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

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Facility: **Canyon Fuel Company, LLC, Soldier Canyon Mine**
UPDES No. UT0023680

Receiving water: **Soldier Creek => Price River (2B, 3C, 4)**

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 takes into account 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

This facility is an underground Coal Mine.

Outfall 001: Mine Water Discharge
Outfall 002: Sedimentation Pond
Outfall 003: Mine Water Discharge

The maximum daily flow is 1.3 MGD as calculated by the permittee.

Receiving Water

The receiving water of Outfalls 001, 002 and 003 is Soldier Creek, an intermittent stream that is a tributary to the Price River.

Per UAC R317-2-13.1(b), the designated beneficial uses for the Price River and tributaries, from confluence with Green River to Carbon Canal Diversion at the Price City Golf Course are 2B, 3C, and 4.

- *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 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.*

- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

As per R317-2, Table 2.14.1, footnote (4), the segment of the Price River which receives flows from Soldier Creek (Price River and tributaries from confluence with Green River to confluence with Soldier Creek) has a site specific standard for total dissolved solids (TDS) of 3,000 mg/l.

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). Because the discharge is to an Intermittent stream, the critical low flow condition (7Q10) of the receiving water would be zero. As a result, effluent limits revert to the water quality standards. Water Quality Standards are presented in the WLA Addendum.

TMDL

According to the Utah's 2016 303(d) Water Quality Assessment, Soldier Creek and tributaries from confluence with Price River to headwaters (UT14060007-009_00) could not be assessed because of insufficient data. A TMDL was completed for the West Colorado Watershed and approved by EPA in 2004. It can be found at https://documents.deq.utah.gov/water-quality/watershed-protection/total-maximum-daily-loads/DWQ-2015-006611.pdf.

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. Water quality standards must be met at the end of the mixing zone.

No mixing zone was considered as the annual critical flow for Outfalls 001, 002 and 003 was determined to be 0.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water are total dissolved solids (TDS) and iron as determined from the existing permit and in consultation with the UPDES Permit Writer.

WET Limits

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 LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (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. The WET limit for LC_{50} is typically 100% effluent and does not need to be determined by the WLA.

IC25 WET limits for Outfalls 001,002, and 003 should be based on 100% effluent.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in the Wasteload Addendum.

The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH. The AMMTOX Model developed by University of Colorado and adapted by Utah DWQ and EPA Region VIII was used to determine ammonia effluent limits (Lewis et al. 2002). The analysis is summarized in the Wasteload Addendum.

Models and supporting documentation are available for review upon request.

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 not required for this facility. The proposed permit is a simple renewal of an existing UPDES permit. No increase in flow or concentration of pollutants over those authorized in the existing permit is being requested.

Documents:

WLA Document *: SoldierCanyon _WLADoc_6-23-21.docx*
Wasteload Analysis and Addendum: *SoldierCanyon _WLA_6-23-21.xlsm*

References:

Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0*.