

**Utah Division of Water Quality
Statement of Basis
ADDENDUM
Wasteload Analysis and Antidegradation Level I Review**

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Standards and Technical Services

Facility: Utah Iron, LLC - Iron Mountain Mine
UPDES No. UT0026298

Receiving water: Unnamed Tributary of Iron Spring Creek (2B, 3D)

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also considers downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge

Outfall 001: Unnamed tributary → Iron Spring Creek
Outfall 002: Unnamed tributary → Iron Spring Creek

The total design capacity for the proposed discharges is 0.4 MGD.

Receiving Water

The receiving water for Outfalls 001 & 002 is an unnamed tributary to Iron Spring Creek.

The beneficial uses for the West Desert region are not defined but this region is defaulted to the 2B and 3D designated beneficial uses.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3D - Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.*

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Flow

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten-year return frequency (7Q10). The facility discharges to a dry wash and no flow records are available. Therefore, critical flow was assumed to be zero.

The effluent limits revert to the water quality standards.

TMDL

According to Utah's 2022 303(d) Water Quality Assessment Report, there are no defined assessment units and no listed impairments for the watershed proximal to the facility, which is the West Desert Region of the Lower Sevier River Basin. The West Desert region does not have identified beneficial uses. There have been no TMDL studies completed for this watershed and therefore, no TMDL implementation requirements at this time.

Protection of Downstream Uses

Per UAC R317-2-8, *all actions to control waste discharges under these rules shall be modified as necessary to protect downstream designated uses.* For this discharge, 3D numeric aquatic life use criteria apply to the immediate receiving water (Iron Spring Creek).

Ambient Water Quality Data and Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Since there is no ambient stream flow data, no mixing zone is allowed and therefore, end of pipe water quality standards must be met.

Parameters of Concern

The primary parameters of concern identified for the discharge/receiving water are pH, TSS, and Total Iron as determined from 40 CFR 440 Subpart N in consultation with the UPDES Permit Writer. Additional potential parameters of concern, such as sulfate, ammonia, selenium or other metals may become apparent as a result of reasonable potential analysis, technology-based standards, or other factors as determined by the UPDES Permit Writer.

Effluent Limitation for Total Ammonia based upon Water Quality Standards

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

| <u>Season</u> | <u>Concentration</u> | <u>Load</u> |
|---------------|------------------------------------|--------------|
| Summer | 4 Day Avg. – Chronic 5.1 mg/l as N | 17.0 lbs/day |
| | 1 Hour Avg. – Acute 15.4 mg/l as | 51.5 lbs/day |
| Fall | 4 Day Avg. – Chronic 4.3 mg/l as N | 14.3 lbs/day |

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| | | |
|--------|------------------------------------|--------------|
| | 1 Hour Avg. – Acute 11.2 mg/l as N | 37.2 lbs/day |
| Winter | 4 Day Avg. – Chronic 4.0 mg/l as N | 13.4 lbs/day |
| | 1 Hour Avg. – Acute 12.8 mg/l as N | 42.5 lbs/day |
| Spring | 4 Day Avg. – Chronic 4.3 mg/l as N | 14.3 lbs/day |
| | 1 Hour Avg. – Acute 11.2 mg/l as N | 37.2 lbs/day |

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

WET Limits

Typically, the percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC₅₀ (lethal concentration, 50%) percent effluent for acute toxicity and the IC₂₅ (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. When applicable, the WET limit for LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is required for this discharge since the facility is a new discharge and the pollutant concentration and load is increasing from ambient conditions under this permit.

WLA Documents:

IronMt_WLA_Summary_2023.docx
IronMt-Memo-2023.docx

References:

Utah Division of Water Quality. 2021. *Utah Wasteload Analysis Procedures Version 2.0*.