	< 0.2	0.2
Oil and Grease (mg/L) Average Monthly	< 24.2	< 5.2	< 6.9	< 5.25	< 4.9	34.4	< 4.9	< 5.4	< 0.2	< 5.1	< 5.3	6.8
Oil and Grease (mg/L) Daily Maximum	43.2	< 5.2	8.2	< 5.4	< 4.9	21.1	< 4.9	< 5.4	< 0.2	< 5.3	< 5.3	7.0
Total Aluminum (lbs/day) Average Monthly	0.6	0.02	< 0.009	0.05	0.02	0.1	0.03	0.05	0.876	< 0.01	0.02	0.02
Total Aluminum (lbs/day) Daily Maximum	1.2	0.03	< 0.009	0.08	0.03	0.2	0.04	0.05	0.876	0.02	0.02	0.02
Total Aluminum (mg/L) Average Monthly	7.04	0.534	< 0.207	1.031	0.463	4.8	0.79	1.039	0.03	< 0.353	0.724	1.04
Total Aluminum (mg/L) Daily Maximum	13.9	0.651	0.213	1.74	0.622	9	0.909	1.1	0.03	0.505	0.972	1.04
Total Chromium (lbs/day) Average Monthly	< 0.0005	< 0.00008	< 0.00009	< 0.00009	< 0.0001	< 0.0001	< 0.00008	< 0.0001	< 0.002	< 0.00008	< 0.00009	< 0.00005
Total Chromium (lbs/day) Daily Maximum	0.001	< 0.00009	< 0.00009	< 0.0001	< 0.0001	0.0001	< 0.00008	< 0.001	< 0.002	< 0.00008	< 0.00009	< 0.00005
Total Chromium (mg/L) Average Monthly	< 0.008	< 0.002	< 0.002	< 0.002	< 0.002	< 0.0025	< 0.002	< 0.003	< 0.00006	< 0.002	< 0.002	< 0.002
Total Chromium (mg/L) Daily Maximum	0.012	< 0.002	< 0.002	< 0.002	< 0.002	0.0029	< 0.002	< 0.004	< 0.00006	< 0.002	< 0.002	< 0.002
Total Cyanide (lbs/day) Average Monthly	< 0.0008	< 0.0004	< 0.0004	< 0.0005	< 0.0005	< 0.0004	< 0.0004	< 0.01	< 0.01	< 0.0004	< 0.0005	< 0.0008
Total Cyanide (lbs/day) Daily Maximum	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0006	< 0.0007	< 0.0004	< 0.01	< 0.01	< 0.0004	< 0.0005	< 0.001
Total Cyanide (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.11	< 0.0003	< 0.01	< 0.01	< 0.04
Total Cyanide (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.2	< 0.0003	< 0.01	< 0.01	< 0.01
Total Zinc (lbs/day) Average Monthly	0.02	< 0.0004	0.0008	0.001	0.001	< 0.001	< 0.0003	< 0.001	0.017	< 0.001	< 0.0007	< 0.0007
Total Zinc (lbs/day) Daily Maximum	0.03	< 0.0004	0.0009	0.002	0.001	0.002	0.0004	0.001	0.017	0.001	0.0007	0.001

Total Zinc (mg/L) Average Monthly	0.327	< 0.01	0.019	0.031	0.025	< 0.059	< 0.012	< 0.021	0.0005	< 0.029	< 0.022	< 0.032
Total Zinc (mg/L) Daily Maximum	0.38	< 0.01	0.021	0.043	0.031	0.107	0.014	0.021	0.0005	0.048	0.034	0.054

DMR Data for Outfall 203 (from January 1, 2024 to December 31, 2024)

Parameter	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24
Flow (MGD) Average Monthly	0.0015	0.002	0.00097	0.00095	0.0014	0.00102	0.0009	0.0014	0.0061	0.0052	0.0029	0.0051
pH (S.U.) Minimum	6.2	6.1	6.4	6.5	6.7	6.2	6.3	6.2	6.8	6.8	6.2	6.7
pH (S.U.) Maximum	8.6	8.1	7.8	7.4	7.5	7.6	7.3	7.9	7.8	7.7	7.5	7.7
DO (mg/L) Minimum	10.44	9.97	9.04	8.18	7.45	7.56	7.64	13.5	12.3	11.0	11.0	10.0
CBOD5 (mg/L) Average Monthly	< 3.0	< 2.5	< 2.5	< 3	< 3	< 3.0	< 4.8	< 4.8	< 4.8	< 4.0	< 4.0	< 4.0
TSS (mg/L) Average Monthly	14.5	16.3	< 6.3	13.8	9.8	17.75	46.3	11	< 10.8	11	13.3	6.5
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	18	< 1	< 1	< 1
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	83	< 1	< 1	< 1
Total Nitrogen (mg/L) Average Monthly	< 22.9	< 39.17	< 40.44	< 40.73	< 26.59	< 42.81	35.209	47.01	< 17.56	< 37.22	< 34.27	< 21.73
Ammonia (mg/L) Average Monthly	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 19.1	< 0.31	< 0.3	< 0.3	< 0.31	< 0.3
Total Phosphorus (mg/L) Average Monthly	0.397	0.531	0.482	0.295	0.188	0.247	0.386	< 1.46	1.73	1.792	0.565	0.439

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** 0.06608
Latitude 41º 26' 19" **Longitude** -80º 21' 59"
Wastewater Description: Suboutfalls 103 (IW) & 203 (Sew) and Stormwater

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
O&G	15	Average Monthly	Chapter 95.2 (2)(ii)	O&G
O&G	30	IMAX	Chapter 95.2 (2)(ii)	O&G
pH	6.0 – 9.0 S.U.	Min – Max	95.2(1)	pH

Comments:

Water Quality-Based Limitations

Comments: No water quality modeling was done at Outfall 003. Instead, WQBELs were evaluated separately at Suboutfalls 103 and 203 because the discharges tend to discharge infrequently at different times.

Best Professional Judgment (BPJ) Limitations

Comments: None.

Anti-Backsliding

N/A

Development of Effluent Limitations

Suboutfall No. 103 **Design Flow (MGD)** 0.04608
Latitude 41º 26' 14" **Longitude** -80º 21' 58"
Wastewater Description: Aluminum forming-core, extrusion press leakage, press heat treatment and misc. wastewaters.

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (lb/day)	SBC	Federal Regulation
TSS	29.0	Average Monthly	40 CFR 467.32 - BPT
O&G	17.8	Average Monthly	40 CFR 467.32 - BPT
pH	7.0 – 10.0 S.U.	Min – Max	40 CFR 467.32 - BPT
Aluminum	2.6	Average Monthly	40 CFR 467.33 - BAT
Chromium, tot.	0.1	Average Monthly	40 CFR 467.33 - BAT
Cyanide, tot.	0.1	Average Monthly	40 CFR 467.33 - BAT
Zinc	0.5	Average Monthly	40 CFR 467.33 - BAT

Comments: Refer to the attached spreadsheets used to calculate the production-based, technology limitations.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
Total Aluminum	15.4	Average Monthly	Toxics Management Spreadsheet Ver. 1.4
Total Aluminum	24.1	Daily Maximum	Toxics Management Spreadsheet Ver. 1.4
Total Zinc	3.32	Average Monthly	Toxics Management Spreadsheet Ver. 1.4
Total Zinc	5.18	Daily Maximum	Toxics Management Spreadsheet Ver. 1.4

Comments: Technology-based effluent limits are more stringent for total aluminum and total zinc than the calculated WQBELs. Therefore, the WQBELs above will not be applied.

Although toxics modeling calculated a WQBEL for acrylamide, it was non-detect in application sampling and resampling and they indicate that none of the chemical and water treatment chemicals used at the plant contain acrylamide. Therefore, no limits or monitoring for acrylamide will be placed in the permit.

Toxics modeling also recommended monitoring for total arsenic and total chromium. Total chromium already has technology-based limits that will be applied in the draft permit. Monitoring for total arsenic will be applied to this suboutfall in the draft permit at a frequency of 1/month.

Temperature modeling did not determine the need for WQBELs, and the average temperatures are well below the suggested public safety level of 110 degrees Fahrenheit. No temperature limits or monitoring is being proposed.

Best Professional Judgment (BPJ) Limitations

Comments: None

Anti-Backsliding

Technology based limits for TSS and Oil & Grease were made less stringent as a result of new facility production data.

Development of Effluent Limitations

Suboutfall No. 203 **Design Flow (MGD)** 0.02
Latitude 41º 26' 15" **Longitude** -80º 21' 59"
Wastewater Description: Treated sewage

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: There is no need to impose a TRC limit since they employ UV light disinfection.

Monitoring for E. coli will be placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

Comments: water quality modeling (attached) did not determine that any water quality-based limits were necessary.

A total phosphorus average monthly limit of 2.0 mg/l, based on the Shenango Reservoir Trophic State Index Study, is being retained in this proposed renewed permit.

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen limit of a minimum of 4.0 mg/l is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Other Considerations

Monitoring for ammonia nitrogen and total phosphorus is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitation for Individual Sewage Permits."

Anti-Backsliding

NA

Development of Effluent Limitations

Outfall No.	006	**Design Flow (MGD)**	0
Latitude	41º 26' 1.00"	**Longitude**	-80º 22' 1.00"
Outfall No.	009	**Design Flow (MGD)**	0
Latitude	41º 26' 13.00"	**Longitude**	-80º 21' 56.00"
Outfall No.	010	**Design Flow (MGD)**	0
Latitude	41º 26' 6.00"	**Longitude**	-80º 21' 48.00"

Wastewater Description: Stormwater associated with industrial activities

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Comments: None

Water Quality-Based Limitations

Comments: None

Best Professional Judgment (BPJ) Limitations

Comments: Monitoring requirements and benchmark values found in appendix B of the PAG-03 general permit were placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Industrial Permits." The parameters to be monitored are TSS, total nitrogen, total phosphorus, total aluminum, total copper, total iron, total lead and total zinc, with benchmark values for TSS and oil & grease that can be found in in Part C of the permit.

Anti-Backsliding

N/A

No Exposure Stormwater Outfalls

The permittee signified Outfalls 004, 0007, 008, and 011 as qualifying for "No-Exposure." Therefore, BPJ requirements above will not apply to these stormwater outfalls.

Threatened and Endangered Mussel Species Concerns and Considerations

The lower section of Little Shenango River in the vicinity of the discharges have been found to contain at least one state listed threatened and endangered mussel species. Due to this facility having discharges in this segment of stream, potential impacts were evaluated.

The USFWS has indicated in comment letters and email correspondence on other NPDES permits, that to protect threatened and endangered mussel species, wastewater discharges containing ammonia-nitrogen (NH3-N), chloride (Cl-) dissolved nickel, dissolved zinc, and total copper where mussels or their habitat exist, can be no more than 1.9 mg/l, 78 mg/l, 7.3 µg/l, 13.18 µg/l, and 10 µg/l respectively.

The calculated site- specific criteria based on WQN Station 913 stream background pH data and default temperature for a TSF (pH of 7.41 and temperature of 25) results in NH3-N criteria of 1.087 mg/l.

A summary of the sampling data for ammonia-nitrogen (NH3-N) and temperature from three samples at internal outfalls 103 and 203 for the 2021 renewal application, is as follows:

PARAMETER	UNITS	Outfall 103			Comments
		Max	Avg. Value	No. Samples	
NH_3-N	mg/l	0.44	0.16	3	Two non-detects at a QL of 0.02 mg/l
Chloride	mg/l	223	197	3	
Total Nickel	µg/l	3.2	1.58	3	Two non-detects
Total Zinc	µg/l	49	30.7	3	
Total Copper	µg/l	11.5	5.17	3	Two non-detects

PARAMETER	UNITS	Outfall 203			Comments
		Max	Avg. Value	No. Samples	
NH_3-N	mg/l	0.62	0.46	27	22 non-detects at a QL of 0.02 mg/l
Chloride	mg/l	67.5	65.5	3	
Total Nickel	µg/l	0.92	0.84	3	Two non-detects
Total Zinc	µg/l	26	22.3	3	
Total Copper	µg/l	11.1	10.67	3	

As can be seen from the sampling above, ammonia nitrogen and total nickel is well below protective levels for threatened and endangered mussels for both internal outfalls. Regardless, all parameters of concern were evaluated for both internal outfalls (103 – Process Wastewater and 203 – Domestic Sewage) using the Department's Mussel Impact Evaluation Sheet (attached).

Based on the spreadsheet calculations, there is potential impact from suboutfall 103 due to chloride and total nickel (impact areas greater than 1 m^2). However, the Department does not believe this to warrant further action at this time as this is a batch discharge (1.5 hours – 2/day), calculated during low flow conditions and there is long term data for total zinc due to continued requirements to monitor in the permit. The spreadsheet calculations determined minimal impacts from 203 (<0.1 m^2 of impact area). No additional actions are being proposed in regard to mussels for this suboutfall either.

Internal outfall 103 was also evaluated for thermal impacts and the Department believe they should have no impact as it averages between 18C (64F) and 21C (70F).

No impacts to threatened and endangered mussels are expected due to stormwater discharged from this facility

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/day	Estimate
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/day	Grab
Oil and Grease	XXX	XXX	XXX	15	XXX	30	2/month	Grab

Compliance Sampling Location: Outfall 003 (prior to mixing with any other waters)

Other Comments:

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 006, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Suspended Solids Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nitrogen Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Calculation
Total Phosphorus Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Copper, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Lead, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Zinc, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 006 (prior to mixing with any other waters).

Other Comments: Samples should be taken during a qualifying rain event.

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 009, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Suspended Solids Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nitrogen Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Calculation
Total Phosphorus Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Copper, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Lead, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Zinc, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 009 (prior to mixing with any other waters)

Other Comments: Samples should be taken during a qualifying rain event.

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 010, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Suspended Solids Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nitrogen Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Calculation
Total Phosphorus Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Copper, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Lead, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Zinc, Total Other Stormwater	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 010 (prior to mixing with any other waters)

Other Comments: Samples should be taken during a qualifying rain event.

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 103, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	7.0 Inst Min	XXX	XXX	9.0	2/month	Grab
Total Suspended Solids	29.0	61.0	XXX	Report	Report	188	2/month	8-Hr Composite
Oil and Grease	17.8	29.7	XXX	Report	Report	116	2/month	Grab
Aluminum, Total	2.6	5.2	XXX	Report	Report	17.1	2/month	8-Hr Composite
Arsenic, Total	XXX	Report	XXX	XXX	Report	XXX	1/month	8-Hr Composite
Chromium, Total	0.1	0.4	XXX	Report	Report	1	2/month	8-Hr Composite
Cyanide, Total	0.1	0.2	XXX	Report	Report	6.9	2/month	8-Hr Composite
Zinc, Total	0.5	1.2	XXX	Report	Report	3.3	2/month	8-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	Report	XXX	1/quarter	Grab

Compliance Sampling Location: Suboutfall 103 (prior to mixing with any other waters)

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 203, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/week	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	1/month	8-Hr Composite

Compliance Sampling Location: Suboutfall 203 (prior to mixing with any other waters)

Other Comments:

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Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **ILSCO Extrusions** NPDES Permit No.: **PA0034916** Outfall No.: **003**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Process Wastewater, Sanitary, GW, SW**

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
0.04608	209.3	6.6						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		1410									
	Chloride (PWS)	mg/L		223									
	Bromide	mg/L		2.55									
	Sulfate (PWS)	mg/L		874									
	Fluoride (PWS)	mg/L		1.33									
Group 2	Total Aluminum	µg/L		23700									
	Total Antimony	µg/L		8									
	Total Arsenic	µg/L		84.5									
	Total Barium	µg/L		39.3									
	Total Beryllium	µg/L		0.228									
	Total Boron	µg/L		635									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L		900									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	0.6									
	Total Copper	µg/L		11.5									
	Free Cyanide	µg/L		10									
	Total Cyanide	µg/L		600									
	Dissolved Iron	µg/L		591									
	Total Iron	µg/L		808									
	Total Lead	µg/L	<	2									
	Total Manganese	µg/L		49.9									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L		3.2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2.5									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L		1.1									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		3000									
	Total Molybdenum	µg/L		27.7									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<	120									
	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		0.7									
	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	<										
	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	<	1.5									
	2,4-Dichlorophenol	µg/L	<	0.59									
	2,4-Dimethylphenol	µg/L	<	1.9									
	4,6-Dinitro-o-Cresol	µg/L	<	17									
	2,4-Dinitrophenol	µg/L	<	18									
	2-Nitrophenol	µg/L	<	2.2									
	4-Nitrophenol	µg/L	<	11									
	p-Chloro-m-Cresol	µg/L	<	3.2									
	Pentachlorophenol	µg/L	<	9.8									
	Phenol	µg/L	<	5.7									
	2,4,6-Trichlorophenol	µg/L	<	2.6									
Group 5	Acenaphthene	µg/L	<	0.76									
	Acenaphthylene	µg/L	<	0.76									
	Anthracene	µg/L	<	0.57									
	Benzidine	µg/L	<	12.5									
	Benzo(a)Anthracene	µg/L	<	0.87									
	Benzo(a)Pyrene	µg/L	<	0.62									
	3,4-Benzofluoranthene	µg/L	<	1.1									
	Benzo(ghi)Perylene	µg/L	<	0.8									
	Benzo(k)Fluoranthene	µg/L	<	1									
	Bis(2-Chloroethoxy)Methane	µg/L	<	1.8									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.47									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.67									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	2.5									
	4-Bromophenyl Phenyl Ether	µg/L	<	3.7									
	Butyl Benzyl Phthalate	µg/L	<	0.25									
	2-Chloronaphthalene	µg/L	<	0.69									
	4-Chlorophenyl Phenyl Ether	µg/L	<	2.6									
	Chrysene	µg/L	<	0.94									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.84									
	1,2-Dichlorobenzene	µg/L	<	1.1									
	1,3-Dichlorobenzene	µg/L	<	1.2									
	1,4-Dichlorobenzene	µg/L	<	0.71									
	3,3-Dichlorobenzidine	µg/L	<	1									
	Diethyl Phthalate	µg/L	<	6.6									
	Dimethyl Phthalate	µg/L	<	2.3									
	Di-n-Butyl Phthalate	µg/L	<	8.6									
	2,4-Dinitrotoluene	µg/L	<	4.1									

	2,6-Dinitrotoluene	µg/L	<	2									
	Di-n-Octyl Phthalate	µg/L	<	8									
	1,2-Diphenylhydrazine	µg/L	<	2.3									
	Fluoranthene	µg/L	<	0.7									
	Fluorene	µg/L	<	0.8									
	Hexachlorobenzene	µg/L	<	0.65									
	Hexachlorobutadiene	µg/L	<	0.25									
	Hexachlorocyclopentadiene	µg/L	<	5.8									
	Hexachloroethane	µg/L	<	1.5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.99									
	Isophorone	µg/L	<	2.2									
	Naphthalene	µg/L	<	0.69									
	Nitrobenzene	µg/L	<	5.8									
	n-Nitrosodimethylamine	µg/L	<	0.78									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.83									
	n-Nitrosodiphenylamine	µg/L	<	1.4									
	Phenanthrene	µg/L	<	0.64									
	Pyrene	µg/L	<	0.63									
	1,2,4-Trichlorobenzene	µg/L	<	0.25									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

ILSCO Extrusions, NPDES Permit No. PA0034916, Outfall 003

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Little Shenango River**

No. Reaches to Model: 1

- (•) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	056167	3.68	970	98.8			Yes
End of Reach 1	035482	0	934	295		1	Yes

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

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	3.68	0.0527										139.4	7.41		
End of Reach 1	0	0.0527										100	7		

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	3.68		5.2												
End of Reach 1	0		10.6												

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Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

ILSCO Extrusions, NPDES Permit No. PA0034916, Outfall 003

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)
3.68	5.21		5.21	0.071	0.002	0.728	40.567	55.748	0.179	1.258	82.156
0	15.55	1.547	13.9995								

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)
3.68	5.20		5.20	0.071	0.002	0.727	40.567	55.78	0.179	1.259	82.223
0	10.6	1.547	9.05								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.427 Analysis Hardness (mg/l): 141.57 Analysis pH: 7.34

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	24,157	
Total Antimony	0	0		0	1,100	1,100	35,431	
Total Arsenic	0	0		0	340	340	10,951	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	676,405	
Total Boron	0	0		0	8,100	8,100	260,899	
Total Cadmium	0	0		0	2.823	3.04	97.8	Chem Translator of 0.929 applied
Total Chromium (III)	0	0		0	757.426	2,397	77,204	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	525	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	3,060	
Total Copper	0	0		0	18.647	19.4	626	Chem Translator of 0.96 applied

Free Cyanide	0	0		0	22	22.0	709	
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	94.092	127	4,094	Chem Translator of 0.74 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	53.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	628.328	630	20,279	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	5.849	6.88	222	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	2,094	
Total Zinc	0	0		0	157.316	161	5,181	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	96.6	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	650	650	20,936	
Benzene	0	0		0	640	640	20,614	
Bromoform	0	0		0	1,800	1,800	57,978	
Carbon Tetrachloride	0	0		0	2,800	2,800	90,187	
Chlorobenzene	0	0		0	1,200	1,200	38,652	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	579,776	
Chloroform	0	0		0	1,900	1,900	61,199	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	483,146	
1,1-Dichloroethylene	0	0		0	7,500	7,500	241,573	
1,2-Dichloropropane	0	0		0	11,000	11,000	354,307	
1,3-Dichloropropylene	0	0		0	310	310	9,985	
Ethylbenzene	0	0		0	2,900	2,900	93,408	
Methyl Bromide	0	0		0	550	550	17,715	
Methyl Chloride	0	0		0	28,000	28,000	901,873	
Methylene Chloride	0	0		0	12,000	12,000	386,517	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	32,210	
Tetrachloroethylene	0	0		0	700	700	22,547	
Toluene	0	0		0	1,700	1,700	54,757	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	219,026	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	96,629	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	109,513	
Trichloroethylene	0	0		0	2,300	2,300	74,082	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	18,037	
2,4-Dichlorophenol	0	0		0	1,700	1,700	54,757	
2,4-Dimethylphenol	0	0		0	660	660	21,258	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	2,577	
2,4-Dinitrophenol	0	0		0	660	660	21,258	
2-Nitrophenol	0	0		0	8,000	8,000	257,678	
4-Nitrophenol	0	0		0	2,300	2,300	74,082	
p-Chloro-m-Cresol	0	0		0	160	160	5,154	
Pentachlorophenol	0	0		0	12.302	12.3	396	

Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	14,816	
Acenaphthene	0	0		0	83	83.0	2,673	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	9,663	
Benzo(a)Anthracene	0	0		0	0.5	0.5	16.1	
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	966,293	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	144,944	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	8,697	
Butyl Benzyl Phthalate	0	0		0	140	140	4,509	
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	26,412	
1,3-Dichlorobenzene	0	0		0	350	350	11,273	
1,4-Dichlorobenzene	0	0		0	730	730	23,513	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	128,839	
Dimethyl Phthalate	0	0		0	2,500	2,500	80,524	
Di-n-Butyl Phthalate	0	0		0	110	110	3,543	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	51,536	
2,6-Dinitrotoluene	0	0		0	990	990	31,888	
1,2-Diphenylhydrazine	0	0		0	15	15.0	483	
Fluoranthene	0	0		0	200	200	6,442	
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	322	
Hexachlorocyclopentadiene	0	0		0	5	5.0	161	
Hexachloroethane	0	0		0	60	60.0	1,933	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	322,098	
Naphthalene	0	0		0	140	140	4,509	
Nitrobenzene	0	0		0	4,000	4,000	128,839	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	547,566	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	9,663	
Phenanthrene	0	0		0	5	5.0	161	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	4,187	

☑ ***CFC*** CCT (min): 82.156 PMF: 1 Analysis Hardness (mg/l): 140.34 Analysis pH: 7.38

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	16,289	
Total Arsenic	0	0		0	150	150	11,106	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	303,567	
Total Boron	0	0		0	1,600	1,600	118,465	
Total Cadmium	0	0		0	0.311	0.35	25.8	Chem Translator of 0.895 applied
Total Chromium (III)	0	0		0	97.826	114	8,422	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	770	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	1,407	
Total Copper	0	0		0	11.964	12.5	923	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	385	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	111,061	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	3.632	4.9	363	Chem Translator of 0.742 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	67.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	69.276	69.5	5,145	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	369	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	963	
Total Zinc	0	0		0	157.438	160	11,822	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	222	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	130	130	9,625	
Benzene	0	0		0	130	130	9,625	
Bromoform	0	0		0	370	370	27,395	
Carbon Tetrachloride	0	0		0	560	560	41,463	
Chlorobenzene	0	0		0	240	240	17,770	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	259,142	
Chloroform	0	0		0	390	390	28,876	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	229,526	
1,1-Dichloroethylene	0	0		0	1,500	1,500	111,061	
1,2-Dichloropropane	0	0		0	2,200	2,200	162,889	
1,3-Dichloropropylene	0	0		0	61	61.0	4,516	
Ethylbenzene	0	0		0	580	580	42,944	
Methyl Bromide	0	0		0	110	110	8,144	
Methyl Chloride	0	0		0	5,500	5,500	407,224	
Methylene Chloride	0	0		0	2,400	2,400	177,698	

1,1,2,2-Tetrachloroethane	0	0		0	210	210	15,549	
Tetrachloroethylene	0	0		0	140	140	10,366	
Toluene	0	0		0	330	330	24,433	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	103,657	
1,1,1-Trichloroethane	0	0		0	610	610	45,165	
1,1,2-Trichloroethane	0	0		0	680	680	50,348	
Trichloroethylene	0	0		0	450	450	33,318	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	8,144	
2,4-Dichlorophenol	0	0		0	340	340	25,174	
2,4-Dimethylphenol	0	0		0	130	130	9,625	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	1,185	
2,4-Dinitrophenol	0	0		0	130	130	9,625	
2-Nitrophenol	0	0		0	1,600	1,600	118,465	
4-Nitrophenol	0	0		0	470	470	34,799	
p-Chloro-m-Cresol	0	0		0	500	500	37,020	
Pentachlorophenol	0	0		0	9.438	9.44	699	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	6,738	
Acenaphthene	0	0		0	17	17.0	1,259	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	4,368	
Benzo(a)Anthracene	0	0		0	0.1	0.1	7.4	
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	444,244	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	67,377	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	3,998	
Butyl Benzyl Phthalate	0	0		0	35	35.0	2,591	
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	11,847	
1,3-Dichlorobenzene	0	0		0	69	69.0	5,109	
1,4-Dichlorobenzene	0	0		0	150	150	11,106	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	59,233	
Dimethyl Phthalate	0	0		0	500	500	37,020	
Di-n-Butyl Phthalate	0	0		0	21	21.0	1,555	
2,4-Dinitrotoluene	0	0		0	320	320	23,693	
2,6-Dinitrotoluene	0	0		0	200	200	14,808	
1,2-Diphenylhydrazine	0	0		0	3	3.0	222	
Fluoranthene	0	0		0	40	40.0	2,962	

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	148	
Hexachlorocyclopentadiene	0	0		0	1	1.0	74.0	
Hexachloroethane	0	0		0	12	12.0	888	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	155,485	
Naphthalene	0	0		0	43	43.0	3,184	
Nitrobenzene	0	0		0	810	810	59,973	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	251,738	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	4,368	
Phenanthrene	0	0		0	1	1.0	74.0	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	1,925	

☑ ***THH*** CCT (min): 82.156 THH PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 1

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	#########	WQC applied at RMI 0 with a design stream flow of 15.5465 cfs
Chloride (PWS)	0	0		0	250,000	250,000	54,771,759	WQC applied at RMI 0 with a design stream flow of 15.5465 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	54,771,759	WQC applied at RMI 0 with a design stream flow of 15.5465 cfs
Fluoride (PWS)	0	0		0	2,000	2,000	438,174	WQC applied at RMI 0 with a design stream flow of 15.5465 cfs
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	415	
Total Arsenic	0	0		0	10	10.0	740	
Total Barium	0	0		0	2,400	2,400	177,698	
Total Boron	0	0		0	3,100	3,100	229,526	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Free Cyanide	0	0		0	4	4.0	296	
Dissolved Iron	0	0		0	300	300	22,212	
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	74,041	
Total Mercury	0	0		0	0.050	0.05	3.7	
Total Nickel	0	0		0	610	610	45,165	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	1,095	WQC applied at RMI 0 with a design stream flow of 15.5465 cfs
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	17.8	

Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	222	
Acrylamide	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	7,404	
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	422	
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	2,443	
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	5,035	
Methyl Bromide	0	0		0	100	100.0	7,404	
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	4,220	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	7,404	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	740,407	
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	2,221	
2,4-Dichlorophenol	0	0		0	10	10.0	740	
2,4-Dimethylphenol	0	0		0	100	100.0	7,404	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	148	
2,4-Dinitrophenol	0	0		0	10	10.0	740	
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	296,163	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	5,183	
Anthracene	0	0		0	300	300	22,212	
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	14,808	
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	7.4	
2-Chloronaphthalene	0	0		0	800	800	59,233	
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	74,041	
1,3-Dichlorobenzene	0	0		0	7	7.0	518	
1,4-Dichlorobenzene	0	0		0	300	300	22,212	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	44,424	
Dimethyl Phthalate	0	0		0	2,000	2,000	148,081	
Di-n-Butyl Phthalate	0	0		0	20	20.0	1,481	
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	1,481	
Fluorene	0	0		0	50	50.0	3,702	
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	296	
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	2,517	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	740	
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	1,481	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	5.18	

☑ ***CRL*** CCT (min): 82.223 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	
Free Cyanide	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylamide	0	0		0	0.07	0.07	5.18	
Acrylonitrile	0	0		0	0.06	0.06	4.44	
Benzene	0	0		0	0.58	0.58	42.9	
Bromoform	0	0		0	7	7.0	518	
Carbon Tetrachloride	0	0		0	0.4	0.4	29.6	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	59.2	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	70.2	
1,2-Dichloroethane	0	0		0	9.9	9.9	732	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	66.6	
1,3-Dichloropropylene	0	0		0	0.27	0.27	20.0	
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	1,479	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	14.8	
Tetrachloroethylene	0	0		0	10	10.0	739	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	

1,1,2-Trichloroethane	0	0		0	0.55	0.55	40.7	
Trichloroethylene	0	0		0	0.6	0.6	44.4	
Vinyl Chloride	0	0		0	0.02	0.02	1.48	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	2.22	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	111	
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	0.007	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.074	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.007	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.074	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.74	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	2.22	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	23.7	
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	8.87	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.007	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	3.7	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	3.7	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	3.7	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	2.22	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.006	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.74	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	7.39	

Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.074	
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	0.052	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.37	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	244	
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 Aluminum	5.95	9.28	15,484	24,157	38,710	µg/L	15,484	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Arsenic	Report	Report	Report	Report	Report	µg/L	740	THH	Discharge Conc > 10% WQBEL (no RP)
Total Chromium (III)	Report	Report	Report	Report	Report	µg/L	8,422	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	1.28	1.99	3,321	5,181	8,302	µg/L	3,321	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Acrylamide	0.002	0.003	5.18	8.08	12.9	µg/L	5.18	CRL	Discharge Conc ≥ 50% WQBEL (RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	109,544	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	54,772	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	54,772	mg/L	Discharge Conc ≤ 10% WQBEL
Fluoride (PWS)	438	mg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	415	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	177,698	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS

Total Boron	118,465	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	25.8	µg/L	Discharge Conc < TQL
Hexavalent Chromium	336	µg/L	Discharge Conc < TQL
Total Cobalt	1,407	µg/L	Discharge Conc < TQL
Total Copper	401	µg/L	Discharge Conc ≤ 10% WQBEL
Free Cyanide	296	µg/L	Discharge Conc ≤ 25% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	22,212	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	111,061	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	363	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	74,041	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	3.7	µg/L	Discharge Conc < TQL
Total Nickel	5,145	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)	1,095	µg/L	Discharge Conc < TQL
Total Selenium	369	µg/L	Discharge Conc < TQL
Total Silver	142	µg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	17.8	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	61.9	µg/L	Discharge Conc < TQL
Acrylonitrile	4.44	µg/L	Discharge Conc < TQL
Benzene	42.9	µg/L	Discharge Conc < TQL
Bromoform	518	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	29.6	µg/L	Discharge Conc < TQL
Chlorobenzene	7,404	µg/L	Discharge Conc < TQL
Chlorodibromomethane	59.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	259,142	µg/L	Discharge Conc < TQL
Chloroform	422	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	70.2	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	732	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	2,443	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	66.6	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	20.0	µg/L	Discharge Conc < TQL
Ethylbenzene	5,035	µg/L	Discharge Conc < TQL
Methyl Bromide	7,404	µg/L	Discharge Conc < TQL
Methyl Chloride	407,224	µg/L	Discharge Conc < TQL
Methylene Chloride	1,479	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	14.8	µg/L	Discharge Conc < TQL
Tetrachloroethylene	739	µg/L	Discharge Conc < TQL
Toluene	4,220	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	7,404	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	45,165	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	40.7	µg/L	Discharge Conc < TQL
Trichloroethylene	44.4	µg/L	Discharge Conc < TQL

Vinyl Chloride	1.48	µg/L	Discharge Conc < TQL
2-Chlorophenol	2,221	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	740	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	7,404	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	148	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrophenol	740	µg/L	Discharge Conc ≤ 25% WQBEL
2-Nitrophenol	118,465	µg/L	Discharge Conc < TQL
4-Nitrophenol	34,799	µg/L	Discharge Conc ≤ 25% WQBEL
p-Chloro-m-Cresol	3,303	µg/L	Discharge Conc < TQL
Pentachlorophenol	2.22	µg/L	Discharge Conc < TQL
Phenol	296,163	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	111	µg/L	Discharge Conc < TQL
Acenaphthene	1,259	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	22,212	µg/L	Discharge Conc < TQL
Benzidine	0.007	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.074	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.007	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.074	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.74	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	2.22	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	14,808	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	23.7	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	3,998	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	7.4	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	59,233	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	8.87	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.007	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	11,847	µg/L	Discharge Conc ≤ 25% WQBEL
1,3-Dichlorobenzene	518	µg/L	Discharge Conc ≤ 25% WQBEL
1,4-Dichlorobenzene	11,106	µg/L	Discharge Conc ≤ 25% WQBEL
3,3-Dichlorobenzidine	3.7	µg/L	Discharge Conc < TQL
Diethyl Phthalate	44,424	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	37,020	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	1,481	µg/L	Discharge Conc ≤ 25% WQBEL
2,4-Dinitrotoluene	3.7	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	3.7	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	2.22	µg/L	Discharge Conc < TQL
Fluoranthene	1,481	µg/L	Discharge Conc < TQL
Fluorene	3,702	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.006	µg/L	Discharge Conc < TQL

Hexachlorobutadiene	0.74	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	74.0	µg/L	Discharge Conc ≤ 25% WQBEL
Hexachloroethane	7.39	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.074	µg/L	Discharge Conc < TQL
Isophorone	2,517	µg/L	Discharge Conc < TQL
Naphthalene	2,890	µg/L	Discharge Conc ≤ 25% WQBEL
Nitrobenzene	740	µg/L	Discharge Conc ≤ 25% WQBEL
n-Nitrosodimethylamine	0.052	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.37	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	244	µg/L	Discharge Conc < TQL
Phenanthrene	74.0	µg/L	Discharge Conc < TQL
Pyrene	1,481	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	5.18	µg/L	Discharge Conc < TQL

Thermal Discharge Recommended Permit Limits

Trout Stocking (TSF) Stream

Facility: **ILSCO Extrusions**
Permit Number: PA0034916
Stream: Little Shenango River

	TSF Ambient Stream Temperature (ºF) (Default)	Ambient Stream Temperature (ºF) (Site-specific data)	Target Maximum Stream Temp.[1] (ºF)	**TSF** Daily WLA[2] (Million BTUs/day)	**TSF** Daily WLA[3] (ºF)	at Discharge Flow (MGD)	**PMF**
Jan 1-31	34	0	40	N/A -- Case 2	110.0	0.04608	1.00
Feb 1-29	35	0	40	N/A -- Case 2	110.0	0.04608	1.00
Mar 1-31	39	0	46	N/A -- Case 2	110.0	0.04608	1.00
Apr 1-15	46	0	52	N/A -- Case 2	110.0	0.04608	1.00
Apr 16-30	52	0	58	N/A -- Case 2	110.0	0.04608	1.00
May 1-15	56	0	64	N/A -- Case 2	110.0	0.04608	1.00
May 16-31	60	0	68	N/A -- Case 2	110.0	0.04608	1.00
Jun 1-15	65	0	70	N/A -- Case 2	110.0	0.04608	1.00
Jun 16-30	69	0	72	N/A -- Case 2	110.0	0.04608	1.00
Jul 1-31	73	0	74	N/A -- Case 2	110.0	0.04608	1.00
Aug 1-15	72	0	80	N/A -- Case 2	110.0	0.04608	1.00
Aug 16-31	70	0	87	N/A -- Case 2	110.0	0.04608	1.00
Sep 1-15	68	0	84	N/A -- Case 2	110.0	0.04608	1.00
Sep 16-30	62	0	78	N/A -- Case 2	110.0	0.04608	1.00
Oct 1-15	57	0	72	N/A -- Case 2	110.0	0.04608	1.00
Oct 16-31	53	0	66	N/A -- Case 2	110.0	0.04608	1.00
Nov 1-15	47	0	58	N/A -- Case 2	110.0	0.04608	1.00
Nov 16-30	41	0	50	N/A -- Case 2	110.0	0.04608	1.00
Dec 1-31	36	0	42	N/A -- Case 2	110.0	0.04608	1.00

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

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

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

ILSCO Extrusions - Thermal Discharge Limit Calc

10/18/2023

CALCULATION OF TECHNOLOGY BASED EFFLUENT LIMITS

Case Name: Ilsco Extrusions
NPDES # PA0034916
Suboutfall 103 **Wasteflow:** N/A mgd

Prepared by: Pesek
Date: 7/29/2025

Industry Category and Subcategory: 40 CFR 467 - Subpart C - Aluminum Forming - Extrusion Subcategory
Applicable ELG: 40 CFR 467.32 (BPT) & 467.33 (BAT)
Production Rate Used and Basis For Selection:

(Core) - Die Cleaning Operation
Production Rate: **0.117 lb/10^6 lbs/d** = 29.5 x 10^6 lbs/yr /252 days/10^6 lbs

Parameter	ELG #	Level	ELG Information Max 1-day	ELG Information Avg 30-day	Units	Allowable Mass Loadings (lbs/day) Avg Monthly	Allowable Mass Loadings (lbs/day) Max Daily	Allowable Concentrations (mg/l) Avg Monthly	Allowable Concentrations (mg/l) Max Daily	Allowable Concentrations (mg/l) Inst Max.
TSS	467.32	BPT	15	7.13	Lb/10^6 Lbs	0.83	1.76			
O&G	467.32	BPT	7.32	4.39	Lb/10^6 Lbs	0.51	0.86			
pH	467.32	BPT	7 to 10 at all times							
Chromium (tot.)	467.33	BAT	0.15	0.061	Lb/10^6 Lbs	0.007	0.018			
Zinc	467.33	BAT	0.49	0.21	Lb/10^6 Lbs	0.02	0.06			
Cyanide (tot.)	467.33	BAT	0.098	0.041	Lb/10^6 Lbs	0.005	0.01			
Aluminum	467.33	BAT	2.19	1.09	Lb/10^6 Lbs	0.13	0.26			

CALCULATION OF TECHNOLOGY BASED EFFLUENT LIMITS

Case Name: Ilsco Extrusions
NPDES # PA0034916
Suboutfall 103

Wasteflow: N/A mgd

Prepared by: Pesek
Date: 7/29/2025

Industry Category and Subcategory: 40 CFR 467 - Subpart C - Aluminum Forming - Extrusion Subcategory
Applicable ELG: 40 CFR 467.32 (BPT) & 467.33 (BAT)

(Extrusion Press Leakage)
Production Rate: **0.117 lb/10^6 lbs/d** = 29.5 x 10^6 lbs/yr /252 days/10^6 lbs

Parameter	ELG #	Level	ELG Information Max 1-day	ELG Information Avg 30-day	Units	Allowable Mass Loadings (lbs/day) Avg Monthly	Allowable Mass Loadings (lbs/day) Max Daily	Allowable Concentrations (mg/l) Avg Monthly	Allowable Concentrations (mg/l) Max Daily	Allowable Concentrations (mg/l) Inst Max.
TSS	467.32	BPT	60.6	28.82	Lb/10^6 Lbs	3.37	7.09			
O&G	467.32	BPT	29.56	17.74	Lb/10^6 Lbs	2.08	3.46			
pH	467.32	BPT	7 to 10 at all times							
Chromium (tot.)	467.33	BAT	0.65	0.27	Lb/10^6 Lbs	0.03	0.08			
Zinc	467.33	BAT	2.16	0.9	Lb/10^6 Lbs	0.11	0.25			
Cyanide (tot.)	467.33	BAT	0.43	0.18	Lb/10^6 Lbs	0.02	0.05			
Aluminum	467.33	BAT	9.51	4.73	Lb/10^6 Lbs	0.55	1.11			

CALCULATION OF TECHNOLOGY BASED EFFLUENT LIMITS

Case Name: Ilsco Extrusions
NPDES # PA0034916
Suboutfall 103

Wasteflow: N/A mgd

Prepared by: Pesek
Date: 7/29/2025

Industry Category and Subcategory: 40 CFR 467 - Subpart C - Aluminum Forming - Extrusion Subcategory
Applicable ELG: 40 CFR 467.32 (BPT) & 467.33 (BAT)

(Press Heat Treatment CCW)
Production Rate: **0.117 lb/10^6 lbs/d** = 29.5 x 10^6 lbs/yr /252 days/10^6 lbs

Parameter	ELG #	Level	ELG Information Max 1-day	ELG Information Avg 30-day	Units	Allowable Mass Loadings (lbs/day) Avg Monthly	Allowable Mass Loadings (lbs/day) Max Daily	Allowable Concentrations (mg/l) Avg Monthly	Allowable Concentrations (mg/l) Max Daily	Allowable Concentrations (mg/l) Inst Max.
TSS	467.32	BPT	315.91	150.25	Lb/10^6 Lbs	17.58	36.96			
O&G	467.32	BPT	154.1	92.46	Lb/10^6 Lbs	10.82	18.03			
pH	467.32	BPT	7 to 10 at all times							
Chromium (tot.)	467.33	BAT	0.9	0.37	Lb/10^6 Lbs	0.04	0.11			
Zinc	467.33	BAT	2.98	1.25	Lb/10^6 Lbs	0.15	0.35			
Cyanide (tot.)	467.33	BAT	0.59	0.25	Lb/10^6 Lbs	0.03	0.07			
Aluminum	467.33	BAT	13.1	6.52	Lb/10^6 Lbs	0.76	1.53			

CALCULATION OF TECHNOLOGY BASED EFFLUENT LIMITS

Case Name: Ilsco Extrusions
NPDES # PA0034916
Suboutfall 103 **Wasteflow: N/A mgd**

Prepared by: Pesek
Date: 7/29/2025

Industry Category and Subcategory: **40 CFR 467 - Subpart C - Aluminum Forming - Extrusion Subcategory**
Applicable ELG: 40 CFR **467.32 (BPT) & 467.33 (BAT)**

(Direct Chill Casting CCW)
Production Rate: **0.278 lb/10^6 lbs/d** = 0.967292x 10^8 lbs/yr /348 days/10^6 lbs

Parameter	ELG #	Level	ELG Information Max 1-day	ELG Information Avg 30-day	Units	Allowable Mass Loadings (lbs/day) Avg Monthly	Allowable Mass Loadings (lbs/day) Max Daily	Allowable Concentrations (mg/l) Avg Monthly	Allowable Concentrations (mg/l) Max Daily	Allowable Concentrations (mg/l) Inst Max.
TSS	467.32	BPT	54.49	25.92	Lb/10^6 Lbs	7.21	15.15			
O&G	467.32	BPT	26.58	15.95	Lb/10^6 Lbs	4.43	7.39			
pH	467.32	BPT	7 to 10 at all times							
Chromium (tot.)	467.33	BAT	0.59	0.24	Lb/10^6 Lbs	0.07	0.16			
Zinc	467.33	BAT	1.94	0.81	Lb/10^6 Lbs	0.23	0.54			
Cyanide (tot.)	467.33	BAT	0.39	0.16	Lb/10^6 Lbs	0.04	0.11			
Aluminum	467.33	BAT	8.55	4.26	Lb/10^6 Lbs	1.18	2.38			

CALCULATION OF TECHNOLOGY BASED EFFLUENT LIMITS

Case Name: Ilsco Extrusions
NPDES # PA0034916
Suboutfall 101 **Wasteflow: 0.0461 mgd**

Prepared by: Pesek
Date: 7/29/2025

Industry Category and Subcategory:
Applicable ELG: N/A

Core (Die Cleaning), Extrusion Press Leakage, Press Heat Treatment of CCW & Direct Chill Casting CCW processes.

Production Rate: N/A

			ELG Information			Allowable Mass Loadings (lbs/day)		Allowable Concentrations (mg/l)		
Parameter	ELG #	Level	Max 1-day	Avg 30-day	Units	Avg Monthly	Max Daily	Avg Monthly	Max Daily	Inst Max.
TSS						29.0	61.0	75.4	158.6	188.6
Oil & Grease						17.8	29.7	46.4	77.4	116.1
pH			7 to 10 at all times					7 to 10 at all times		
Chromium (tot.)						0.1	0.4	0.4	0.9	1.0
Zinc						0.5	1.2	1.3	3.1	3.3
Cyanide (tot.)						0.1	0.2	0.3	0.6	6.9
Aluminum						2.6	5.3	6.8	13.7	17.1

This is the total, calculated production allowance for the extrusion related processes. The wasteflow used to convert to the equivalent concentration is the max.flow during batch discharge (32 GPM) from discussion with the consultant.

Flow Data for Thermal Discharge Analysis

Facility: **ILSCO Extrusions**
Permit Number: PA0034916
Stream Name: Little Shenango River
Analyst/Engineer: A. Pesek
Stream Q7-10 (cfs): 5.20676

	Facility Flows				Stream Flows			
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	PMF	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	0	0.04608	0	0.04608	1.00	16.66	16.66	16.73
Feb 1-29	0	0.04608	0	0.04608	1.00	18.22	18.22	18.29
Mar 1-31	0	0.04608	0	0.04608	1.00	36.45	36.45	36.52
Apr 1-15	0	0.04608	0	0.04608	1.00	48.42	48.42	48.49
Apr 16-30	0	0.04608	0	0.04608	1.00	48.42	48.42	48.49
May 1-15	0	0.04608	0	0.04608	1.00	26.55	26.55	26.63
May 16-31	0	0.04608	0	0.04608	1.00	26.55	26.55	26.63
Jun 1-15	0	0.04608	0	0.04608	1.00	15.62	15.62	15.69
Jun 16-30	0	0.04608	0	0.04608	1.00	15.62	15.62	15.69
Jul 1-31	0	0.04608	0	0.04608	1.00	8.85	8.85	8.92
Aug 1-15	0	0.04608	0	0.04608	1.00	7.29	7.29	7.36
Aug 16-31	0	0.04608	0	0.04608	1.00	7.29	7.29	7.36
Sep 1-15	0	0.04608	0	0.04608	1.00	5.73	5.73	5.80
Sep 16-30	0	0.04608	0	0.04608	1.00	5.73	5.73	5.80
Oct 1-15	0	0.04608	0	0.04608	1.00	6.25	6.25	6.32
Oct 16-31	0	0.04608	0	0.04608	1.00	6.25	6.25	6.32
Nov 1-15	0	0.04608	0	0.04608	1.00	8.33	8.33	8.40
Nov 16-30	0	0.04608	0	0.04608	1.00	8.33	8.33	8.40
Dec 1-31	0	0.04608	0	0.04608	1.00	12.50	12.50	12.57

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.
Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017
NOTE: The user can only edit fields that are blue.
NOTE: MGD x 1.547 = cfs.

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16B	56167	Trib 56167 to East Branch Spring Cr	3.680	970.00	98.80	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.41	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
ILSCO Extrusion	PA0034916	0.0305	0.0000	0.0000	0.000	25.00	6.60

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	7.54	0.00	0.00
NH3-N	25.00	0.04	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16B	56167	Trib 56167 to East Branch Spring Cr	**0.010**	936.00	105.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.41	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
16B	56167	Trib 56167 to East Branch Spring Cr

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
3.680	5.21	0.00	5.21	.0472	0.00175	.728	40.63	55.78	0.18	1.263	25.00	7.39
Q1-10 Flow												
3.680	3.33	0.00	3.33	.0472	0.00175	NA	NA	NA	0.14	1.617	25.00	7.38
Q30-10 Flow												
3.680	7.08	0.00	7.08	.0472	0.00175	NA	NA	NA	0.21	1.065	25.00	7.39

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
16B	56167	Trib 56167 to East Branch Spring Cr

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
3.680	ILSCO Extrusion	7.26	50	7.26	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
3.680	ILSCO Extrusion	1.1	25	1.1	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
3.68	ILSCO Extrusion	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
16B	56167	Trib 56167 to East Branch Spring Cr

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.680	0.030	25.000	7.389
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
40.628	0.728	55.778	0.178
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.21	0.061	0.26	1.029
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.499	3.333	Tsivoglou	6
Reach Travel Time (days)			
1.263			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.126	2.19	0.23	7.54
0.253	2.16	0.20	7.54
0.379	2.14	0.18	7.54
0.505	2.12	0.16	7.54
0.632	2.10	0.14	7.54
0.758	2.08	0.12	7.54
0.884	2.06	0.11	7.54
1.011	2.04	0.09	7.54
1.137	2.02	0.08	7.54
1.263	2.00	0.07	7.54

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
16B	56167	Trib 56167 to East Branch Spring Cr

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
3.680	ILSCO Extrusion	PA0034916	0.031	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

7/29/2025

Outfall 001

Facility:	ILSCO Extrusions
Permit Number:	PA0034916 Effective: Pending Expiration: Pending
Outfall No:	103
Location:	Sugar Grove Township, Mercer County
Discharge to:	Little Shenango River
Site Specific Mussel Survey Completed:	No

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	3 MGD / 5.20676 cfs	L. Shenango River @ Greenville Gage
Q_D	Discharge Flow	0.04608 MGD / 0.07131 cfs	
$C_{S(Cl^-)}$	Instream chloride Concentration	0 mg/L	
$C_{E(Cl^-)}$	Discharge chloride (existing)	223 mg/L	2022 Renewal Application
$C_{P(Cl^-)}$	Discharge chloride (proposed)	223 mg/L	2022 Renewal Application
$C_{S(Ni)}$	Instream nickel Concentration	0 µg/L	
$C_{E(Ni)}$	Discharge nickel (existing)	3.2 µg/L	2022 Renewal Application
$C_{P(Ni)}$	Discharge nickel (proposed)	3.2 µg/L	2022 Renewal Application
$C_{S(Zn)}$	Instream zinc Concentration	0 µg/L	
$C_{E(Zn)}$	Discharge zinc (existing)	49 µg/L	2022 Renewal Application
$Zn_{P(Zn)}$	Discharge zinc (proposed)	49 µg/L	2022 Renewal Application
$C_{S(Cu)}$	Instream copper Concentration	0 µg/L	
$C_{E(Cu)}$	Discharge copper (existing)	11.5 µg/L	2022 Renewal Application
$Zn_{P(Cu)}$	Discharge copper (proposed)	11.5 µg/L	2022 Renewal Application
$C_{S(NH3-N)}$	Instream NH^3-N	0.04 mg/L	WQN # 913 (2000-2015 (July-Sept) (Median)
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	0.72 mg/L	2022 Renewal Application
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	0.72 mg/L	2022 Renewal Application
pH_S	Instream pH	7.41 S.U.	WQN #913 (July-Sept)(2000-2015)(Geo Mean)
T_S	Instream Temp.	25 °C	Default value for a TSF
$C_{C(NH3-N)}$	Ammonia criteria	1.087 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
$C_{C(Cu)}$	Copper criteria	10 µg/L	USFWS criteria
W_S	Stream width	70 meters	

Ammonia Criteria Calculations:

	pH_S	7.41	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20° for a CWF and 25° for a WWF)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	4.605		
	EPA 2013 CMC (mg TAN/L) =	6.951	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		6.951	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	1.058	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	1.087	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	per m^2	
Rayed Bean *(Villosa fabalis)*	per m^2	
Clubshell *(Pleurobema clava)*	per m^2	
Sheepnose *(Plethobasus cyphyus)*	per m^2	
Snuffbox *(Epioblasma triquetra)*	per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A	m^2
B.	Chlorides in Existing Discharge:	223	mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:	223	mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:	N/A	m^2

A/B = D/C Therefore, D = (A*C)/B

7/29/2025

Outfall 001

Facility:	ILSCO Extrusions		
Permit Number:	PA0034916	Effective: Pending	Expiration: Pending
Outfall No:	103		
Location:	Sugar Grove Township, Mercer County		
Discharge to:	Little Shenango River		
Site Specific Mussel Survey Completed:	No		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl^-)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)} - C_{S(Cl^-)} \times Q_S$(MGD) X 8.34 =	1,952 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximium Discharge Chloride Loading exceeding criteria = $\{C_{E(CL^-)} - C_{E(CL^-)}\} \times Q_D$(MGD) X 8.34 =	56 lbs/Day
	$\%_{E(Cl^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)} / L_{S(Cl^-)}$ =	3% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cl^-)} - C_{P(Cl^-)}\} \times Q_D$(MGD) X 8.34 =	55.724544 lbs/Day
	$\%_{P(Cl^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)} / L_{S(Cl^-)}$ =	2.85% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(Cl^-)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	2.00 m^2
Nickel(Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)} - C_{S(Ni)} \times Q_S$(MGD) X 8.34 =	183 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximium Discharge Nickel Loading exceeding criteria = $\{C_{E(Ni)} - C_{E(Ni)}\} \times Q_D$(MGD) X 8.34 =	-2 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)} / L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Ni)} - C_{P(Ni)}\} \times Q_D$(MGD) X 8.34 =	-1.57565952 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)} / L_{S(Ni)}$ =	-0.86% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.18 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)} - C_{S(Zn)} \times Q_S$(MGD) X 8.34 =	330 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximium Discharge Zinc Loading exceeding criteria = $\{C_{E(Zn)} - C_{E(Zn)}\} \times Q_D$(MGD) X 8.34 =	14 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)} / L_{S(Zn)}$ =	4% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Zn)} - C_{P(Zn)}\} \times Q_D$(MGD) X 8.34 =	13.7658839 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)} / L_{S(Zn)}$ =	4.17% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	4.26 m^2
Copper (Cu)	$L_{S(Cu)}$ = Available Copper Loading in Stream = $C_{C(Cu)} - C_{S(Cu)} \times Q_S$(MGD) X 8.34 =	250 lbs/Day
	$L_{D\text{-}MAX(Cu)}$ = Current Maximium Discharge Copper Loading exceeding criteria = $\{C_{E(Cu)} - C_{E(Cu)}\} \times Q_D$(MGD) X 8.34 =	1 lbs/Day
	$\%_{E(Cu)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cu)} / L_{S(Cu)}$ =	0% of Stream Capacity
	$L_{D(Cu)}$ = Proposed Discharge Cu Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cu)} - C_{P(Cu)}\} \times Q_D$(MGD) X 8.34 =	0.5764608 lbs/Day
	$\%_{P(Cu)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cu)} / L_{S(Cu)}$ =	0.23% of Stream Capacity
	Proposed Area of Impact due to Copper* = $(\%_{P(Cu)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.01 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)} - C_{S(NH3\text{-}N)} \times Q_S$(MGD) X 8.34 =	26 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximium Discharge NH3-N Loading = $C_{E(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0% of Stream Capacity
	$L_{D(NH3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)} - C_{C(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0.00% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2

7/29/2025

Outfall 001

Facility:	ILSCO Extrusions		
Permit Number:	PA0034916	Effective: Pending	Expiration: Pending
Outfall No:	103		
Location:	Sugar Grove Township, Mercer County		
Discharge to:	Little Shenango River		
Site Specific Mussel Survey Completed:	No		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl^-)	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_DC_{P(Cl^-)} = Q_TC_{C(Cl^-)}$	
	$Q_{A(Cl^-)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_DC_{P(Cl^-)} = (Q_D+Q_S)C_{C(Cl^-)}$	
	SOLVING FOR $Q_{A(Cl^-)} = [(Q_DC_{P(Cl^-)} / C_{C(Cl^-)}) - Q_D)] / (1 - C_{S(Cl^-)}/C_{C(Cl^-)})$ =	0.13256346 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Chlorides to Criteria Concentration = $Q_{A(Cl^-)} / Q_S$ (cfs) =	2.5460%
	$W_{I(Cl^-)}$ = Proposed Width of Stream required to Assimilate Chlorides to Criteria Concentration = W_S X $\%_{P(Cl^-)}$	1.782191 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	1.59 m^2
Nickel (Ni)	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = Q_TC_{C(Ni)}$	
	$Q_{A(Ni)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Ni)}C_{S(Ni)} + Q_DC_{P(Ni)} = (Q_D+Q_S)C_{C(Ni)}$	
	SOLVING FOR $Q_{A(Ni)} = [(Q_DC_{P(Ni)} / C_{C(Ni)}) - Q_D)] / (1 - C_{S(Ni)}/C_{C(Ni)})$ =	-0.04005082 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Nickel to Criteria Concentration = $Q_{A(Ni)} / Q_S$ (cfs) =	-0.7692%
	$W_{I(Ni)}$ = Proposed Width of Stream required to Assimilate Nickel to Criteria Concentration = W_S X $\%_{P(Ni)}$	-0.538446 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.14 m^2
Zinc (Zn)	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = Q_TC_{C(Zn)}$	
	$Q_{A(Zn)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Zn)}C_{S(Zn)} + Q_DC_{P(Zn)} = (Q_D+Q_S)C_{C(Zn)}$	
	SOLVING FOR $Q_{A(Zn)} = [(Q_DC_{PZn)} / C_{C(Zn)}) - Q_D)] / (1 - C_{S(Zn)}/C_{C(Zn)})$ =	0.19380305 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Zinc to Criteria Concentration = $Q_{A(Zn)} / Q_S$ (cfs) =	3.7221%
	$W_{I(Zn)}$ = Proposed Width of Stream required to Assimilate Zinc to Criteria Concentration = W_S X $\%_{PZn)}$	2.605500 meters
	Proposed Area of Impact due to Zinc * = $(W_{IZn)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	3.39 m^2
Copper (Cu)	$Q_{A(Cu)}C_{S(Cu)} + Q_DC_{P(Cu)} = Q_TC_{C(Cu)}$	
	$Q_{A(Cu)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cu)}C_{S(Cu)} + Q_DC_{P(Cu)} = (Q_D+Q_S)C_{C(Cu)}$	
	SOLVING FOR $Q_{A(Cu)} = [(Q_DC_{PCu)} / C_{C(Cu)}) - Q_D)] / (1 - C_{S(Cu)}/C_{C(Cu)})$ =	0.0106965 cfs
	$\%_{P(Cu)}$ = Percent of Stream Width Required to Assimilate Copper to Criteria Concentration = $Q_{A(Cu)} / Q_S$ (cfs) =	0.2054%
	$W_{I(Cu)}$ = Proposed Width of Stream required to Assimilate Copper to Criteria Concentration = W_S X $\%_{PCu)}$	0.143804 meters
	Proposed Area of Impact due to Copper * = $(W_{I(Cu)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.01 m^2
Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_DC_{P(NH3\text{-}N)} = Q_TC_{C(NH3\text{-}N)}$	
	$Q_{A(NH3\text{-}N)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_DC_{P(NH3\text{-}N)} = (Q_D+Q_S)C_{C(NH3\text{-}N)}$	
	SOLVING FOR $Q_{A(NH3\text{-}N)} = [(Q_DC_{P(NH3\text{-}N)} / C_{C(NH3\text{-}N)}) - Q_D)] / (1 - C_{S(NH3\text{-}N)}/C_{C(NH3\text{-}N)})$ =	-0.024996 cfs
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Width Required to Assimilate NH3-N to Criteria Concentration = $Q_{A(NH3\text{-}N)} / Q_S$ (cfs) =	-0.4801%
	$W_{I(NH3\text{-}N)}$ = Proposed Width of Stream required to Assimilate NH3-N to Criteria Concentration = W_S X $\%_{P(NH3\text{-}N)}$	-0.336047 meters
	Proposed Area of Impact due to NH3-N * = $(W_{I(NH3\text{-}N)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.06 m^2

7/29/2025

Outfall 203

Facility:	ILSCO Extrusions
Permit Number:	PA0034916 Effective: Pending Expiration: Pending
Outfall No:	203
Location:	Sugar Grove Township, Mercer County
Discharge to:	Little Shenango River
Site Specific Mussel Survey Completed:	No

Discharge and Stream Characteristics			Comments
Q_S	Stream Flow	3 MGD / 5.20676 cfs	L. Shenango River @ Greenville Gage
Q_D	Discharge Flow	0.02 MGD / 0.03095 cfs	
$C_{S(Cl^-)}$	Instream chloride Concentration	0 mg/L	
$C_{E(Cl^-)}$	Discharge chloride (existing)	67.5 mg/L	2022 Renewal Application
$C_{P(Cl^-)}$	Discharge chloride (proposed)	67.5 mg/L	2022 Renewal Application
$C_{S(Ni)}$	Instream nickel Concentration	0 µg/L	
$C_{E(Ni)}$	Discharge nickel (existing)	0.92 µg/L	2022 Renewal Application
$C_{P(Ni)}$	Discharge nickel (proposed)	0.92 µg/L	2022 Renewal Application
$C_{S(Zn)}$	Instream zinc Concentration	0 µg/L	
$C_{E(Zn)}$	Discharge zinc (existing)	26 µg/L	2022 Renewal Application
$Zn_{P(Zn)}$	Discharge zinc (proposed)	26 µg/L	2022 Renewal Application
$C_{S(Cu)}$	Instream copper Concentration	0 µg/L	
$C_{E(Cu)}$	Discharge copper (existing)	11.1 µg/L	2022 Renewal Application
$Zn_{P(Cu)}$	Discharge copper (proposed)	11.1 µg/L	2022 Renewal Application
$C_{S(NH3-N)}$	Instream NH^3-N	0.04 mg/L	WQN # 913 (2000-2015 (July-Sept) (Median)
$C_{E(NH3-N)}$	Discharge NH^3-N (existing)	0.62 mg/L	2022 Renewal Application
$C_{P(NH3-N)}$	Discharge NH^3-N (proposed)	0.62 mg/L	2022 Renewal Application
pH_S	Instream pH	7.41 S.U.	WQN #913 (July-Sept)(2000-2015)(Geo Mean)
T_S	Instream Temp.	25 °C	Default value for a TSF
$C_{C(NH3-N)}$	Ammonia criteria	1.087 mg/L	From ammonia criteria comparison spreadsheet -using instream pH and Temp
$C_{C(Cl^-)}$	Chloride criteria	78 mg/L	USFWS criteria
$C_{C(Ni)}$	Nickel criteria	7.3 µg/L	USFWS criteria
$C_{C(Zn)}$	Zinc criteria	13.18 µg/L	USFWS criteria
$C_{C(Cu)}$	Copper criteria	10 µg/L	USFWS criteria
W_S	Stream width	70 meters	

Ammonia Criteria Calculations:

	pH_S	7.41	S.U.	*(Default value is 7.0)*
	T_S	25	°C	*(Default value is 20° for a CWF and 25° for a WWF)*

Acute Criteria

	METHOD and UNITS	CRITERIA	Comments	
	Old CMC (mg TAN/L) =	4.605		
	EPA 2013 CMC (mg TAN/L) =	6.951	Oncorhynchus present	* formula on pg. 41 (plateaus at 15.7 C)
		6.951	Oncorhynchus absent	* formula on pg. 42 (plateaus at 10.2 C)

Chronic Criteria

	METHOD and UNITS	CRITERIA	COMMENTS
	Old CMC (mg TAN/L) =	1.058	
$C_{C(NH3-N)}$	EPA 2013 CMC (mg TAN/L) =	1.087	* formula on pg. 46 (plateaus at 7 C)

Endangered Mussel Species Impact Area Calculations:

Existing Area of Impact

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

Approximate Area of Impact Determined from Survey =	N/A m^2	(Enter N/A if no site specific survey has been completed)
Existing Mussel Density within Area of Impact =		
Rabbitsfoot *(Quadrula cylindrical)*	per m^2	
Northern Riffleshell *(Epioblasma torulosa rangiana)*	per m^2	
Rayed Bean *(Villosa fabalis)*	per m^2	
Clubshell *(Pleurobema clava)*	per m^2	
Sheepnose *(Plethobasus cyphyus)*	per m^2	
Snuffbox *(Epioblasma triquetra)*	per m^2	
TOTAL	0 per m^2	

Method 1 - Utilizing Site Specific Mussel Survey Information

☑ N/A - No Site Specific Mussel Survey Completed for this Discharger

This method utilizes a simple comparison of the size of the existing area of impact as determined from a site specific mussel survey and the chlorides in the existing discharge compared to the chlorides in the proposed discharge after the facility upgrades treatment technologies. This method is only applicable to where the stream impairment is caused by TDS and/or chlorides as the plume has been delineated through conductivity measurements.

A.	Area of Impact Determined from Survey:	N/A m^2
B.	Chlorides in Existing Discharge:	68 mg/L
C.	Chlorides in Proposed Discharge after Treatment Facility Upgrades:	67.5 mg/L
D.	Approximate Area of Impact after Treatment Facility Upgrades:	N/A m^2

A/B = D/C Therefore, D = (A*C)/B

7/29/2025

Outfall 001

Facility:	ILSCO Extrusions		
Permit Number:	PA0034916	Effective: Pending	Expiration: Pending
Outfall No:	203		
Location:	Sugar Grove Township, Mercer County		
Discharge to:	Little Shenango River		
Site Specific Mussel Survey Completed:	No		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 2 - Mass Balance Relationship of Loading and Assimilative Capacity of Stream

Chloride (Cl^-)	$L_{S(Cl^-)}$ = Available Chloride Loading in Stream = $C_{C(Cl^-)} - C_{S(Cl^-)} \times Q_S$(MGD) X 8.34 =	1,952 lbs/Day
	$L_{D\text{-}MAX(Cl^-)}$ = Current Maximium Discharge Chloride Loading exceeding criteria = $\{C_{E(CL^-)} - C_{E(CL^-)}\} \times Q_D$(MGD) X 8.34 =	-2 lbs/Day
	$\%_{E(Cl^-)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cl^-)} / L_{S(Cl^-)}$ =	0% of Stream Capacity
	$L_{D(Cl^-)}$ = Proposed Discharge Cl^- Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cl^-)} - C_{P(Cl^-)}\} \times Q_D$(MGD) X 8.34 =	-1.7514 lbs/Day
	$\%_{P(Cl^-)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cl^-)} / L_{S(Cl^-)}$ =	-0.09% of Stream Capacity
	Proposed Area of Impact due to Chloride * = $(\%_{P(Cl^-)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Nickel(Ni)	$L_{S(Ni)}$ = Available Nickel Loading in Stream = $C_{C(Ni)} - C_{S(Ni)} \times Q_S$(MGD) X 8.34 =	183 lbs/Day
	$L_{D\text{-}MAX(Ni)}$ = Current Maximium Discharge Nickel Loading exceeding criteria = $\{C_{E(Ni)} - C_{E(Ni)}\} \times Q_D$(MGD) X 8.34 =	-1 lbs/Day
	$\%_{E(Ni)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Ni)} / L_{S(Ni)}$ =	0% of Stream Capacity
	$L_{D(Ni)}$ = Proposed Discharge Ni Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Ni)} - C_{P(Ni)}\} \times Q_D$(MGD) X 8.34 =	-1.064184 lbs/Day
	$\%_{P(Ni)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Ni)} / L_{S(Ni)}$ =	-0.58% of Stream Capacity
	Proposed Area of Impact due to Nickel * = $(\%_{P(Ni)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.08 m^2
Zinc (Zn)	$L_{S(Zn)}$ = Available Zinc Loading in Stream = $C_{C(Zn)} - C_{S(Zn)} \times Q_S$(MGD) X 8.34 =	330 lbs/Day
	$L_{D\text{-}MAX(Zn)}$ = Current Maximium Discharge Zinc Loading exceeding criteria = $\{C_{E(Zn)} - C_{E(Zn)}\} \times Q_D$(MGD) X 8.34 =	2 lbs/Day
	$\%_{E(Zn)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Zn)} / L_{S(Zn)}$ =	1% of Stream Capacity
	$L_{D(Zn)}$ = Proposed Discharge Zn Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Zn)} - C_{P(Zn)}\} \times Q_D$(MGD) X 8.34 =	2.138376 lbs/Day
	$\%_{P(Zn)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Zn)} / L_{S(Zn)}$ =	0.65% of Stream Capacity
	Proposed Area of Impact due to Zinc * = $(\%_{P(Zn)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.10 m^2
Copper (Cu)	$L_{S(Cu)}$ = Available Copper Loading in Stream = $C_{C(Cu)} - C_{S(Cu)} \times Q_S$(MGD) X 8.34 =	250 lbs/Day
	$L_{D\text{-}MAX(Cu)}$ = Current Maximium Discharge Copper Loading exceeding criteria = $\{C_{E(Cu)} - C_{E(Cu)}\} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{E(Cu)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(Cu)} / L_{S(Cu)}$ =	0% of Stream Capacity
	$L_{D(Cu)}$ = Proposed Discharge Cu Loading exceeding criteria after Treatment Facility Upgrades = $\{C_{P(Cu)} - C_{P(Cu)}\} \times Q_D$(MGD) X 8.34 =	0.18348 lbs/Day
	$\%_{P(Cu)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(Cu)} / L_{S(Cu)}$ =	0.07% of Stream Capacity
	Proposed Area of Impact due to Copper* = $(\%_{P(Cu)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Ammonia-Nitrogen (NH3-N)	$L_{S(NH3\text{-}N)}$ = Available NH3-N Loading in Stream = $C_{C(NH3\text{-}N)} - C_{S(NH3\text{-}N)} \times Q_S$(MGD) X 8.34 =	26 lbs/Day
	$L_{D\text{-}MAX(NH3\text{-}N)}$ = Current Maximium Discharge NH3-N Loading = $C_{E(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{E(NH3\text{-}N)}$ = Percent of Stream Capacity for Current Loading = $L_{D\text{-}MAX(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0% of Stream Capacity
	$L_{D(NH3\text{-}N)}$ = Proposed Discharge NH3-N Loading after Treatment Facility Upgrades = $C_{P(NH3\text{-}N)} - C_{C(NH3\text{-}N)} \times Q_D$(MGD) X 8.34 =	0 lbs/Day
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Capacity for Proposed Loading = $L_{D(NH3\text{-}N)} / L_{S(NH3\text{-}N)}$ =	0.00% of Stream Capacity
	Proposed Area of Impact due to NH3-N * = $(\%_{P(NH3\text{-}N)} \times W_S)^2 \times 0.5$ = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2

7/29/2025

Outfall 001

Facility:	ILSCO Extrusions		
Permit Number:	PA0034916	Effective: Pending	Expiration: Pending
Outfall No:	203		
Location:	Sugar Grove Township, Mercer County		
Discharge to:	Little Shenango River		
Site Specific Mussel Survey Completed:	No		

Endangered Mussel Species Impact Area Calculations: (continued...)

Method 3 - Mass Balance Relationship of Stream Flow, Proposed Effluent Quality, and Mussel Protection Criteria

Chloride (Cl^-)	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = Q_T C_{C(Cl^-)}$	
	$Q_{A(Cl^-)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cl^-)}C_{S(Cl^-)} + Q_D C_{P(Cl^-)} = (Q_D+Q_S)C_{C(Cl^-)}$	
	SOLVING FOR $Q_{A(Cl^-)} = [(Q_D C_{P(Cl^-)} / C_{C(Cl^-)}) - Q_D)] / (1 - C_{S(Cl^-)}/C_{C(Cl^-)})$ =	-0.00416635 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Chlorides to Criteria Concentration = $Q_{A(Cl^-)} / Q_S$ (cfs) =	-0.0800%
	$W_{I(Cl^-)}$ = Proposed Width of Stream required to Assimilate Chlorides to Criteria Concentration = W_S X $\%_{P(Cl^-)}$	-0.056013 meters
	Proposed Area of Impact due to Chloride * = $(W_{I(Cl^-)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Nickel (Ni)	$Q_{A(Ni)}C_{S(Ni)} + Q_D C_{P(Ni)} = Q_T C_{C(Ni)}$	
	$Q_{A(Ni)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Ni)}C_{S(Ni)} + Q_D C_{P(Ni)} = (Q_D+Q_S)C_{C(Ni)}$	
	SOLVING FOR $Q_{A(Ni)} = [(Q_D C_{P(Ni)} / C_{C(Ni)}) - Q_D)] / (1 - C_{S(Ni)}/C_{C(Ni)})$ =	-0.02704945 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Nickel to Criteria Concentration = $Q_{A(Ni)} / Q_S$ (cfs) =	-0.5195%
	$W_{I(Ni)}$ = Proposed Width of Stream required to Assimilate Nickel to Criteria Concentration = W_S X $\%_{P(Ni)}$	-0.363654 meters
	Proposed Area of Impact due to Nickel * = $(W_{I(Ni)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.07 m^2
Zinc (Zn)	$Q_{A(Zn)}C_{S(Zn)} + Q_D C_{P(Zn)} = Q_T C_{C(Zn)}$	
	$Q_{A(Zn)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Zn)}C_{S(Zn)} + Q_D C_{P(Zn)} = (Q_D+Q_S)C_{C(Zn)}$	
	SOLVING FOR $Q_{A(Zn)} = [(Q_D C_{PZn)} / C_{C(Zn)}) - Q_D)] / (1 - C_{S(Zn)}/C_{C(Zn)})$ =	0.03010463 cfs
	$\%_{P(Cl^-)}$ = Percent of Stream Width Required to Assimilate Zinc to Criteria Concentration = $Q_{A(Zn)} / Q_S$ (cfs) =	0.5782%
	$W_{I(Zn)}$ = Proposed Width of Stream required to Assimilate Zinc to Criteria Concentration = W_S X $\%_{PZn)}$	0.404728 meters
	Proposed Area of Impact due to Zinc * = $(W_{IZn)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.08 m^2
Copper (Cu)	$Q_{A(Cu)}C_{S(Cu)} + Q_D C_{P(Cu)} = Q_T C_{C(Cu)}$	
	$Q_{A(Cu)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(Cu)}C_{S(Cu)} + Q_D C_{P(Cu)} = (Q_D+Q_S)C_{C(Cu)}$	
	SOLVING FOR $Q_{A(Cu)} = [(Q_D C_{PCu)} / C_{C(Cu)}) - Q_D)] / (1 - C_{S(Cu)}/C_{C(Cu)})$ =	0.0034045 cfs
	$\%_{P(Cu)}$ = Percent of Stream Width Required to Assimilate Copper to Criteria Concentration = $Q_{A(Cu)} / Q_S$ (cfs) =	0.0654%
	$W_{I(Cu)}$ = Proposed Width of Stream required to Assimilate Copper to Criteria Concentration = W_S X $\%_{PCu)}$	0.045770 meters
	Proposed Area of Impact due to Copper * = $(W_{I(Cu)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.00 m^2
Ammonia-Nitrogen (NH3-N)	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = Q_T C_{C(NH3\text{-}N)}$	
	$Q_{A(NH3\text{-}N)}$ = Assimilative Stream Flow Required to Achieve Criteria (cfs)	
	$Q_T = Q_S + Q_D$ (cfs)	
	$Q_{A(NH3\text{-}N)}C_{S(NH3\text{-}N)} + Q_D C_{P(NH3\text{-}N)} = (Q_D+Q_S)C_{C(NH3\text{-}N)}$	
	SOLVING FOR $Q_{A(NH3\text{-}N)} = [(Q_D C_{P(NH3\text{-}N)} / C_{C(NH3\text{-}N)}) - Q_D)] / (1 - C_{S(NH3\text{-}N)}/C_{C(NH3\text{-}N)})$ =	-0.013805 cfs
	$\%_{P(NH3\text{-}N)}$ = Percent of Stream Width Required to Assimilate NH3-N to Criteria Concentration = $Q_{A(NH3\text{-}N)} / Q_S$ (cfs) =	-0.2651%
	$W_{I(NH3\text{-}N)}$ = Proposed Width of Stream required to Assimilate NH3-N to Criteria Concentration = W_S X $\%_{P(NH3\text{-}N)}$	-0.185593 meters
	Proposed Area of Impact due to NH3-N * = $(W_{I(NH3\text{-}N)})^2$ X 0.5 = * assuming equal flow across transect and 90° spread at discharge	0.02 m^2