

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

**Date:** July 10, 2020

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Standards and Technical Services

**Facility:** Monticello City Waste Water Treatment Plant,  
UPDES Permit No. UT002450

**Receiving water:** Montezuma Creek (1C, 2A, 3B, 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

001 Outfall (Lagoon Discharge) 0.32 MGD maximum daily discharge  
001R Reuse Discharge

Receiving Water

The designated beneficial uses of the Montezuma Creek-2, Montezuma Creek and tributaries from Verdure Creek confluence to U.S. 191 are 1C, 2A, 3B, 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water*
- *Class 2A - Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.*
- *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 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Utah Division of Water Quality  
Wasteload Analysis  
Monticello City WWTP, UPDES Permit No. UT0024503

**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). There was very limited data; therefore the data from the previous permit cycle was retained in the WLA. The 20<sup>th</sup> percentile flow values were used for each season. These values are displayed in

Table 1.

Table 1. Seasonal Flow Values (20<sup>th</sup> percentile)

Season	20 <sup>th</sup> percentile (cfs)
Summer	2.0
Fall	2.0
Winter	2.0
Spring	2.0
Overall	10.0

Ambient receiving water quality was characterized using data from DWQ monitoring station #4953720 MONTEZUMA CK AB MONTICELLO for the period 1975-2020.

Discharge data was characterized using data from DWQ monitoring station #4953710 MONTICELLO WWTP for the period 1975-2020.

Total Maximum Daily Load (TMDL)

According to the Utah’s 2016 303(d) Water Quality Assessment Report, the receiving water for the discharge, Montezuma Creek-2, Montezuma Creek and tributaries from Verdure Creek confluence to U.S. 191 (UT14080203-003\_00) is supporting all assessed uses and exhibits no evidence of water quality impairment.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and for chronic conditions is 2500 ft, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

Based on the results of the mixing zone modeling, plume width was 100 % of the river at 2500 feet. 100 % of the seasonal critical low flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

No additional potential parameters of concern were identified based on review of the impairment status of the receiving water and review of the previous permit.

### 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.

IC<sub>25</sub> WET limits for Outfall 001 should be based on 19.8 % 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 Addendums.

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 because the receiving waterbody is classified as a 1C drinking water source. 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: *Monticello\_WLA\_2020.docx*

Wasteload Analysis and Addendums: *Monticello\_WLA\_7-6-2020.xlsm*

### References:

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

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WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis

6-Jul-20
4:00 PM

Facilities: Monticello City WWTP  
Discharging to: Montezuma Creek

UPDES No: UT-0024503

**I. Introduction**

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 [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

Mathematical water quality modeling is employed to determine stream quality response to point source discharges. Models aid in the effort of anticipating stream quality at future effluent flows at critical environmental conditions (e.g., low stream flow, high temperature, high pH, etc).

The numeric criteria in this wasteload analysis may always be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

**II. Receiving Water and Stream Classification**

Montezuma Creek:	1C, 2A, 3B, 4
Antidegradation Review:	Level I review completed. Level II review required.

**III. Numeric Stream Standards for Protection of Aquatic Wildlife**

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average) 4.00 mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.150 lbs/day	750.00	ug/l	1.294 lbs/day
Arsenic	190.00 ug/l	0.328 lbs/day	340.00	ug/l	0.586 lbs/day
Cadmium	0.61 ug/l	0.001 lbs/day	6.52	ug/l	0.011 lbs/day
Chromium III	211.92 ug/l	0.366 lbs/day	4433.71	ug/l	7.647 lbs/day
Chromium VI	11.00 ug/l	0.019 lbs/day	16.00	ug/l	0.028 lbs/day
Copper	23.85 ug/l	0.041 lbs/day	39.41	ug/l	0.068 lbs/day
Iron			1000.00	ug/l	1.725 lbs/day
Lead	12.88 ug/l	0.022 lbs/day	330.60	ug/l	0.570 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.004 lbs/day
Nickel	132.13 ug/l	0.228 lbs/day	1188.44	ug/l	2.050 lbs/day
Selenium	4.60 ug/l	0.008 lbs/day	20.00	ug/l	0.034 lbs/day
Silver	N/A ug/l	N/A lbs/day	25.04	ug/l	0.043 lbs/day
Zinc	303.93 ug/l	0.524 lbs/day	303.93	ug/l	0.524 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 300 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.003 lbs/day
Chlordane	0.004 ug/l	0.058 lbs/day	1.200	ug/l	0.002 lbs/day
DDT, DDE	0.001 ug/l	0.013 lbs/day	0.550	ug/l	0.001 lbs/day
Dieldrin	0.002 ug/l	0.026 lbs/day	1.250	ug/l	0.002 lbs/day
Endosulfan	0.056 ug/l	0.753 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.031 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.051 lbs/day	0.260	ug/l	0.000 lbs/day
Lindane	0.080 ug/l	1.076 lbs/day	1.000	ug/l	0.002 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.188 lbs/day	2.000	ug/l	0.003 lbs/day
Pentachlorophenol	13.00 ug/l	174.827 lbs/day	20.000	ug/l	0.034 lbs/day
Toxephene	0.0002 ug/l	0.003 lbs/day	0.7300	ug/l	0.001 lbs/day

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**IV. Numeric Stream Standards for Protection of Agriculture**

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	0.65 lbs/day
Cadmium			10.0 ug/l	0.01 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	1.03 tons/day

**V. Numeric Stream Standards for Protection of Human Health (Class 1C Waters)**

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			50.0 ug/l	0.672 lbs/day
Barium			1000.0 ug/l	13.448 lbs/day
Cadmium			10.0 ug/l	0.134 lbs/day
Chromium			50.0 ug/l	0.672 lbs/day
Lead			50.0 ug/l	0.672 lbs/day
Mercury			2.0 ug/l	0.027 lbs/day
Selenium			10.0 ug/l	0.134 lbs/day
Silver			50.0 ug/l	0.672 lbs/day
Fluoride (3)			1.4 ug/l	0.019 lbs/day
to			2.4 ug/l	0.032 lbs/day
Nitrates as N			10.0 ug/l	0.134 lbs/day

**Chlorophenoxy Herbicides**

2,4-D	100.0 ug/l	1.345 lbs/day
2,4,5-TP	10.0 ug/l	0.134 lbs/day
Endrin	0.2 ug/l	0.003 lbs/day
cyclohexane (Lindane)	4.0 ug/l	0.054 lbs/day
Methoxychlor	100.0 ug/l	1.345 lbs/day
Toxaphene	5.0 ug/l	0.067 lbs/day

**VI. Numeric Stream Standards the Protection of Human Health from Water & Fish Consumption [Toxics]**

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	1200.00 ug/l	16.14 lbs/day	2700.0 ug/l	36.31 lbs/day
Acrolein	320.00 ug/l	4.30 lbs/day	780.0 ug/l	10.49 lbs/day
Acrylonitrile	0.06 ug/l	0.00 lbs/day	0.7 ug/l	0.01 lbs/day
Benzene	1.20 ug/l	0.02 lbs/day	71.0 ug/l	0.95 lbs/day
Benzidine	0.00012 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	0.25 ug/l	0.00 lbs/day	4.4 ug/l	0.06 lbs/day
Chlorobenzene	680.00 ug/l	9.14 lbs/day	21000.0 ug/l	282.41 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	0.00075 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	0.38 ug/l	0.01 lbs/day	99.0 ug/l	1.33 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.03 lbs/day	8.9 ug/l	0.12 lbs/day

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1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.01 lbs/day	42.0 ug/l	0.56 lbs/day
1,1,2,2-Tetrachloroethane	0.17 ug/l	0.00 lbs/day	11.0 ug/l	0.15 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.00 lbs/day	1.4 ug/l	0.02 lbs/day
2-Chloroethyl vinyl ether	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	1700.00 ug/l	22.86 lbs/day	4300.0 ug/l	57.83 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.03 lbs/day	6.5 ug/l	0.09 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	0.08 lbs/day	470.0 ug/l	6.32 lbs/day
2-Chlorophenol	120.00 ug/l	1.61 lbs/day	400.0 ug/l	5.38 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	36.31 lbs/day	17000.0 ug/l	228.62 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	5.38 lbs/day	2600.0 ug/l	34.97 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	5.38 lbs/day	2600.0 ug/l	34.97 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.00 lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.00 lbs/day	3.2 ug/l	0.04 lbs/day
1,2-trans-Dichloroethylene	700.00 ug/l	9.41 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	1.25 lbs/day	790.0 ug/l	10.62 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.01 lbs/day	39.0 ug/l	0.52 lbs/day
1,3-Dichloropropylene	10.00 ug/l	0.13 lbs/day	1700.0 ug/l	22.86 lbs/day
2,4-Dimethylphenol	540.00 ug/l	7.26 lbs/day	2300.0 ug/l	30.93 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.00 lbs/day	9.1 ug/l	0.12 lbs/day
2,6-Dinitrotoluene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	0.04 ug/l	0.00 lbs/day	0.5 ug/l	0.01 lbs/day
Ethylbenzene	3100.00 ug/l	41.69 lbs/day	29000.0 ug/l	390.00 lbs/day
Fluoranthene	300.00 ug/l	4.03 lbs/day	370.0 ug/l	4.98 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	1400.00 ug/l	18.83 lbs/day	170000.0 ug/l	2286.21 lbs/day
Bis(2-chloroethoxy) methane	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	4.70 ug/l	0.06 lbs/day	1600.0 ug/l	21.52 lbs/day
Methyl chloride (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	4.30 ug/l	0.06 lbs/day	360.0 ug/l	4.84 lbs/day
Dichlorobromomethane	0.27 ug/l	0.00 lbs/day	22.0 ug/l	0.30 lbs/day
Chlorodibromomethane	0.41 ug/l	0.01 lbs/day	34.0 ug/l	0.46 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.01 lbs/day	50.0 ug/l	0.67 lbs/day
Hexachlorocyclopentadiene	240.00 ug/l	3.23 lbs/day	17000.0 ug/l	228.62 lbs/day
Isophorone	8.40 ug/l	0.11 lbs/day	600.0 ug/l	8.07 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	0.23 lbs/day	1900.0 ug/l	25.55 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	70.00 ug/l	0.94 lbs/day	14000.0 ug/l	188.28 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	0.17 lbs/day	765.0 ug/l	10.29 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	0.11 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	0.07 lbs/day	16.0 ug/l	0.22 lbs/day
N-Nitrosodi-n-propylamine	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.02 lbs/day
Pentachlorophenol	0.28 ug/l	0.00 lbs/day	8.2 ug/l	0.11 lbs/day
Phenol	2.10E+04 ug/l	2.82E+02 lbs/day	4.6E+06 ug/l	6.19E+04 lbs/day
Bis(2-ethylhexyl)phthalate	1.80 ug/l	0.02 lbs/day	5.9 ug/l	0.08 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	40.34 lbs/day	5200.0 ug/l	69.93 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	36.31 lbs/day	12000.0 ug/l	161.38 lbs/day
Di-n-octyl phthalate				

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Diethyl phthalate	23000.00 ug/l	309.31 lbs/day	120000.0 ug/l	1613.79 lbs/day
Dimethyl phthalate	3.13E+05 ug/l	4.21E+03 lbs/day	2.9E+06 ug/l	3.90E+04 lbs/day
Benzo(a)anthracene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	129.10 lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	960.00 ug/l	12.91 lbs/day	11000.0 ug/l	147.93 lbs/day
Tetrachloroethylene	0.80 ug/l	0.01 lbs/day	8.9 ug/l	0.12 lbs/day
Toluene	6800.00 ug/l	91.45 lbs/day	200000 ug/l	2689.65 lbs/day
Trichloroethylene	2.70 ug/l	0.04 lbs/day	81.0 ug/l	1.09 lbs/day
Vinyl chloride	2.00 ug/l	0.03 lbs/day	525.0 ug/l	7.06 lbs/day
			0.0	0.00 lbs/day
<b>Pesticides</b>			0.0	0.00 lbs/day
Aldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	0.0008 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.03 lbs/day
beta-Endosulfan	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.03 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.01 lbs/day	2.0 ug/l	0.03 lbs/day
Endrin	0.7600 ug/l	0.01 lbs/day	0.8 ug/l	0.01 lbs/day
Endrin aldehyde	0.7600 ug/l	0.01 lbs/day	0.8 ug/l	0.01 lbs/day
Heptachlor	0.0002 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1248)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	0.000750 ug/l	0.00	0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	0.00 lbs/day	1.40E-08	0.00
<b>Metals</b>				
Antimony	14.0 ug/l	0.19 lbs/day		
Arsenic	50.0 ug/l	0.67 lbs/day	4300.00 ug/l	57.83 lbs/day
Asbestos	7.00E+06 ug/l	9.41E+04 lbs/day		
Beryllium				
Cadmium				

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Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	17.48 lbs/day	2.2E+05 ug/l	2958.62 lbs/day
Lead	700.0 ug/l	9.41 lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	61.86 lbs/day
Selenium	0.1 ug/l	0.00 lbs/day		
Silver	610.0 ug/l	8.20 lbs/day		
Thallium			6.30 ug/l	0.08 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

**VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

- (1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).
- (2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.
- (3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8
- (4) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

Coefficients used in the model were based, in part, upon the following references:

- (1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.
- (2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al. Harper Collins Publisher, Inc. 1987, pp. 644.

**VIII. Modeling Information**

The required information for the model may include the following information for both the upstream conditions at low flow and the effluent conditions:

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l

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pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

**Other Conditions**

In addition to the upstream and effluent conditions, the models require a variety of physical and biological coefficients and other technical information. In the process of actually establishing the permit limits for an effluent, values are used based upon the available data, model calibration, literature values, site visits and best professional judgement.

**Model Inputs**

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	
Summer (Irrig. Season)	2.0	20.0	8.2	0.01	0.50	6.23	0.00	500.0	
Fall	2.0	12.0	8.1	0.01	0.50	---	0.00	500.0	
Winter	2.0	4.0	8.0	0.01	0.50	---	0.00	500.0	
Spring	2.0	12.0	8.1	0.01	0.50	---	0.00	500.0	
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l	
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l			
All Seasons	0.0000	0.53*	1.06*	0.1*	0.053*	10.0		* 1/2 MDL	

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.32000	17.0	500.00	0.66707
Fall	0.32000	15.0		
Winter	0.32000	12.0		
Spring	0.32000	15.0		

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

**IX. 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 coincide with the environmental conditions expected at low stream flows.

**Effluent Limitation for Flow based upon Water Quality Standards**

In-stream criteria of downstream segments will be met with an effluent flow maximum value as follows:

Season	Daily Average	
Summer	0.320 MGD	0.495 cfs
Fall	0.320 MGD	0.495 cfs
Winter	0.320 MGD	0.495 cfs
Spring	0.320 MGD	0.495 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.32 MGD. If the discharger is allowed to have a flow greater than 0.32 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

**Effluent Limitation for Whole Effluent Toxicity (WET) based upon WET Policy**

Effluent Toxicity will not occur in downstream segments if the values below are met.

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	19.8% Effluent	[Chronic]

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**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD limitation as follows:

Season	Concentration	Load
Summer	25.0 mg/l as BOD5	66.7 lbs/day
Fall	25.0 mg/l as BOD5	66.7 lbs/day
Winter	25.0 mg/l as BOD5	66.7 lbs/day
Spring	25.0 mg/l as BOD5	66.7 lbs/day

**Effluent Limitation for Dissolved Oxygen (DO) based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent D.O. limitation as follows:

Season	Concentration
Summer	5.50
Fall	5.50
Winter	5.50
Spring	5.50

**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:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	13.8 mg/l as N	36.9 lbs/day
	1 Hour Avg. - Acute	53.8 mg/l as N	143.4 lbs/day
Fall	4 Day Avg. - Chronic	19.1 mg/l as N	51.1 lbs/day
	1 Hour Avg. - Acute	53.4 mg/l as N	142.5 lbs/day
Winter	4 Day Avg. - Chronic	17.6 mg/l as N	46.9 lbs/day
	1 Hour Avg. - Acute	41.3 mg/l as N	110.1 lbs/day
Spring	4 Day Avg. - Chronic	19.1 mg/l as N	51.1 lbs/day
	1 Hour Avg. - Acute	53.4 mg/l as N	142.5 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.0%.

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**Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards**

In-stream criteria of downstream segments for Total Residual Chlorine will be met with an effluent limitation as follows:

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	0.074	mg/l	0.20	lbs/day
	1 Hour Avg. - Acute	0.075	mg/l	0.20	lbs/day
Fall	4 Day Avg. - Chronic	0.074	mg/l	0.20	lbs/day
	1 Hour Avg. - Acute	0.075	mg/l	0.20	lbs/day
Winter	4 Day Avg. - Chronic	0.074	mg/l	0.20	lbs/day
	1 Hour Avg. - Acute	0.075	mg/l	0.20	lbs/day
Spring	4 Day Avg. - Chronic	0.074	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.075	mg/l	0.00	lbs/day

**Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards**

Season		Concentration		Load	
Summer	Maximum, Acute	4028.1	mg/l	5.37	tons/day
Fall	Maximum, Acute	4028.1	mg/l	5.37	tons/day
Winter	Maximum, Acute	4028.1	mg/l	5.37	tons/day
Spring	4 Day Avg. - Chronic	4028.1	mg/l	5.37	tons/day

Colorado Salinity Forum Limits      Determined by Permitting Section

**Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards**

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 300 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	2,260.2	ug/l	3.9 lbs/day
Arsenic	954.40 ug/l	1.6 lbs/day	1,025.2	ug/l	1.8 lbs/day
Cadmium	2.76 ug/l	0.0 lbs/day	19.5	ug/l	0.0 lbs/day
Chromium III	1,064.87 ug/l	1.8 lbs/day	13,388.4	ug/l	23.1 lbs/day
Chromium VI	39.38 ug/l	0.1 lbs/day	40.3	ug/l	0.1 lbs/day
Copper	117.01 ug/l	0.2 lbs/day	117.4	ug/l	0.2 lbs/day
Iron	N/A	N/A	3,017.5	ug/l	5.2 lbs/day
Lead	61.72 ug/l	0.1 lbs/day	996.8	ug/l	1.7 lbs/day
Mercury	0.06 ug/l	0.0 lbs/day	7.2	ug/l	0.0 lbs/day
Nickel	662.74 ug/l	1.1 lbs/day	3,587.5	ug/l	6.2 lbs/day
Selenium	16.76 ug/l	0.0 lbs/day	57.2	ug/l	0.1 lbs/day
Silver	N/A ug/l	N/A lbs/day	75.6	ug/l	0.1 lbs/day
Zinc	1,531.53 ug/l	2.6 lbs/day	917.7	ug/l	1.6 lbs/day

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Cyanide	26.21 ug/l	0.0 lbs/day	66.4	ug/l	0.1 lbs/day
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**Effluent Limitations for Heat/Temperature based upon  
Water Quality Standards**

Summer	26.0 Deg. C.	78.9 Deg. F
Fall	18.0 Deg. C.	64.5 Deg. F
Winter	10.0 Deg. C.	50.1 Deg. F
Spring	18.0 Deg. C.	64.5 Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Organics [Pesticides] will be met with an effluent limit as follows:

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aldrin			1.5E+00	ug/l	4.00E-03 lbs/day
Chlordane	4.30E-03 ug/l	1.15E-02 lbs/day	1.2E+00	ug/l	3.20E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	2.67E-03 lbs/day	5.5E-01	ug/l	1.47E-03 lbs/day
Dieldrin	1.90E-03 ug/l	5.07E-03 lbs/day	1.3E+00	ug/l	3.34E-03 lbs/day
Endosulfan	5.60E-02 ug/l	1.49E-01 lbs/day	1.1E-01	ug/l	2.94E-04 lbs/day
Endrin	2.30E-03 ug/l	6.14E-03 lbs/day	9.0E-02	ug/l	2.40E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.67E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.01E-02 lbs/day	2.6E-01	ug/l	6.94E-04 lbs/day
Lindane	8.00E-02 ug/l	2.13E-01 lbs/day	1.0E+00	ug/l	2.67E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	8.00E-05 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.67E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.07E-04 lbs/day
PCB's	1.40E-02 ug/l	3.74E-02 lbs/day	2.0E+00	ug/l	5.34E-03 lbs/day
Pentachlorophenol	1.30E+01 ug/l	3.47E+01 lbs/day	2.0E+01	ug/l	5.34E-02 lbs/day
Toxephene	2.00E-04 ug/l	5.34E-04 lbs/day	7.3E-01	ug/l	1.95E-03 lbs/day

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**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	<b>1 Hour Average</b>	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	8.6 lbs/day
Nitrates as N	4.0 mg/l	6.9 lbs/day
Total Phosphorus as P	0.05 mg/l	0.1 lbs/day
Total Suspended Solids	90.0 mg/l	155.2 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

	<b>Maximum Concentration</b>	
	Concentration	Load
<b>Toxic Organics</b>		
Acenaphthene	6.05E+03 ug/l	1.61E+01 lbs/day
Acrolein	1.61E+03 ug/l	4.30E+00 lbs/day
Acrylonitrile	2.97E-01 ug/l	7.93E-04 lbs/day
Benzene	6.05E+00 ug/l	1.61E-02 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	1.26E+00 ug/l	3.36E-03 lbs/day
Chlorobenzene	3.43E+03 ug/l	9.14E+00 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	3.78E-03 ug/l	1.01E-05 lbs/day
1,2-Dichloroethane	1.92E+00 ug/l	5.11E-03 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	9.58E+00 ug/l	2.56E-02 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	3.07E+00 ug/l	8.20E-03 lbs/day
1,1,2,2-Tetrachloroethane	8.57E-01 ug/l	2.29E-03 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.56E-01 ug/l	4.17E-04 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	8.57E+03 ug/l	2.29E+01 lbs/day
2,4,6-Trichlorophenol	1.06E+01 ug/l	2.82E-02 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	2.87E+01 ug/l	7.67E-02 lbs/day
2-Chlorophenol	6.05E+02 ug/l	1.61E+00 lbs/day
1,2-Dichlorobenzene	1.36E+04 ug/l	3.63E+01 lbs/day
1,3-Dichlorobenzene	2.02E+03 ug/l	5.38E+00 lbs/day
1,4-Dichlorobenzene	2.02E+03 ug/l	5.38E+00 lbs/day
3,3'-Dichlorobenzidine	2.02E-01 ug/l	5.38E-04 lbs/day

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1,1-Dichloroethylene	2.87E-01 ug/l	7.67E-04 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	4.69E+02 ug/l	1.25E+00 lbs/day
1,2-Dichloropropane	2.62E+00 ug/l	6.99E-03 lbs/day
1,3-Dichloropropylene	5.04E+01 ug/l	1.34E-01 lbs/day
2,4-Dimethylphenol	2.72E+03 ug/l	7.26E+00 lbs/day
2,4-Dinitrotoluene	5.54E-01 ug/l	1.48E-03 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	2.02E-01 ug/l	5.38E-04 lbs/day
Ethylbenzene	1.56E+04 ug/l	4.17E+01 lbs/day
Fluoranthene	1.51E+03 ug/l	4.03E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	7.06E+03 ug/l	1.88E+01 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	2.37E+01 ug/l	6.32E-02 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	2.17E+01 ug/l	5.78E-02 lbs/day
Dichlorobromomethane(HM)	1.36E+00 ug/l	3.63E-03 lbs/day
Chlorodibromomethane (HM)	2.07E+00 ug/l	5.51E-03 lbs/day
Hexachlorocyclopentadiene	1.21E+03 ug/l	3.23E+00 lbs/day
Isophorone	4.23E+01 ug/l	1.13E-01 lbs/day
Naphthalene		
Nitrobenzene	8.57E+01 ug/l	2.29E-01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	3.53E+02 ug/l	9.41E-01 lbs/day
4,6-Dinitro-o-cresol	6.55E+01 ug/l	1.75E-01 lbs/day
N-Nitrosodimethylamine	3.48E-03 ug/l	9.28E-06 lbs/day
N-Nitrosodiphenylamine	2.52E+01 ug/l	6.72E-02 lbs/day
N-Nitrosodi-n-propylamine	2.52E-02 ug/l	6.72E-05 lbs/day
Pentachlorophenol	1.41E+00 ug/l	3.77E-03 lbs/day
Phenol	1.06E+05 ug/l	2.82E+02 lbs/day
Bis(2-ethylhexyl)phthalate	9.07E+00 ug/l	2.42E-02 lbs/day
Butyl benzyl phthalate	1.51E+04 ug/l	4.03E+01 lbs/day
Di-n-butyl phthalate	1.36E+04 ug/l	3.63E+01 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.16E+05 ug/l	3.09E+02 lbs/day
Dimethyl phthlate	1.58E+06 ug/l	4.21E+03 lbs/day
Benzo(a)anthracene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Benzo(a)pyrene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Benzo(b)fluoranthene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Benzo(k)fluoranthene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Chrysene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	1.41E-02 ug/l	3.77E-05 lbs/day
Pyrene (PAH)	4.84E+03 ug/l	1.29E+01 lbs/day
Tetrachloroethylene	4.03E+00 ug/l	1.08E-02 lbs/day
Toluene	3.43E+04 ug/l	9.14E+01 lbs/day
Trichloroethylene	1.36E+01 ug/l	3.63E-02 lbs/day
Vinyl chloride	1.01E+01 ug/l	2.69E-02 lbs/day

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**Pesticides**

Aldrin	6.55E-04 ug/l	1.75E-06 lbs/day
Dieldrin	7.06E-04 ug/l	1.88E-06 lbs/day
Chlordane	2.87E-03 ug/l	7.67E-06 lbs/day
4,4'-DDT	2.97E-03 ug/l	7.93E-06 lbs/day
4,4'-DDE	2.97E-03 ug/l	7.93E-06 lbs/day
4,4'-DDD	4.18E-03 ug/l	1.12E-05 lbs/day
alpha-Endosulfan	4.69E+00 ug/l	1.25E-02 lbs/day
beta-Endosulfan	4.69E+00 ug/l	1.25E-02 lbs/day
Endosulfan sulfate	4.69E+00 ug/l	1.25E-02 lbs/day
Endrin	3.83E+00 ug/l	1.02E-02 lbs/day
Endrin aldehyde	3.83E+00 ug/l	1.02E-02 lbs/day
Heptachlor	1.06E-03 ug/l	2.82E-06 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1254 (Arochlor 1254)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1221 (Arochlor 1221)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1232 (Arochlor 1232)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1248 (Arochlor 1248)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1260 (Arochlor 1260)	2.22E-04 ug/l	5.92E-07 lbs/day
PCB-1016 (Arochlor 1016)	2.22E-04 ug/l	5.92E-07 lbs/day

**Pesticide**

Toxaphene	3.68E-03 ug/l	9.82E-06 lbs/day
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**Metals**

Antimony	70.56 ug/l	0.19 lbs/day
Arsenic	248.79 ug/l	0.66 lbs/day
Asbestos	3.53E+07 ug/l	9.41E+04 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	6552.10 ug/l	17.48 lbs/day
Cyanide	3528.05 ug/l	9.41 lbs/day
Lead	0.00	0.00
Mercury	0.71 ug/l	0.00 lbs/day
Nickel	3074.45 ug/l	8.20 lbs/day
Selenium	0.00	0.00
Silver	0.00	0.00
Thallium	8.57 ug/l	0.02 lbs/day
Zinc		

**Dioxin**

Dioxin (2,3,7,8-TCDD)	6.55E-08 ug/l	1.75E-10 lbs/day
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**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

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	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		2260.2				2260.2	N/A
Antimony			70.6	21672.3		70.6	
Arsenic	504.0	1025.2	248.8		0.0	248.8	954.4
Barium					5040.1	5040.1	
Beryllium						0.0	
Cadmium	50.1	19.5			0.0	19.5	2.8
Chromium (III)		13388.4			0.0	13388.4	1064.9
Chromium (VI)	500.8	40.3			0.0	40.29	39.38
Copper	1004.8	117.4	6552.1			117.4	117.0
Cyanide		66.4	1108817.1			66.4	26.2
Iron		3017.5				3017.5	
Lead	500.8	996.8			0.0	500.8	61.7
Mercury		7.25	0.7	0.76	0.0	0.71	0.060
Nickel		3587.5	3074.4	23184.4		3074.4	662.7
Selenium	245.6	57.2			0.0	57.2	16.8
Silver		75.6			0.0	75.6	
Thallium			8.6	31.8		8.6	
Zinc		917.7				917.7	1531.5
Boron	3780.1					3780.1	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**

[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	2260.2	N/A	
Antimony	70.56		
Arsenic	248.8	954.4	Acute Controls
Asbestos	3.53E+07		
Barium			
Beryllium			
Cadmium	19.5	2.8	
Chromium (III)	13388.4	1065	
Chromium (VI)	40.3	39.4	
Copper	117.4	117.0	
Cyanide	66.4	26.2	
Iron	3017.5		
Lead	500.8	61.7	
Mercury	0.706	0.060	
Nickel	3074.4	663	
Selenium	57.2	16.8	
Silver	75.6	N/A	
Thallium	8.6		
Zinc	917.7	1531.5	Acute Controls
Boron	3780.06		



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Salt Lake City, Utah**

**XIII. Notice of UPDES Requirement**

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information. Permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations provided that the values in this wasteload analysis [TMDL] are not compromised. See special provisions in Utah Water Quality Standards for adjustments in the Total Dissolved Solids values based upon background concentration.

Utah Division of Water Quality  
801-538-6052  
File Name: Monticello\_WLA\_7-6-20

**Utah Division of Water Quality  
Salt Lake City, Utah**

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 2.000	REAER. Coeff. (Ka)20 (Ka)/day 59.157	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 59.157	NBOD Coeff. (Kn)20 1/day 0.400	NBOD Coeff. (Kn)T 1/day 0.400
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.000	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 32.000
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.000						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is required because the receiving waterbody is classified as a 1C drinking water source.