

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

**Date:** February 10, 2020

**Prepared by:** Suzan Tahir  
Standards and Technical Services

**Facility:** Mountain Green Wastewater Treatment Plant, UPDES Permit No. UT0024732

**Receiving water:** Weber River (2B, 3A, 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) 0.61 MGD (0.94cfs) maximum daily discharge (design flow rate)

Receiving Water

Per UAC R317-2-13.4.a, the designated beneficial uses of the Weber River and tributaries from Slaterville diversion to Stoddard diversion are 2B, 3A 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 3A - Protected for cold water species of game fish and other cold 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.*

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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 7Q10 flow was calculated using mean daily flow data from USGS monitoring station # USGS 10136500 WEBER RIVER AT GATEWAY, UT for the period 2009-2020. The seasonal 7Q10 values were used for the calculations. These values and the overall 7Q10 value for the period 2009-2020 are displayed below in Table 1.

Table 1.7Q10 Values

Season	7Q10 (cfs)
Summer	189.1
Fall	43.8
Winter	34.0
Spring	100.6
Overall	34.3

Ambient receiving water quality was characterized using data from DWQ monitoring station #4921000, WEBER R AT GATEWAY TO POWER HOUSE for the period 2009-2020.

Total Maximum Daily Load (TMDL)

According to the Utah's 2016 303(d) Water Quality Assessment Report, the receiving water for the discharge, Weber River from Ogden River confluence to Cottonwood Creek confluence (UT16020102-002\_00) is impaired for macroinvertebrates and requires a TMDL.

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 97.9 % of the river at 2500 feet. 97.9 % 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

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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.

IC25 WET limits for Outfall 001 should be based on 0.30 % 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 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: *MtGreen\_WLA\_Doc\_02-10-20.docx*

Wasteload Analysis and Addendums: *MtGreen\_Lagoons\_WLA\_1-20-2020.xlsm*

References:

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

**WASTELOAD ANALYSIS [WLA]**  
**Addendum: Statement of Basis**  
**SUMMARY**

**Discharging Facility:** Mountain Green Lagoons  
UPDES No: UT-0024732  
Current Flow: 0.61 MGD Design Flow  
Design Flow 0.61 MGD

**Receiving Water:** Weber River  
Stream Classification: 2B, 3A, 4  
Stream Flows [cfs]: 189.1 Summer (July-Sept) 10th Percentile  
43.8 Fall (Oct-Dec) 10th Percentile  
34.0 Winter (Jan-Mar) 10th Percentile  
100.6 Spring (Apr-June) 10th Percentile  
382.3 Average  
Stream TDS Values: 396.7 Summer (July-Sept) Average  
419.3 Fall (Oct-Dec) Average  
340.0 Winter (Jan-Mar) Average  
183.3 Spring (Apr-June) Average

Effluent Limits:		WQ Standard:
Flow, MGD:	0.61 MGD	Design Flow
BOD, mg/l:	45.0 Summer	5.0 Indicator
Dissolved Oxygen, mg/l:	5.0 Summer	6.5 30 Day Average
TNH3, Chronic, mg/l:	164.3 Summer	Varies Function of pH and Temperature
TDS, mg/l:	30143.7 Summer	1200.0

**Modeling Parameters:**  
Acute River Width: 50.0%  
Chronic River Width: 97.9% Plume Model Used

**Level 1 Antidegradation Level Completed: Level II Review not required**

Date: 1/20/2020

Permit Writer:	_____	_____
WLA by:	_____	_____
WQM Sec. Approval:	_____	_____
TMDL Sec. Approval:	_____	_____

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WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis

20-Jan-20
4:00 PM

Facilities: Mountain Green Lagoons  
Discharging to: Weber River

UPDES No: UT-0024732

**THIS IS A DRAFT DOCUMENT**

**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**

Weber River:	2B, 3A, 4
Antidegradation Review:	Level I review completed. Level II review not 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)	6.50 mg/l (30 Day Average) 5.00 mg/l (7Day Average) 4.00 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**	0.094 lbs/day	750.00	ug/l	0.809 lbs/day
Arsenic	190.00 ug/l	0.205 lbs/day	340.00	ug/l	0.367 lbs/day
Cadmium	0.51 ug/l	0.001 lbs/day	5.03	ug/l	0.005 lbs/day
Chromium III	172.00 ug/l	0.185 lbs/day	3598.50	ug/l	3.879 lbs/day
ChromiumVI	11.00 ug/l	0.012 lbs/day	16.00	ug/l	0.017 lbs/day
Copper	19.18 ug/l	0.021 lbs/day	31.00	ug/l	0.033 lbs/day
Iron			1000.00	ug/l	1.078 lbs/day
Lead	9.31 ug/l	0.010 lbs/day	239.01	ug/l	0.258 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.003 lbs/day
Nickel	106.51 ug/l	0.115 lbs/day	957.95	ug/l	1.033 lbs/day
Selenium	4.60 ug/l	0.005 lbs/day	20.00	ug/l	0.022 lbs/day
Silver	N/A ug/l	N/A lbs/day	16.15	ug/l	0.017 lbs/day
Zinc	244.91 ug/l	0.264 lbs/day	244.91	ug/l	0.264 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

Metals Standards Based upon a Hardness of 232.51 mg/l as CaCO<sub>3</sub>

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.002 lbs/day
Chlordane	0.004 ug/l	4.313 lbs/day	1.200	ug/l	0.001 lbs/day
DDT, DDE	0.001 ug/l	1.003 lbs/day	0.550	ug/l	0.001 lbs/day
Dieldrin	0.002 ug/l	1.906 lbs/day	1.250	ug/l	0.001 lbs/day
Endosulfan	0.056 ug/l	56.173 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	2.307 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	3.812 lbs/day	0.260	ug/l	0.000 lbs/day
Lindane	0.080 ug/l	80.248 lbs/day	1.000	ug/l	0.001 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	14.043 lbs/day	2.000	ug/l	0.002 lbs/day
Pentachlorophenol	13.00 ug/l	13040.250 lbs/day	20.000	ug/l	0.022 lbs/day
Toxephene	0.0002 ug/l	0.201 lbs/day	0.7300	ug/l	0.001 lbs/day

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

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

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

<b>4 Day Average (Chronic) Standard</b>		<b>1 Hour Average (Acute) Standard</b>	
	<b>Concentration</b>	<b>Load*</b>	<b>Concentration</b>
<b>Metals</b>			<b>Load*</b>
Arsenic			ug/l
Barium			ug/l
Cadmium			ug/l
Chromium			ug/l
Lead			ug/l
Mercury			ug/l
Selenium			ug/l
Silver			ug/l
Fluoride (3)			ug/l
to			ug/l
Nitrates as N			ug/l
<b>Chlorophenoxy Herbicides</b>			
2,4-D			ug/l
2,4,5-TP			ug/l
Endrin			ug/l
achlorocyclohexane (Lindane)			ug/l
Methoxychlor			ug/l
Toxaphene			ug/l

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

<b>Maximum Conc., ug/l - Acute Standards</b>			
<b>Class 1C</b>		<b>Class 3A, 3B</b>	
<b>Toxic Organics</b>	<b>[2 Liters/Day for 70 Kg Person over 70 Yr.]</b>	<b>[6.5 g for 70 Kg Person over 70 Yr.]</b>	
Acenaphthene	ug/l	lbs/day	90.0 ug/l
Acrolein	ug/l	lbs/day	400.0 ug/l
Acrylonitrile	ug/l	lbs/day	7.0 ug/l
Benzene	ug/l	lbs/day	51.0 ug/l
Benzidine	ug/l	lbs/day	0.0 ug/l
Carbon tetrachloride	ug/l	lbs/day	5.0 ug/l
Chlorobenzene	ug/l	lbs/day	800.0 ug/l
1,2,4-Trichlorobenzene			0.1
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l
1,2-Dichloroethane	ug/l	lbs/day	2000.0 ug/l
1,1,1-Trichloroethane			200000.0
Hexachloroethane	ug/l	lbs/day	0.1 ug/l
1,1,2-Trichloroethane	ug/l	lbs/day	8.9 ug/l
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	3.0 ug/l
Bis(2-chloroethyl) ether	ug/l	lbs/day	0.0 ug/l
2-Chloronaphthalene	ug/l	lbs/day	4000.0 ug/l
2,4,6-Trichlorophenol	ug/l	lbs/day	2.2 ug/l
Chloroform (HM)	ug/l	lbs/day	1000.0 ug/l
2-Chlorophenol	ug/l	lbs/day	600.0 ug/l
1,2-Dichlorobenzene	ug/l	lbs/day	2.8 ug/l
1,3-Dichlorobenzene	ug/l	lbs/day	2000.0 ug/l
1,4-Dichlorobenzene	ug/l	lbs/day	800.0 ug/l
3,3'-Dichlorobenzidine	ug/l	lbs/day	3000.0 ug/l
1,1-Dichloroethylene	ug/l	lbs/day	10.0 ug/l
1,2-trans-Dichloroethylene	ug/l	lbs/day	900.0 ug/l
2,4-Dichlorophenol	ug/l	lbs/day	0.2 ug/l
1,2-Dichloropropane	ug/l	lbs/day	20000.0 ug/l
1,3-Dichloropropylene	ug/l	lbs/day	4000.0 ug/l

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2,4-Dimethylphenol	ug/l	lbs/day	60.0 ug/l	60.19 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	31.0 ug/l	31.10 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	12.0 ug/l	12.04 lbs/day
Ethylbenzene	ug/l	lbs/day	1700.0 ug/l	1705.26 lbs/day
Fluoranthene	ug/l	lbs/day	3000.0 ug/l	3009.29 lbs/day
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	30.0 ug/l	30.09 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1.7 ug/l	1.71 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.2 ug/l	0.20 lbs/day
Bromoform (HM)	ug/l	lbs/day	130.0 ug/l	130.40 lbs/day
Dichlorobromomethane(HM)	ug/l	lbs/day	20.0 ug/l	20.06 lbs/day
Chlorodibromomethane (HM)	ug/l	lbs/day	70.0 ug/l	70.22 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	65000.0 ug/l	65201.25 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	1000.0 ug/l	1003.10 lbs/day
Isophorone	ug/l	lbs/day	10000.0 ug/l	10030.96 lbs/day
Nitrobenzene	ug/l	lbs/day	120.0 ug/l	120.37 lbs/day
2-Nitrophenol	ug/l	lbs/day	27.0 ug/l	27.08 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	21.0 ug/l	21.07 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	4.0 ug/l	4.01 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1800.0 ug/l	1805.57 lbs/day
Pentachlorophenol	ug/l	lbs/day	600.0 ug/l	601.86 lbs/day
Phenol	ug/l	lbs/day	1000.0 ug/l	1.00E+03 lbs/day
Bis(2-ethylhexyl)phthalate	ug/l	lbs/day	300.0 ug/l	300.93 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	2000.0 ug/l	2006.19 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	765.0 ug/l	767.37 lbs/day
Diethyl phthalate	ug/l	lbs/day	1.2 ug/l	1.24 lbs/day
Dimethyl phthalate	ug/l	lbs/day	3.0 ug/l	3.01E+00 lbs/day
Benzo(a)anthracene (PAH)	ug/l	lbs/day	6.0 ug/l	6.02 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.5 ug/l	0.51 lbs/day
Benzo(b)fluoranthene (PAH)	ug/l	lbs/day	34.0 ug/l	34.11 lbs/day
Benzo(k)fluoranthene (PAH)	ug/l	lbs/day	0.1 ug/l	0.10 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.04 lbs/day
Anthracene (PAH)	ug/l	lbs/day	300000.0 ug/l	300928.85 lbs/day
Dibenzo(a,h)anthracene (PAH)	ug/l	lbs/day	0.4 ug/l	0.37 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	ug/l	lbs/day	0.1 ug/l	0.10 lbs/day
Pyrene (PAH)	ug/l	lbs/day	30.0 ug/l	30.09 lbs/day
Tetrachloroethylene	ug/l	lbs/day	600.0 ug/l	601.86 lbs/day
Toluene	ug/l	lbs/day	2000.0 ug/l	2006.19 lbs/day
Trichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Vinyl chloride	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticides</b>				
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	30.0 ug/l	30.09 lbs/day
beta-Endosulfan	ug/l	lbs/day	40.0 ug/l	40.12 lbs/day
Endosulfan sulfate	ug/l	lbs/day	40.0 ug/l	40.12 lbs/day
Endrin	ug/l	lbs/day	0.0 ug/l	0.03 lbs/day
Endrin aldehyde	ug/l	lbs/day	1.0 ug/l	1.00 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>PCB's</b>				
PCBs	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Insecticide</b>				
Hexachlorocyclohexane (HCH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
alpha-BHC	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
beta-BHC	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
gamma-BHC	ug/l	lbs/day	4.4 ug/l	4.41 lbs/day
Methoxychlor	ug/l	lbs/day	0.0 ug/l	0.02 lbs/day



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**Dioxin**

Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day
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**Metals**

Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	640.00 ug/l	641.98 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	220681.16 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.15 lbs/day
Nickel			4600.00 ug/l	4614.24 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			0.47 ug/l	0.47 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
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

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**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)		189.1	17.2	8.5	0.03	1.00	7.10	0.00	396.7
Fall		43.8	5.9	7.9	0.08	1.00	---	0.00	419.3
Winter		34.0	4.6	7.9	0.11	1.00	---	0.00	419.3
Spring		100.6	13.2	8.4	0.05	1.00	---	0.00	419.3
Dissolved	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved	Hg	Ni	Se	Ag	Zn	Boron			
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	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	0.61000	19.8	928.00	2.36008
Fall	0.61000	5.3		
Winter	0.61000	4.5		
Spring	0.61000	16.6		

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	0.610 MGD	0.944 cfs
Fall	0.610 MGD	0.944 cfs
Winter	0.610 MGD	0.944 cfs
Spring	0.610 MGD	0.944 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.61 MGD. If the discharger is allowed to have a flow greater than 0.61 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 >	1.6% Effluent	[Acute]
	IC25 >	0.3% 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		Summer
Summer	45.0 mg/l as BOD5	228.9 lbs/day	45.00
Fall	45.0 mg/l as BOD5	228.9 lbs/day	
Winter	45.0 mg/l as BOD5	228.9 lbs/day	
Spring	45.0 mg/l as BOD5	228.9 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
Summer	5.00	5.00
Fall	5.00	
Winter	5.00	
Spring	5.00	

**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	pre-2004
Summer	4 Day Avg. - Chronic	164.3 mg/l as N	835.9 lbs/day	59.43
	1 Hour Avg. - Acute	143.2 mg/l as N	728.4 lbs/day	169.42
Fall	4 Day Avg. - Chronic	295.8 mg/l as N	1,504.3 lbs/day	72.32
	1 Hour Avg. - Acute	180.0 mg/l as N	915.3 lbs/day	175.29
Winter	4 Day Avg. - Chronic	103.7 mg/l as N	527.4 lbs/day	58.69
	1 Hour Avg. - Acute	77.3 mg/l as N	393.1 lbs/day	144.68
Spring	4 Day Avg. - Chronic	130.2 mg/l as N	662.1 lbs/day	
	1 Hour Avg. - Acute	83.6 mg/l as N	425.2 lbs/day	

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.%.

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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	1.981	mg/l	10.08	lbs/day
	1 Hour Avg. - Acute	1.830	mg/l	9.31	lbs/day
Fall	4 Day Avg. - Chronic	2.155	mg/l	10.96	lbs/day
	1 Hour Avg. - Acute	1.990	mg/l	10.12	lbs/day
Winter	4 Day Avg. - Chronic	1.676	mg/l	8.52	lbs/day
	1 Hour Avg. - Acute	1.549	mg/l	7.88	lbs/day
Spring	4 Day Avg. - Chronic	4.936	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	4.546	mg/l	0.00	lbs/day

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

Season		Concentration		Load	
Summer	Maximum, Acute	30143.7	mg/l	76.66	tons/day
Fall	Maximum, Acute	29327.1	mg/l	74.58	tons/day
Winter	Maximum, Acute	32185.4	mg/l	81.85	tons/day
Spring	4 Day Avg. - Chronic	37830.0	mg/l	96.21	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 232.51 mg/l):

4 Day Average			1 Hour Average		
	Concentration	Load		Concentration	Load
Aluminum	N/A	N/A	14,218.1	ug/l	15.3 lbs/day
Arsenic	6,864.92 ug/l	22.6 lbs/day	6,450.7	ug/l	7.0 lbs/day
Cadmium	15.54 ug/l	0.1 lbs/day	94.2	ug/l	0.1 lbs/day
Chromium III	6,211.78 ug/l	20.4 lbs/day	68,410.4	ug/l	73.7 lbs/day
Chromium VI	258.83 ug/l	0.9 lbs/day	232.6	ug/l	0.3 lbs/day
Copper	667.95 ug/l	2.2 lbs/day	575.1	ug/l	0.6 lbs/day
Iron	N/A	N/A	18,992.3	ug/l	20.5 lbs/day
Lead	309.85 ug/l	1.0 lbs/day	4,530.3	ug/l	4.9 lbs/day
Mercury	0.44 ug/l	0.0 lbs/day	45.6	ug/l	0.0 lbs/day
Nickel	3,835.84 ug/l	12.6 lbs/day	18,200.9	ug/l	19.6 lbs/day
Selenium	110.79 ug/l	0.4 lbs/day	351.7	ug/l	0.4 lbs/day
Silver	N/A ug/l	N/A lbs/day	307.2	ug/l	0.3 lbs/day
Zinc	8,882.13 ug/l	29.2 lbs/day	4,655.4	ug/l	5.0 lbs/day
Cyanide	188.65 ug/l	0.6 lbs/day	418.3	ug/l	0.5 lbs/day

**Effluent Limitations for Heat/Temperature based upon Water Quality Standards**

Summer	100.0 Deg. C.	212.0 Deg. F
Fall	54.3 Deg. C.	129.8 Deg. F
Winter	42.6 Deg. C.	108.7 Deg. F
Spring	100.0 Deg. C.	212.0 Deg. F

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**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	1.18E-02 lbs/day
Chlordane	4.30E-03 ug/l	2.19E-02 lbs/day	1.2E+00	ug/l	9.41E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	5.09E-03 lbs/day	5.5E-01	ug/l	4.31E-03 lbs/day
Dieldrin	1.90E-03 ug/l	9.66E-03 lbs/day	1.3E+00	ug/l	9.80E-03 lbs/day
Endosulfan	5.60E-02 ug/l	2.85E-01 lbs/day	1.1E-01	ug/l	8.62E-04 lbs/day
Endrin	2.30E-03 ug/l	1.17E-02 lbs/day	9.0E-02	ug/l	7.05E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	7.84E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.93E-02 lbs/day	2.6E-01	ug/l	2.04E-03 lbs/day
Lindane	8.00E-02 ug/l	4.07E-01 lbs/day	1.0E+00	ug/l	7.84E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.35E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	7.84E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.14E-04 lbs/day
PCB's	1.40E-02 ug/l	7.12E-02 lbs/day	2.0E+00	ug/l	1.57E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	6.61E+01 lbs/day	2.0E+01	ug/l	1.57E-01 lbs/day
Toxephene	2.00E-04 ug/l	1.02E-03 lbs/day	7.3E-01	ug/l	5.72E-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	5.4 lbs/day
Nitrates as N	4.0 mg/l	4.3 lbs/day
Total Phosphorus as P	0.05 mg/l	0.1 lbs/day
Total Suspended Solids	90.0 mg/l	97.0 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	3.33E+03 ug/l	1.70E+01 lbs/day
Acrolein	1.48E+04 ug/l	7.53E+01 lbs/day
Acrylonitrile	2.59E+02 ug/l	1.32E+00 lbs/day
Benzene	1.89E+03 ug/l	9.61E+00 lbs/day
Benzidine	4.07E-01 ug/l	2.07E-03 lbs/day
Carbon tetrachloride	1.85E+02 ug/l	9.42E-01 lbs/day
Chlorobenzene	2.96E+04 ug/l	1.51E+02 lbs/day
1,2,4-Trichlorobenzene	2.81E+00 ug/l	1.43E-02 lbs/day
Hexachlorobenzene	2.93E-03 ug/l	1.49E-05 lbs/day
1,2-Dichloroethane	7.41E+04 ug/l	3.77E+02 lbs/day
1,1,1-Trichloroethane	7.41E+06 ug/l	3.77E+04 lbs/day
Hexachloroethane	3.70E+00 ug/l	1.88E-02 lbs/day
1,1,2-Trichloroethane	3.30E+02 ug/l	1.68E+00 lbs/day
1,1,2,2-Tetrachloroethane	1.11E+02 ug/l	5.65E-01 lbs/day
Bis(2-chlorolmethylether)	6.30E-01 ug/l	3.20E-03 lbs/day
Bis(2-chlorolmethylethylether)	1.48E+05 ug/l	7.53E+02 lbs/day
Bis(2-chloroethyl) ether	8.15E+01 ug/l	4.14E-01 lbs/day
2-Chloronaphthalene	3.70E+04 ug/l	1.88E+02 lbs/day
2,4,5-Trichlorophenol	2.22E+04 ug/l	
2,4,6-Trichlorophenol	1.04E+02 ug/l	5.27E-01 lbs/day
Chloroform (HM)	7.41E+04 ug/l	3.77E+02 lbs/day
2-Chlorophenol	2.96E+04 ug/l	1.51E+02 lbs/day
1,2-Dichlorobenzene	1.11E+05 ug/l	5.65E+02 lbs/day
1,3-Dichlorobenzene	3.70E+02 ug/l	1.88E+00 lbs/day
1,4-Dichlorobenzene	3.33E+04 ug/l	1.70E+02 lbs/day
3,3'-Dichlorobenzidine	5.55E+00 ug/l	2.83E-02 lbs/day
1,1-Dichloroethylene	7.41E+05 ug/l	3.77E+03 lbs/day
1,2-trans-Dichloroethylene	1.48E+05 ug/l	7.53E+02 lbs/day
2,4-Dichlorophenol	2.22E+03 ug/l	1.13E+01 lbs/day
1,2-Dichloropropane	1.15E+03 ug/l	5.84E+00 lbs/day
1,3-Dichloropropane	4.44E+02 ug/l	2.26E+00 lbs/day
1,3-Dichloropropylene	6.30E+04 ug/l	3.20E+02 lbs/day
2,4-Dimethylphenol	1.11E+05 ug/l	5.65E+02 lbs/day
2-Methyl-4,6-Dinitriphenol	1.11E+03 ug/l	5.65E+00 lbs/day
2,4-Dinitrotoluene	6.30E+01 ug/l	3.20E-01 lbs/day
1,2-Diphenylhydrazine	7.41E+00 ug/l	3.77E-02 lbs/day
Ethylbenzene	4.81E+03 ug/l	2.45E+01 lbs/day
Fluoranthene	7.41E+02 ug/l	3.77E+00 lbs/day
Fluorene	2.59E+03 ug/l	1.32E+01 lbs/day
Bis(2-chloroisopropyl) ether	2.41E+06 ug/l	1.22E+04 lbs/day
Methylene chloride (HM)	3.70E+04 ug/l	1.88E+02 lbs/day
Methyl bromide (HM)	3.70E+05 ug/l	1.88E+03 lbs/day
Bromoform (HM)	4.44E+03 ug/l	2.26E+01 lbs/day
Dichlorobromomethane(HM)	1.00E+03 ug/l	5.09E+00 lbs/day

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Chlorodibromomethane (HM)	7.78E+02 ug/l	3.96E+00 lbs/day
Hexachlorobutadiene(c)	3.70E-01 ug/l	1.88E-03 lbs/day
Hexachlorocyclopentadiene	1.48E+02 ug/l	7.53E-01 lbs/day
Ideno1,2,3-cdPyrene	4.81E-02 ug/l	2.45E-04 lbs/day
Isophorone	6.67E+04 ug/l	3.39E+02 lbs/day
Nitrobenzene	2.22E+04 ug/l	1.13E+02 lbs/day
2-Nitrophenol	3.70E+04 ug/l	1.88E+02 lbs/day
2,4-Dinitrophenol	1.11E+04 ug/l	5.65E+01 lbs/day
3-Methyl-4-Chlorophenol	7.41E+04 ug/l	3.77E+02 lbs/day
4,6-Dinitro-o-cresol	2.83E+04 ug/l	1.44E+02 lbs/day
N-Nitrosodiethylamine	4.59E+01 ug/l	2.34E-01 lbs/day
N-Nitrosodimethylamine	1.11E+02 ug/l	5.65E-01 lbs/day
N-Nitrosodiphenylamine	2.22E+02 ug/l	1.13E+00 lbs/day
N-Nitrosodi-n-propylamine	1.89E+01 ug/l	9.61E-02 lbs/day
N-Nitrosopyrrolidine	1.26E+03 ug/l	6.40E+00 lbs/day
Pentachlorobenzene	3.70E+00 ug/l	1.88E-02 lbs/day
Pentachlorophenol	1.48E+00 ug/l	7.53E-03 lbs/day
Phenol	1.11E+07 ug/l	5.65E+04 lbs/day
Bis(2-ethylhexyl)phthalate	1.37E+01 ug/l	6.97E-02 lbs/day
Butyl benzyl phthalate	3.70E+00 ug/l	1.88E-02 lbs/day
Di-n-butyl phthalate	1.11E+03 ug/l	5.65E+00 lbs/day
Diethyl phthalate	2.22E+04 ug/l	1.13E+02 lbs/day
Dimethyl phthalate	7.41E+04 ug/l	3.77E+02 lbs/day
Benzo(a)anthracene (PAH)	4.81E-02 ug/l	2.45E-04 lbs/day
Benzo(a)pyrene (PAH)	4.81E-03 ug/l	2.45E-05 lbs/day
Benzo(b)fluoranthene (PAH)	4.81E-02 ug/l	2.45E-04 lbs/day
Benzo(k)fluoranthene (PAH)	4.81E-01 ug/l	2.45E-03 lbs/day
Chrysene (PAH)	4.81E+00 ug/l	2.45E-02 lbs/day
Anthracene (PAH)	1.48E+04 ug/l	7.53E+01 lbs/day
Dibenzo(a,h)anthracene (PAH)	4.81E-03 ug/l	2.45E-05 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	1.15E+00 ug/l	5.84E-03 lbs/day
Pyrene (PAH)	1.11E+03 ug/l	5.65E+00 lbs/day
Tetrachloroethylene	1.07E+03 ug/l	5.46E+00 lbs/day
Toluene	1.93E+04 ug/l	9.79E+01 lbs/day
Trichloroethylene	2.59E+02 ug/l	1.32E+00 lbs/day
Vinyl chloride	5.92E+01 ug/l	3.01E-01 lbs/day
<b>Pesticides</b>		
Aldrin	2.85E-05 ug/l	1.45E-07 lbs/day
Dieldrin	4.44E-05 ug/l	2.26E-07 lbs/day
Chlordane	1.18E-02 ug/l	6.03E-05 lbs/day
4,4'-DDT	1.11E-03 ug/l	5.65E-06 lbs/day
4,4'-DDE	6.67E-04 ug/l	3.39E-06 lbs/day
4,4'-DDD	4.44E-03 ug/l	2.26E-05 lbs/day
alpha-Endosulfan	1.11E+03 ug/l	5.65E+00 lbs/day
beta-Endosulfan	1.48E+03 ug/l	7.53E+00 lbs/day
Endosulfan sulfate	1.48E+03 ug/l	7.53E+00 lbs/day
Endrin	1.11E+00 ug/l	5.65E-03 lbs/day
Endrin aldehyde	3.70E+01 ug/l	1.88E-01 lbs/day
Heptachlor	2.18E-04 ug/l	1.11E-06 lbs/day
Heptachlor epoxide	1.18E-03 ug/l	6.03E-06 lbs/day
<b>PCB's</b>		
PCBs	2.37E-03 ug/l	1.21E-05 lbs/day
<b>Pesticide</b>		
Toxaphene	2.63E-02 ug/l	1.34E-04 lbs/day
<b>Insecticide</b>		
Hexachlorocyclohexane (HCH)	3.70E-01 ug/l	lbs/day
alpha-BHC	1.44E-02 ug/l	7.35E-05 lbs/day
beta-BHC	5.18E-01 ug/l	2.64E-03 lbs/day
gamma-BHC	1.63E+02 ug/l	8.29E-01 lbs/day
Methoxychlor	7.41E-01 ug/l	3.77E-03 lbs/day



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**Metals**

Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Barium		
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)	ug/l	lbs/day
Copper	ug/l	lbs/day
Cyanide		
Iron	ug/l	lbs/day
Lead	ug/l	lbs/day
Mercury		
Nickel		
Selenium	ug/l	lbs/day
Silver		

**Dioxin**

Dioxin (2,3,7,8-TCDD)	5.18E-07 ug/l	2.64E-09 lbs/day
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**Metals Effluent Limitations for Protection of All Beneficial Uses  
Based upon Water Quality Standards and Toxics Rule**

	<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		14218.1				14218.1	N/A
Antimony				23698.9		23698.9	
Arsenic	3703.0	6450.7			0.0	3703.0	6864.9
Barium						0.0	
Beryllium						0.0	
Cadmium	367.4	94.2			0.0	94.2	15.5
Chromium (III)		68410.4			0.0	68410.4	6211.8
Chromium (VI)	3674.3	232.6			0.0	232.63	258.83
Copper	7377.3	575.1				575.1	668.0
Cyanide		418.3	8146499.7			418.3	188.6
Iron		18992.3				18992.3	
Lead	3674.3	4530.3			0.0	3674.3	309.8
Mercury		45.64		5.55	0.0	5.55	0.435
Nickel		18200.9		170335.9		18200.9	3835.8
Selenium	1794.2	351.7			0.0	351.7	110.8
Silver		307.2			0.0	307.2	
Thallium				17.4		17.4	
Zinc		4655.4				4655.4	8882.1
Boron	27772.2					27772.2	

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**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	14218.1	N/A	
Antimony	23698.91		
Arsenic	3703.0	6864.9	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	94.2	15.5	
Chromium (III)	68410.4	6212	
Chromium (VI)	232.6	258.8	Acute Controls
Copper	575.1	668.0	Acute Controls
Cyanide	418.3	188.6	
Iron	18992.3		
Lead	3674.3	309.8	
Mercury	5.554	0.435	
Nickel	18200.9	3836	
Selenium	351.7	110.8	
Silver	307.2	N/A	
Thallium	17.4		
Zinc	4655.4	8882.1	Acute Controls
Boron	27772.16		

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

**X. Antidegradation Considerations**

The Utah Antidegradation Policy allows for degradation of existing quality where it is determined that such lowering of water quality is necessary to accommodate important economic or social development in the area in which the waters are protected [R317-2-3]. It has been determined that certain chemical parameters introduced by this discharge will cause an increase of the concentration of said parameters in the receiving waters. Under no conditions will the increase in concentration be allowed to interfere with existing instream water uses.

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review was not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value.

**XII. Summary Comments**

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

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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.

**THIS IS A DRAFT DOCUMENT**

Utah Division of Water Quality  
801-538-6052  
File Name: MtGreenLagoons\_WLA\_1-20-2020

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 0.830	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.730	REAER. Coeff. (Ka)20 (Ka)/day 4.289	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 4.014	NBOD Coeff. (Kn)20 1/day 0.400	NBOD Coeff. (Kn)T 1/day 0.323
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 3.518	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 27.189
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.839						
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 any degradation is de minimis in nature and therefore does not require a Level II review. The proposed activity is a basic permit renewal. No increase in effluent concentration or load is requested over that allowed under the current UPDES Permit.