

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

**Date:** July 16, 2020

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**Facility:** Ensign-Bickford  
UPDES Permit No. UT0025283

**Outfall:** 002b – New Outfall

**Receiving water:** Spanish Fork River (2B, 3B, 3D, 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

002b Discharge from the Spanish Fork granular activated carbon groundwater treatment system. Design flow 2.16 MGD (3.35 cfs).

Receiving Water

Per UAC R317-2-13.5(c), the designated beneficial uses of Spanish Fork River and tributaries from Utah Lake to diversion at Moark Junction are: 2B, 3B, 3D, 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 3B - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*
- *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.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

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Typically, the critical flow for the receiving water in the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to the lack of available and representative flow data on the Spanish Fork River at the discharge location, the 7Q10 flow was conservatively assumed to be zero. Therefore, no background flow or water quality was considered in this analysis.

Impaired Waters and TMDL

According to 303(d) list of impaired waters in *Utah's 2016 Integrated Report*, the Spanish Fork River from Utah Lake to Moark Diversion (Assessment Unit# UT16020202-001\_00) is not listed as impaired for any of its beneficial uses.

The downstream waterbody, Utah Lake other than Provo Bay (AU UT-L-16020201-004\_01), is listed as impaired for harmful algal blooms (Class 2B); PCB in fish tissue and total phosphorus (Class 3B) and total dissolved solids (Class 4).

Per UAC R317-8-2.2, *"No permit may be issued by the Director: (7) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards."* Therefore, the TDS limit is set at the water quality criteria.

Mixing Zone

Since no background flow in the receiving water was assumed during critical conditions, no mixing zone is allowed.

Parameters of Concern

The potential parameters of concern identified for the discharge were TDS, RDX and nitrate as determined by the impairment status of the receiving water and review of the previous permit.

Wasteload Allocation Methods

Since no background flow in the receiving water was assumed during critical conditions, effluent limits were set at the water quality criteria.

Whole Effluent Toxicity 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<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (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<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Table 1: WET Limits for IC<sub>25</sub>**

Season	Percent Effluent
Annual	100%

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Water Quality Based Effluent Limits

Water quality based effluent limits for selected constituents are summarized in Table 2.

**Table 2: Water Quality Based Effluent Limits for Select Constituents**

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow (MGD)		2.16	1 day			
Total Dissolved Solids (mg/L)	1,200	1,200	Max			
RDX (mg/L)	0.002	0.002	Max			
Nitrate (mg/L)	10	10	Max			

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 facility as this is a newly permitted outfall with the potential to increase concentrations and loads of pollutants to the receiving waters.

Documents:

WLA Document: EnsignBickford002b\_WLADoc\_2020-07-16.docx

References:

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

Utah Division of Water Quality. 2016. *Utah's 2016 Integrated Report*.