

**Utah Division of Water Quality  
Fact Sheet and Statement of Basis  
ADDENDUM  
Wasteload Analysis and Antidegradation Review**

**Date:** May 22, 2018

**Facility:** Tooele Wastewater Treatment Plant  
Tooele, UT  
UPDES No. UT-0025445

**Receiving water:** Unnamed Irrigation Ditch (2B, 3E, 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

Outfall 001: Unnamed Irrigation Ditch

The design capacity for the treatment facility is 2.25 MGD average flow, as estimated by the permittee. The facility does not have a permanent outfall to the receiving ditch, and only discharges during emergencies by pumping water from the reject water holding pond.

Receiving Water

The receiving water for outfall 001 is an unnamed irrigation ditch. Per UAC R317-2-13.9, the designated uses for irrigation canals and ditches are 2B, 3E, 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 3E - Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

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 7Q10 flow for the irrigation ditch is assumed to be zero.

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Downstream Analysis

The unnamed irrigation ditch drains to the north along 1200 West where the channel eventually disperses in a farm field north of Erda Way. Based on site reconnaissance and anecdotal evidence from the previous discharge from the facility (2005), a discharge of limited duration is not likely to reach the Great Salt Lake or other natural waterbody.

TMDL

The receiving waters do not have an approved TMDL for any parameters.

Mixing Zone

Since no flow is in the receiving water during critical conditions, no mixing zone is allowed and no dilution factor was applied.

Whole Effluent Toxicity (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<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>**

<b>Season</b>	<b>Percent Effluent</b>
Annual	100%

Effluent Limits

Due to a lack of flow dilution, effluent limits for this discharge are water quality standards for the receiving water. The applicable water quality standards are attached as an appendix to this wasteload.

Class 3E waters do not have numeric aquatic life use criteria; therefore, the discharge must meet narrative standards per UAC R317-2-7.3. However, for the purposes of administering the pretreatment program, acute criteria for metals applicable to 3D waters were used for Tooele's discharge in order to interpret the narrative standards. Chronic aquatic life criteria were not considered, due to the unlikelihood of an extended period of discharge from the facility

For parameters without a WQBEL, permit limits should be set according to rules found in R317-1-3 and categorical UPDES discharge requirements.

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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 discharge since the pollutant concentration and load to the receiving waters are not increasing under this permit renewal.

WLA Document: *tooele\_potw\_wla\_2018-05-22.docx*

Analysis: *tooele\_potw\_wla\_2018.xlsm*

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**WASTELOAD ANALYSIS [WLA]**

Date: 5/22/2018

**Appendix A: Mass Balance Mixing Analysis for Conservative Constituents**

Discharging Facility: Tooele Wastewater Treatment Plant  
 UPDES No: UT-0025445  
 Permit Flow [MGD]: 2.25 Annual Max. Monthly

Receiving Water: Unnamed Irrigation Ditch  
 Stream Classification: 2B, 3E, 4  
 Stream Flows [cfs]: 0.0 All Seasons Critical Low Flow

Fully Mixed: YES  
 Acute River Width: 100%  
 Chronic River Width: 100%

**Modeling Information**

A mass balance mixing analysis was used to determine the effluent limits.

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

**Effluent Limitations**

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

**Effluent Limitations for Protection of Recreation (Class 2B Waters)**

Physical Parameter	Concentration	
	Minimum	Maximum
pH	6.5	9.0
Turbidity Increase (NTU)		10.0

**Bacteriological**

E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

**Effluent Limitations for Protection of Aquatic Wildlife (Class 3E Waters)**

It shall be unlawful, and a violation of these rules, for any person to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste; or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures; or determined by biological assessments in Subsection R317-2-7.3.

**Pretreatment Program Limits**

<b>Total Recoverable Metals</b>	<b>Acute Standard (1 Hour Average)<sup>1</sup></b>
<b>Parameter</b>	<b>Standard/Limit</b>
Aluminum (µg/L)	750
Arsenic (µg/L)	340
Cadmium (µg/L)	4.3
Chromium VI (µg/L)	16.0
Chromium III (µg/L)	3,181
Copper (µg/L)	26.9
Cyanide (µg/L)	22.0
Iron (µg/L)	1,000
Lead (µg/L)	197
Mercury (µg/L)	2.4
Nickel (µg/L)	843
Selenium (µg/L)	18.4
Silver (µg/L)	12.5
Tributyltin (µg/L)	0.46
Zinc (µg/L)	216

1: Based upon a Hardness of 200 mg/l as CaCO3

**Effluent Limitation for Protection of Agriculture (Class 4 Waters)**

<b>Parameter</b>	<b>Maximum Concentration Standard/Limit</b>
Total Dissolved Solids (mg/L)	1,200
Boron (mg/L)	0.75
Arsenic, Dissolved (µg/L)	100
Cadmium, Dissolved (µg/L)	10
Chromium, Dissolved (µg/L)	100
Copper, Dissolved (µg/L)	200
Lead, Dissolved (µg/L)	100
Selenium, Dissolved (µg/L)	50
Gross Alpha (pCi/L)	15