Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0232432**
Facility Type	**Industrial**	APS ID	**1116681**
Major / Minor	**Minor**	Authorization ID	**1490200**

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

Applicant and Facility Information

Applicant Name	**PA DOT Engineering District 2-0**	Facility Name	**I-99 J2 ARD Treatment Facility**
Applicant Address	70 PennDOT Drive	Facility Address	28th Division Highway (Atherton Street)
	Clearfield, PA 16830-6051		Port Matilda, PA 16870
Applicant Contact	Eric Murnyack	Facility Contact	Christopher Peacock
Applicant Phone	(814) 765-0435	Facility Phone	(814) 768-0747
Client ID	62168	Site ID	774141
SIC Code	4953	Municipality	Huston Township
SIC Description	Refuse Systems	County	Centre
Date Application Received	June 26, 2024	EPA Waived?	Yes
Date Application Accepted	April 15, 2025	If No, Reason	
Purpose of Application	Renewal of an existing NPDES permit for the I-99 Acid Rock Drainage Treatment Facility.		

Overview

Background

During the test borings for the I-99 construction, PADOT missed the existence of (pyritic) acid rock in the future areas of disturbance. Following the I-99 construction and as part of the acid rock drainage (ARD) remediation efforts, PADOT transported all of the movable acid rock to the nearby Engineered Rock Placement Area (ERPA). The immovable rock, needed for project stabilization and/or support, was left in place. To prevent future ARD, the immovable acid rock was covered with multiple layers of impermeable plastic, as well as lime-kiln dust and synthetic webbing, to shield the acid rock from oxygen and precipitation. The ARD from the immovable rock is routed to a groundwater collection system which conveys the ARD to a treatment system.

The ARD at the disturbed construction areas is generated when exposed pyritic materials come in contact with infiltrated rainwater and/or groundwater. All ARD generated is collected and conveyed by a system consisting of interceptor collection trenches, four pump stations and a network of under-drain pipes and force mains. The primary sources of ARD have been identified as the Pond M Area, the Large Cut Face, the Small Cut Face, the Low Wall and the Bifurication Large Butress.

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		Derek S. Garner / Project Manager	August 21, 2025
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	August 22, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.04
Latitude	40º 49' 51.18"	Longitude	-78º 00' 10.59"
Quad Name	Julian	Quad Code	1222
Wastewater Description:	Acid Rock Drainage (ARD)		

Receiving Waters	Bald Eagle Creek (1)	Stream Code	22412
NHD Com ID	67180118	RMI	4.53
Drainage Area (mi^2)	41.94	Yield (cfs/mi^2)	0.018
Q_{7-10} Flow (cfs)	0.78	Q_{7-10} Basis	USGS Gage No. 01546000
Elevation (ft)	905	Slope (ft/ft)	n/a
Watershed No.	9-C	Chapter 93 Class.	TSF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	n/a	Name	n/a

Nearest Downstream Public Water Supply Intake	PA-American Water Company at Milton, PA		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	1,740
PWS RMI	10.6	Distance from Outfall (mi)	132

(1) Outfall 001's discharge is to an intermittent unnamed tributary of Bald Eagle Creek. A point of first use survey was conducted in May 2013 that confirmed there is limited stream flow and extremely limited mixing. The survey concluded that Bald Eagle Creek should be treated as the point of first use with respect to flow and aquatic life.

Treatment Facility Summary

ARD collected from the disturbed construction areas requires pH adjustment and dissolved metals removal prior to discharge into an ephemeral channel (unnamed tributary to North Bald Eagle Creek). This treatment is accomplished by a limestone pre-treatment pond, an ECOTITE treatment cell, acid or base chemical addition, and polymer addition prior to storage in a 150,000-gallon storage tank for final discharge into the J2 stormwater pond.

The limestone pre-treatment pond is a passive treatment technology commonly used in mine drainage treatment. This pond utilizes high calcium carbonate limestone to provide polishing pre-treatment for ARD to precipitate and remove the dissolved metals (primarily aluminum) and help increase pH and alkalinity levels.

The ECOTITE treatment cell removes additional metals and adjusts pH levels. According to the 2007 paper "*Assessment of ECOTITE for use in Acid Rock Drainage Treatment*" by Terry W. Schmidt, PE (Skelly & Loy) and Bradley R. Shultz, EIT (Skelly & Loy), ECOTITE is a material composed of approximately one third iron by weight including the minerals ackermanite, magnetite, hematite, goethite, monoxides, metallic iron and iron sulfides. ECOTITE has the ability to generate alkalinity through dissolution of calcium-silicate minerals with relatively short contact times. Ferric oxides within ECOTITE provide adsorption capacity for metal retention. The Horsehead Corporation generates ECOTITE material during the recycling and zinc recovery from Electric Arc Furnace (EAF) Dust.

The system was designed to handle a monthly average flow of 0.040 MGD, a maximum daily flow of 0.160 MGD and a long-term average flow of 0.040 MGD.

This design, construction and operation was authorized by Water Quality Management (WQM) permit no. 1415201, issued April 14, 2015.

The flushing of solids from the both the limestone bed and the ECOTITE treatment cell are conveyed to the 150,000-gallon storage tank. Solids/Sludge from the 150,000-gallon storage tank will be dewatered with Geotubes, which will later be disposed of off-site at an approved landfill. Any exhausted ECOTITE material will be disposed of at the manufacturer's
site.

Compliance History

The facility was most recently inspected by DEP on August 15, 2024. The inspection report indicated that all treatment units were operable and there was no impact in the J2 pond.

The following effluent violations occurred during the existing permit's term:

Noncompliance Date	Noncompliance Description	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
3/24/2020	Violation of permit condition	Aluminum, Total	0.85	>	0.75	mg/L	Daily Maximum
3/30/2021	Late DMR Submission	---	---	---	---	---	---
4/29/2021	Late DMR Submission	---	---	---	---	---	---
8/23/2021	Violation of permit condition	Aluminum, Total	0.835	>	0.75	mg/L	Daily Maximum
9/29/2021	Late DMR Submission	---	---	---	---	---	---
10/27/2021	Violation of permit condition	Aluminum, Total	< 0.50	>	0.25	lbs/day	Average Monthly
10/27/2021	Violation of permit condition	Aluminum, Total	0.80	>	0.25	lbs/day	Daily Maximum
10/27/2021	Violation of permit condition	pH	11.1	>	9.0	S.U.	Instantaneous Maximum
11/22/2021	Violation of permit condition	Aluminum, Total	0.90	>	0.25	lbs/day	Average Monthly
11/22/2021	Violation of permit condition	Aluminum, Total	1.03	>	0.25	lbs/day	Daily Maximum
11/22/2021	Violation of permit condition	Manganese, Total	0.50	>	0.33	lbs/day	Average Monthly
11/22/2021	Violation of permit condition	pH	10.38	>	9.0	S.U.	Instantaneous Maximum
12/20/2021	Violation of permit condition	Aluminum, Total	0.90	>	0.75	mg/L	Average Monthly
12/20/2021	Violation of permit condition	Aluminum, Total	1.17	>	0.75	mg/L	Daily Maximum
12/20/2021	Violation of permit condition	Aluminum, Total	1.18	>	0.25	lbs/day	Average Monthly
12/20/2021	Violation of permit condition	Aluminum, Total	2.57	>	0.25	lbs/day	Daily Maximum
12/20/2021	Violation of permit condition	Iron, Total	1.60	>	0.50	lbs/day	Average Monthly
12/20/2021	Violation of permit condition	Iron, Total	3.14	>	1.00	lbs/day	Daily Maximum
12/20/2021	Violation of permit condition	Manganese, Total	0.50	>	0.33	lbs/day	Average Monthly
12/20/2021	Violation of permit condition	Manganese, Total	1.10	>	0.66	lbs/day	Daily Maximum
12/20/2021	Violation of permit condition	pH	9.7	>	9.0	S.U.	Instantaneous Maximum
12/20/2021	Violation of permit condition	Zinc, Total	0.70	>	0.63	lbs/day	Daily Maximum
1/20/2022	Violation of permit condition	Aluminum, Total	0.79	>	0.75	mg/L	Daily Maximum
2/21/2022	Violation of permit condition	Aluminum, Total	1.10	>	0.75	mg/L	Average Monthly
2/21/2022	Violation of permit condition	Aluminum, Total	1.17	>	0.75	mg/L	Daily Maximum
3/10/2022	Violation of permit condition	Aluminum, Total	0.30	>	0.25	lbs/day	Average Monthly
3/10/2022	Violation of permit condition	Aluminum, Total	0.60	>	0.25	lbs/day	Daily Maximum
3/10/2022	Violation of permit condition	Aluminum, Total	0.894	>	0.75	mg/L	Daily Maximum
1/13/2023	Late DMR Submission	---	---	---	---	---	---
1/31/2023	Late DMR Submission	---	---	---	---	---	---
2/13/2023	Violation of permit condition	Aluminum, Total	0.30	>	0.25	lbs/day	Average Monthly
2/13/2023	Violation of permit condition	Aluminum, Total	0.70	>	0.25	lbs/day	Daily Maximum

Noncompliance Date	Noncompliance Description	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
2/13/2023	Violation of permit condition	Aluminum, Total	1.63	>	0.75	mg/L	Daily Maximum
8/29/2023	Late DMR Submission	---	---	---	---	---	---
1/29/2024	Late DMR Submission	---	---	---	---	---	---
1/24/2025	Violation of permit condition	Aluminum, Total	0.30	>	0.25	lbs/day	Average Monthly
1/24/2025	Violation of permit condition	Aluminum, Total	0.40	>	0.25	lbs/day	Daily Maximum
1/24/2025	Violation of permit condition	Aluminum, Total	0.95	>	0.75	mg/L	Average Monthly
1/24/2025	Violation of permit condition	Aluminum, Total	1.01	>	0.75	mg/L	Daily Maximum
2/26/2025	Violation of permit condition	Aluminum, Total	0.92	>	0.75	mg/L	Average Monthly
2/26/2025	Violation of permit condition	Aluminum, Total	1.03	>	0.75	mg/L	Daily Maximum
4/23/2025	Violation of permit condition	Aluminum, Total	0.807	>	0.75	mg/L	Daily Maximum

A Notice of Violation dated December 28, 2022 was sent to the permittee summarizing effluent limit exceedances from 2018 to 2022. As demonstrated by the table above, the permittee continues to demonstrate chronic exceedances of effluent limitations in cold-weather months.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.04
Latitude 40º 49' 47.20" **Longitude** -77º 59' 29.30"
Wastewater Description: Acid Rock Drainage (ARD)

Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	State Regulation
pH	6.0	Minimum	95.2(1)
	9.0	IMAX	95.2(1)
Dissolved Iron	7.0	IMAX	95.2(4)

Water Quality-Based Limitations

Water Quality Modeling

DEP models in-stream conditions to determine if WQBELs are appropriate. The discharge and receiving stream were modeled using the Toxics Management Spreadsheet v1.4 (TMS). TMS is a single discharge model that assigns a partial mixing factor based upon surface water and discharge characteristics.

Effluent concentration data was taken from two sources. Maximum concentrations from eDMR were used, if available. If not, then maximum concentrations reported in the application's pollutant groups were used. If eDMR data was available, the discrete maximum daily concentrations were entered into the TOX_CONC spreadsheet to calculate average monthly concentrations and daily coefficients of variation.

Next, the TOX_CONC results or maximum concentrations from the application's pollutant groups were entered into TMS. TMS then recommends either reporting, effluent limits, or taking no action. Based on the best available data, the following requirements are proposed:

	Mass Limits		Concentration Limits					
Pollutants	**AML (lbs/day)**	**MDL (lbs/day)**	**AML**	**MDL**	**IMAX**	**Units**	**Governing WQBEL**	**WQBEL Basis**
Total Cadmium (1)	Report	Report	Report	Report	Report	µg/L	3.67	CFC
Hexavalent Chromium (2)	0.045	0.07	136	210	340	µg/L	136	CFC
Free Cyanide (3)	Report	Report	Report	Report	Report	µg/L	52.3	THH
Total Lead (2)	0.015	0.023	44.3	69.1	111	µg/L	44.3	CFC
Total Mercury (2)	0.0002	0.0003	0.65	1.1	1.63	µg/L	0.65	THH
Total Selenium (1)	Report	Report	Report	Report	Report	µg/L	65.2	CFC
Total Thallium (2)	0.001	0.002	3.14	5.57	7.84	µg/L	3.14	THH
Total Zinc (1)	Report	Report	Report	Report	Report	µg/L	1,633	CFC

(1) Discharge concentration > 10% WQBEL (no reasonable potential)
(2) Discharge concentration ≥ 50% WQBEL (reasonable potential)
(3) Discharge concentration > 25% WQBEL (no reasonable potential)

Modeling input/output data is attached.

DEP generally does not evaluate BOD5 and ammonia-n limitations if maximum BOD5 concentrations do not exceed 30 mg/L in the effluent. Since the maximum effluent concentration in the application is only 17.4 mg/L no modeling was completed for BOD or ammonia-n.

Total Maximum Daily Load

A Total Maximum Daily Load (TMDL) was developed for the West Branch Susquehanna River to address impairments noted in the 1996 PA 303(d) List. This receiving stream is impaired for metals and pH caused by abandoned mine drainage. To comply with this TMDL, approved by EPA in 2009, the Department must (in the absence of an assigned waste-load allocation) limit the pollutants of concern to the water quality criteria values (specified in 25 PA § 93.7 and § 93.8c). By doing so, a proposed discharge cannot be expected to contribute to the existing impairment. As a major tributary to the West Branch Susquehanna River, Bald Eagle Creek must be held to the same quality standards. Because the source of the wastewater is precipitation, there is no decrease in the assimilative capacity of the stream with respect to the TMDL pollutants of concern.

The following limitations are required to comply with the TMDL:

Parameter	Limit (mg/L)	SBC
Total Aluminum	0.75	Monthly Average
Total Iron	1.50	Monthly Average
Total Manganese	1.00	Monthly Average

Additional Considerations

Total Dissolved Solids Considerations

In accordance with DEP's *Policy and Procedure for NPDES Permitting of TDS Discharges (385-2100-002)*, this "New Discharge Treating Wastewater other than Natural Gas Wastewater" was classified as *Unaffected* at the original issuance in 2014. With 39 samples reported in that application, the average TDS value was 1,112 mg/L and the maximum was 1,604 mg/L. Since these samples had the potential to exceed the 2,000 mg/L concentration threshold identified in 25 PA § 95.10(c) but not exceed the 5,000 pounds/day mass threshold identified in 25 PA § 95.10(a)(7), monitoring was included. In addition to TDS, monitoring was established for sulfate and chlorides (TDS constituents). The current application contains a maximum daily concentration of 830 mg/L.

DEP recommends existing monitoring for TDS, sulfate, and chlorides remains in the permit.

Chesapeake Bay

Per Phase 3 of the Wastewater Supplement to DEP's Chesapeake Bay Watershed Implementation Plan, this is a non-significant industrial wastewater discharge. It is not anticipated that this discharge will contribute a net loading increase of total nitrogen and total phosphorus to the watershed. Accordingly, per the Wastewater Supplement, no cap loads or reporting requirements for total nitrogen or total phosphorus are necessary.

Best Professional Judgment

DEP standard operating procedure is to generally establish a reporting requirement for oil and grease when the effluent concentration exceeds 4.0 mg/L in the application. This application contained a maximum effluent concentration of 5.25 mg/L. Consequently, it is recommended existing oil and grease reporting requirements remain in the permit.

Anti-Backsliding

Per 40 CFR 122.44(l)(2)(i)(B)(1), which allows for less stringent requirements when taking into consideration data that was not available at the time of previous permit issuance and based on samples collected during the existing permit's term, DEP has recommended that total lead and total thallium have less stringent effluent limits.

DEP also recommends that total cadmium, free cyanide, total selenium, and total zinc remain in the permit, but that the numerical limits are replaced with reporting requirements.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	2/month	Grab
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Aluminum, Total	0.25	0.25	XXX	0.75	0.75	0.75	2/month	24-Hr Composite
Cadmium, Total	0.001	0.002	XXX	0.003	0.006	0.007	2/month	24-Hr Composite
Chromium, Hexavalent	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Cyanide, Free	0.02	0.04	XXX	0.06	0.12	0.15	2/month	24-Hr Composite
Iron, Dissolved	XXX	XXX	XXX	XXX	XXX	7.0	2/month	Grab
Iron, Total	0.50	1.00	XXX	1.50	3.00	3.75	2/month	24-Hr Composite
Lead, Total	0.014	0.028	XXX	0.043	0.09	0.11	2/month	24-Hr Composite
Manganese, Total	0.33	0.66	XXX	1.00	2.00	2.5	2/month	24-Hr Composite
Mercury, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Selenium, Total	0.022	0.044	XXX	0.067	0.13	0.17	2/month	24-Hr Composite
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Thallium, Total	0.001	0.002	XXX	0.003	0.006	0.007	2/month	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Zinc, Total	0.31	0.63	XXX	0.95	1.90	2.37	2/month	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite

Compliance Sampling Location: Outfall 001

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	2/month	Grab
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Aluminum, Total	0.25	0.25	XXX	0.75	0.75	0.75	2/month	24-Hr Composite
Cadmium, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Chromium, Hexavalent (ug/L)	0.045	0.07	XXX	136.0	210.0	340	2/month	24-Hr Composite
Cyanide, Free (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Iron, Dissolved	XXX	XXX	XXX	XXX	XXX	7.0	2/month	Grab
Iron, Total	0.50	1.00	XXX	1.50	3.00	3.75	2/month	24-Hr Composite
Lead, Total (ug/L)	0.015	0.023	XXX	44.3	69.1	111	2/month	24-Hr Composite
Manganese, Total	0.33	0.66	XXX	1.00	2.00	2.5	2/month	24-Hr Composite
Mercury, Total (ug/L)	0.0002	0.0003	XXX	0.65	1.1	1.63	2/month	24-Hr Composite
Selenium, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Thallium, Total (ug/L)	0.001	0.002	XXX	3.14	5.57	7.84	2/month	24-Hr Composite
Zinc, Total (ug/L)	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	2/month	24-Hr Composite

Facility: I-99 Js ARD Treatment Facility
NPDES #: PA0232432
Outfall No: 001
n (Samples/Month): 4
Reviewer/Permit Engineer: Derek Garner

Parameter Name	Total Aluminum	Total Cadmium	Chloride	Free Cyanide	Dissolved Iron	Total Iron	Total Lead	Total Manganese	Total Mercury	Total Selenium	Sulfate	Total Thallium	TDS
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limit	0.003	0.000003	0.9	0.0005	0.013	0.05	0.000034	0.02	0.0000932	0.00167		0.000017	
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*												
	0.09	0.00008	132	0.02	0.26	0.46	0.005	0.43	0.0002	0.005	318	0.0002	787
	0.2	0.00006	73	0.02	0.05	0.62	0.005	0.4	0.0002	0.005	295	0.0002	773
	0.02	0.00006	44	0.02	0.05	0.54	0.005	0.53	0.0002	0.005	314	0.0002	680
	0.2	0.00006	31	0.02	0.05	0.53	0.005	0.35	0.0002	0.005	271	0.0002	613
	0.06	0.00004	21	0.02	0.06	0.36	0.005	0.27	0.0002	0.005	325	0.0002	683
	0.01	0.00003	17	0.02	0.05	0.09	0.005	0.16	0.0002	0.009	329	0.0002	655
	0.006	0.00001	7	0.02	0.05	0.12	0.005	0.3	0.0002	0.006	340	0.0002	682
	0.003	0.000009	5	0.02	0.05	ND	0.005	0.21	0.0002	0.006	363	0.0002	697
	0.002	0.000009	4	0.02	0.1	0.12	0.005	0.21	0.0002	0.005	349	0.0002	665
	0.004	0.000008	14	0.02	ND	0.13	0.008	0.314	0.02	0.02	329	0.0002	632
	0.03	0.00002	13	0.02	0.05	0.11	0.005	0.23	0.0002	0.005	330	0.0002	648
	0.07	0.00003	20	0.02	0.05	0.15	0.005	0.24	0.001	0.005	277	0.0002	672
	0.05	0.00004	45	0.02	0.05	0.1	0.005	0.14	0.001	0.005	303	0.0002	791
	0.07	0.00006	86	0.02	0.05	0.2	0.005	0.25	0.0002	0.007	330	0.0002	1055
	0.09	0.00008	96	0.02	0.05	0.07	0.005	0.08	0.0002	0.005	247	0.0002	844
	0.01	0.0003	17	0.01	0.2	0.2	0.008	0.589	0.0002	0.2	289	0.0005	3730
	0.06	0.0003	15	0.005	0.2	0.2	0.008	0.73	0.0002	0.02	291	0.0005	784
	0.07	0.0004	17	0.005	0.2	0.2	0.008	0.473	0.2	0.02	270	0.0005	572
	0.2	0.0005	24	0.01	0.2	0.2	0.008	0.35	0.0002	0.02	307	0.0005	670
	0.02	0.0005	20	0.01	0.2	0.2	0.008	0.149	0.0002	0.02	289	0.0005	538
	0.8	0.0003	255	0.01	0.2	0.2	0.003	ND	0.0002	0.02	297	0.0005	640
	1.03	0.0003	229	0.01	0.2	0.2	0.008	0.29	0.0002	0.006	305	0.0005	548
	2.57	0.0003	244	0.006	0.2	1.74	0.0005	0.5	0.0002	ND	313	0.0005	586
	0.1	0.0002	14	0.01	0.36	0.89	0.0005	0.58	0.0002	ND	322	0.0005	612
	0.2	0.00002	19	0.005	0.224	0.882	0.0005	0.726	0.0002	0.013	302	0.0005	628
	0.6	0.00008	116	0.005	0.2	0.607	0.0005	0.605	0.0002	ND	266	0.0005	626
	0.1	0.00003	44	0.005	0.2	0.308	0.0005	0.258	0.0002	ND	249	0.0005	904
	0.1	0.00004	43	ND	0.2	0.2	0.0005	0.221	0.001	ND	275	0.0005	654
	0.06	0.00003	36	0.006	0.2	1	0.0005	0.1	0.0002	ND	260	0.0005	630
	0.008	0.000006	24	0.005	0.2	1	0.0005	0.037	0.0002	ND	292	0.0005	604
	0.01	0.000007	29	0.005	0.2	1	0.0005	0.037	0.0002	ND	292	0.0005	604
	0.007	0.000009	7	0.001	0.2	0.2	0.0005	0.0227	0.0002	ND	306	0.0005	640
	0.006	0.000007	8	0.005	0.4	0.2	0.0005	0.0396	0.0002	ND	322	0.0005	634
	0.06	0.00003	26	0.005	0.2	0.2	0.0005	0.033	0.0002	ND	316	0.0005	620
	0.02	0.00002	ND	0.005	0.2	0.2	0.0005	0.0182	0.001	ND	336	0.0005	574
	0.02	0.00002	23	0.005	0.2	0.2	0.0005	0.0584	0.002	ND	334	0.0005	774
	0.03	0.00003	338	0.005	0.2	0.2	0.0005	0.0714	0.0002	ND	292	0.0005	970
	0.7	0.00005	66	0.005	0.2	0.391	0.0005	0.14	0.0002	ND	250	0.0005	562
	0.03	0.00003	61	0.005	0.2	0.2	0.0005	0.0338	0.0002	ND	306	0.0005	680
	0.06	0.00004	120	0.003	0.2	0.2	0.0005	0.122	0.0002	ND	230	0.0005	810
	0.03	0.001	41	0.002	0.2	0.2	0.008	0.0655	0.0005	0.0025	262	0.00383	578
	0.04	0.0009	47	ND	0.2	0.2	0.008	0.0409	0.0001	0.02	278	0.0023	625
	0.006	0.000008	34	ND	0.2	0.2	0.0001	0.0221	0.0005	0.02	273	0.0001	618
	0.04	0.00004	39	ND	0.2	1	0.0005	0.024	0.0001	0.02	274	0.0005	592
	0.09	0.0008	27	0.005	0.2	0.2	0.008	0.0607	0.0005	0.0025	324	0.00498	624
	0.02	0.00001	63	0.01	0.2	0.2	0.0001	0.0251	0.001	0.02	314	0.0001	620
	0.004	0.000003	15	0.005	0.2	0.2	0.0001	0.0378	0.0001	0.0025	330	0.0001	620
	0.05	0.000009	37	0.005	0.2	0.2	0.0001	0.108	0.0005	0.0025	292	0.0001	574
	0.08	0.00003	28	0.005	0.2	0.265	0.0005	0.237	0.00158	0.0025	259	0.0005	582

Parameter Name	Total Aluminum	Total Cadmium	Chloride	Free Cyanide	Dissolved Iron	Total Iron	Total Lead	Total Manganese	Total Mercury	Total Selenium	Sulfate	Total Thallium	TDS
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limit	0.003	0.000003	0.9	0.0005	0.013	0.05	0.000034	0.02	0.0000932	0.00167		0.000017	
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*												
	0.02	0.000006	34	0.005	0.2	0.2	0.0001	0.041	0.000678	0.0025	269	0.0001	830
	0.1	0.00001	24	0.005	0.2	0.2	0.0001	0.241	0.0001	0.0025	275	0.0001	628
	0.05	0.000007	27	0.005	0.2	0.2	ND	0.0722	ND	0.0025	263	0.000044	614
	0.05	0.00007	49	0.005	0.2	1	ND	0.0252	ND	0.0025	268	0.00068	590
	0.1	0.00002	61	0.006	0.2	1	ND	0.0585	ND	0.0025	266	ND	536
	0.02	0.0001	25	0.005	0.2	0.233	0.0005	0.25	ND	0.0025	288	0.0002	554
	0.01	ND	8	0.005	0.2	0.2	0.000081	0.0336	0.000466	0.0025	335	0.00002	656
	0.08	0.00001	36	0.001	0.2	0.2	0.000069	0.0176	ND	0.0025	288	0.000027	536
	0.06	0.00001	54	0.005	0.2	0.2	ND	0.11	ND	0.0025	370	0.000023	586
	ND	0.000008	6	0.005	0.2	0.2	0.000172	0.0808	ND	0.0025	318	0.000069	674
	0.04	0.000005	8	0.005	0.2	0.2	ND	0.232	ND	0.0125	315	0.000024	608
	0.4	0.00002	86	ND	0.2	1.48	0.000159	0.522	ND	0.0025	256	0.000027	636
	0.05	0.000009	5	0.003	0.2	1.71	0.000089	0.812	ND	0.0025	289	0.000036	662
	0.2	0.00003	57	0.005	0.2	0.295	0.000097	0.464	ND	0.0125	261	0.000035	856
	0.08	0.00001	11	ND	0.2	0.816	0.000097	0.278	ND	0.0025	258	0.00003	592
	0.05	0.00001	11	ND	0.344	0.486	0.000097	0.379	ND	0.0025	268	0.000071	564
	0.2	0.00005	44	ND	0.2	0.283	0.000097	0.278	ND	0.0025	235	0.00003	544
	0.03	0.00002	14	ND	0.2	0.2	0.000097	0.073	ND	0.0025	267	0.00003	532
	0.08	0.00004		ND	0.2	0.2	0.000097	0.402		0.0025			594

Parameter Name	Total Zinc	Cr(VI)										
Units	mg/L	mg/L										
Detection Limit	0.0044	0.00005										
Sample Date												
	0.173	0.008										
	0.169	0.01										
	0.196	0.01										
	0.14	0.006										
	0.093	0.004										
	0.043	0.003										
	0.111	0.001										
	0.06	0.003										
	0.113	0.000009										
	0.159	0.0008										
	0.105	0.002										
	0.1	0.003										
	0.064	0.004										
	0.141	0.006										
	0.037	0.008										
	0.083	0.006										
	0.203	0.007										
	0.178	0.007										
	0.177	ND										
	0.056	5										
	0.02	0.1										
	0.0977	0.1										
	0.301	0.1										
	0.23	0.006										
	0.292	0.009										
	0.201	0.03										
	0.102	0.01										
	0.146	0.02										
	0.1	0.01										
	0.00817	0.01										
	0.00817	0.01										
	0.0125	0.004										
	0.0125	0.004										
	0.0125	0.01										
	0.0125	0.008										
	0.0215	0.008										
	0.0137	0.01										
	0.0586	0.02										
	0.021	0.02										
	0.0277	0.02										
	0.02	0.01										
	0.02	0.06										
	0.0116	0.02										
	0.0125	0.02										
	0.05	0.01										
	0.00978	0.03										
	0.0161	0.006										
	0.0418	0.02										
	0.0907	0.01										

Parameter Name	Total Zinc	Cr(VI)											
Units	mg/L	mg/L											
Detection Limit	0.0044	0.00005											
Sample Date													
	0.0163	0.01											
	0.0913	0.01											
	0.0387	0.01											
	0.00824	0.005											
	0.0108	0.03											
	0.012	0.01											
	0.0125	0.004											
	0.00586	0.005											
	0.0104	0.0005											
	ND	0.003											
	0.109	0.005											
	0.233	0.02											
	0.5	0.002											
	0.31	0.01											
	0.177	0.005											
	0.188	0.005											
	0.0612	0.02											
	0.0319	0.007											
		0.02											

Reviewer/Permit Engineer: Derek Garner

Facility: I-99 Js ARD Treatment Facility
NPDES #: PA0232432
Outfall No: 001
n (Samples/Month): 4

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Total Aluminum (mg/L)	Delta-Lognormal	2.6280119	0.8155201
Total Cadmium (mg/L)	Delta-Lognormal	2.6357295	0.0005971
Chloride (mg/L)	Delta-Lognormal	1.3034888	160.6975515
Free Cyanide (mg/L)	Delta-Lognormal	0.9954378	0.0210745
Dissolved Iron (mg/L)	Delta-Lognormal	0.6253031	0.3585002
Total Iron (mg/L)	Delta-Lognormal	0.8798488	0.9123924
Total Lead (mg/L)	Delta-Lognormal	#NAME?	0.0292470
Total Manganese (mg/L)	Delta-Lognormal	1.5540658	0.9801134
Total Mercury (mg/L)	Delta-Lognormal	2.3193577	0.0031756
Total Selenium (mg/L)	Delta-Lognormal	1.4009239	0.0236776
Sulfate (mg/L)	Lognormal	0.1062235	332.6650677
Total Thallium (mg/L)	Delta-Lognormal	1.8380395	0.0020619
TDS (mg/L)	Lognormal	0.2608509	923.0601061
Total Zinc (mg/L)	Delta-Lognormal	1.7820097	0.4567530
Cr(VI) (mg/L)	Delta-Lognormal	3.0731090	0.1898910

Discharge Information

Instructions | Discharge | Stream

Facility: **I-99 J2 ARD Treatment Facility** NPDES Permit No.: **PA0232432** Outfall No.: **001**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **Acid Rock Drainage (ARD)**

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
0.04	165.8	7						

					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		830									
	Chloride (PWS)	mg/L		161			1.3						
	Bromide	mg/L		0.02									
	Sulfate (PWS)	mg/L		333			0.106						
	Fluoride (PWS)	mg/L		0.6									
Group 2	Total Aluminum	µg/L		816			2.63						
	Total Antimony	µg/L		0.35									
	Total Arsenic	µg/L		2.5									
	Total Barium	µg/L		36.7									
	Total Beryllium	µg/L		0.68									
	Total Boron	µg/L		134									
	Total Cadmium	µg/L		0.6			2.64						
	Total Chromium (III)	µg/L		1.99									
	Hexavalent Chromium	µg/L		190			3.07						
	Total Cobalt	µg/L		0.6									
	Total Copper	µg/L		2.21									
	Free Cyanide	µg/L		21.1			1						
	Total Cyanide	µg/L		6									
	Dissolved Iron	µg/L		358			0.63						
	Total Iron	µg/L		912			0.88						
	Total Lead	µg/L		29.2									
	Total Manganese	µg/L		980			1.55						
	Total Mercury	µg/L		3.18			2.32						
	Total Nickel	µg/L		3.21									
	Total Phenols (Phenolics) (PWS)	µg/L		93									
	Total Selenium	µg/L		23.7			1.4						
	Total Silver	µg/L		0.27									
	Total Thallium	µg/L		2.06			1.84						
	Total Zinc	µg/L		457			1.78						
	Total Molybdenum	µg/L		0.2									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<		8/13/2	25							

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

	2,4-Dinitrotoluene	µg/L	<										
	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
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											

Stream / Surface Water Information

I-99 J2 ARD Treatment Facility, NPDES Permit No. PA0232432, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Bald Eagle Creek**

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	022412	43.34	901	41.5			Yes
End of Reach 1	022412	41.36	865	49.08			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	43.34	0.018										100	7		
End of Reach 1	41.36	0.018													

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	43.34														
End of Reach 1	41.36														

Model Results

I-99 J2 ARD Treatment Facility, NPDES Permit No. PA0232432, Outfall 001

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

☑ ***Hydrodynamics***

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
43.34	0.75		0.75	0.062	0.003	0.543	18.698	34.443	0.08	1.518	17.412
41.36	0.88		0.883								

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)
43.34	5.76		5.76	0.062	0.003	1.294	18.698	14.455	0.241	0.503	5.433
41.36	6.667		6.67								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.928 Analysis Hardness (mg/l): 105.39 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	9,153	
Total Antimony	0	0		0	1,100	1,100	13,425	
Total Arsenic	0	0		0	340	340	4,150	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	256,294	
Total Boron	0	0		0	8,100	8,100	98,856	
Total Cadmium	0	0		0	2.119	2.25	27.5	Chem Translator of 0.942 applied
Total Chromium (III)	0	0		0	594.802	1,882	22,972	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	199	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,159	
Total Copper	0	0		0	14.121	14.7	180	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	22	22.0	268	
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	68.378	87.3	1,065	Chem Translator of 0.783 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	20.1	Chem Translator of 0.85 applied
Total Nickel	0	0		0	489.506	490	5,986	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.521	4.14	50.6	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	793	
Total Zinc	0	0		0	122.512	125	1,529	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 17.412 PMF: 1 Analysis Hardness (mg/l): 105.03 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	2,876	
Total Arsenic	0	0		0	150	150	1,961	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	53,594	
Total Boron	0	0		0	1,600	1,600	20,915	
Total Cadmium	0	0		0	0.255	0.28	3.67	Chem Translator of 0.907 applied
Total Chromium (III)	0	0		0	77.156	89.7	1,173	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	136	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	248	
Total Copper	0	0		0	9.340	9.73	127	Chem Translator of 0.96 applied
Free Cyanide	0	0		0	5.2	5.2	68.0	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	19,608	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.655	3.39	44.3	Chem Translator of 0.784 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	11.8	Chem Translator of 0.85 applied
Total Nickel	0	0		0	54.213	54.4	711	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	65.2	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	170	
Total Zinc	0	0		0	123.159	125	1,633	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 17.412 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	

Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	73.2	
Total Arsenic	0	0		0	10	10.0	131	
Total Barium	0	0		0	2,400	2,400	31,372	
Total Boron	0	0		0	3,100	3,100	40,522	
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	52.3	
Dissolved Iron	0	0		0	300	300	3,922	
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	13,072	
Total Mercury	0	0		0	0.050	0.05	0.65	
Total Nickel	0	0		0	610	610	7,974	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	3.14	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 5.433 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	

☑ ***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 Cadmium	Report	Report	Report	Report	Report	µg/L	3.67	CFC	Discharge Conc > 10% WQBEL (no RP)
Hexavalent Chromium	0.045	0.07	136	210	340	µg/L	136	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Free Cyanide	Report	Report	Report	Report	Report	µg/L	52.3	THH	Discharge Conc > 25% WQBEL (no RP)
Total Lead	0.015	0.023	44.3	69.1	111	µg/L	44.3	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Mercury	0.0002	0.0004	0.65	1.1	1.63	µg/L	0.65	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Selenium	Report	Report	Report	Report	Report	µg/L	65.2	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Thallium	0.001	0.002	3.14	5.57	7.84	µg/L	3.14	THH	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	1,633	CFC	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	21,234	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	73.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	131	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	31,372	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	20,915	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	1,173	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	248	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	115	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	3,922	µg/L	Discharge Conc ≤ 10% WQBEL

Total Iron	19,608	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	13,072	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	711	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Silver	32.4	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS