WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility:	**Duchesne Valley Water Treatment Plant**		
UPDES No:	UT0025801		
Current Flow:	0.65	MGD	Design Flow
Design Flow	0.65	MGD	

Receiving Water:	**Starvation Reservoir**		
Lake Classification:	1C, 2A, 3A, 4		
TDS (mg/l)	334.76		Average
Hardness (mg/l)	220.00		Average
pH	8.20		Average
Temp (C)	13.5		Average

Selected Effluent Limit Summary:				**WQ Standard:**
Flow, MGD:	0.65	MGD	Design Flow	
BOD, mg/l:	25.0	All Season	5	Indicator
Dissolved Oxygen, mg/l:	5.00	All Season	6.50	30 Day Average
TNH3, Acute, mg/l:	14.90	All Season	Varies	Function of pH and Temperature
TDS, mg/l:	1200.00	All Season	1200	Receiving water is impaired for TDS
Zinc, ug/l	2580.82	All Season	Varies	Function of Hardness
Copper, ug/l	304.96	All Season	Varies	Function of Hardness

Modeling Parameters:

Acute Dilution Ratio	11.90	to 1
Chronic Dilution Ratio:	67.97	to 1

Level 1 Antidegradation Level Completed: Level II Review not required -
No increase over in concentration or load of pollutants over previous permit

Wasteload Analysis - Total Maximum Daily Load (Lake TMDL)

3/16/2021 9:58

Facility: **Duchesne Valley Water Treatment Plant** **UPDES No: UT- UT0025801**
Discharging to: **Starvation Reservoir**

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 lake water quality. The wasteload analysis does not take 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 water quality parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), unionized ammonia (as a function of pH and temperature, measured and evaluated interms of total ammonia), and dissolved oxygen.

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

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

II. Receiving Water and Lake / Reservoir Classification

Starvation Reservoir	1C, 2A, 3A, 4

III. Numeric Water Quality Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Function of Temperature and pH	pH	Temp
	1.67 mg/l as N (4 Day Average)	8.25	13.4
	3.50 mg/l as N (1 Hour Average	8.25	13.4
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 [Class 4 Ag]	1200 mg/l		
Maximum Boron [Class 4 Ag]	750 mg/l		

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration		1 Hour Average (Acute) Standard Concentration	
Aluminum	87.000	ug/l	750	ug/l
Antimony		ug/l		ug/l
Arsenic	190.000	ug/l	360.00	ug/l
Asbestos		ug/l		ug/l
Barium		ug/l	1000.00	ug/l
Beryllium		ug/l		ug/l
Cadmium	0.482	ug/l	4.71	ug/l
Chromium III	162.973	ug/l	3409.72	ug/l
ChromiumVI	11.000	ug/l	16.00	ug/l
Copper	18.136	ug/l	29.14	ug/l
Cyanide	5.200	ug/l	22.00	ug/l
Iron		ug/l	1000.00	ug/l
Lead	8.565	ug/l	219.80	ug/l
Mercury	0.012	ug/l	2.40	ug/l
Nickel	170.40	ug/l	906.08	ug/l
Selenium	5.000	ug/l	20.00	ug/l
Silver		ug/l	14.43	ug/l
Thallium				
Zinc	231.627	ug/l	231.63	ug/l
Based upon a Hardness of 217.7 mg/l as CaCO3			Based upon 217.87 mg/l as CaCO3	

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration		1 Hour Average (Acute) Standard Concentration	
Aldrin			1.500	ug/l
Chlordane	0.0043	ug/l	1.200	ug/l
DDT, DDE	0.001	ug/l	0.550	ug/l
Dieldrin	0.0056	ug/l	0.240	ug/l
Endosulfan, a & b	0.056	ug/l	0.110	ug/l
Endrin	0.036	ug/l	0.086	ug/l
Guthion				
Heptachlor & H. epoxide	0.0038	ug/l	0.260	ug/l
Lindane	0.08	ug/l	1.000	ug/l
Methoxychlor			0.030	ug/l
Mirex			0.001	ug/l
Parathion	0.0130	ug/l	0.066	ug/l
PCB's	0.014	ug/l		
Pentachlorophenol	15.00	ug/l	19.000	ug/l
Toxephene	0.0002	ug/l	0.730	ug/l

IV. Numeric Water Quality Standards for Protection of Agriculture

	1 Hour Average (Acute) Standard Concentration	
TDS	1200	mg/l
Arsenic	100	ug/l
Boron	750	ug/l
Cadmium	10	ug/l
Chromium	100	ug/l
Copper	200	ug/l
Lead	100	ug/l
Selenium	50	ug/l

V. Numeric Water Quality Standards for Protection of Human Health (Class 1C Waters)

Metals	1 Hour Average (Acute) Standard Concentration	
Arsenic	10	ug/l
Barium	1000	ug/l
Cadmium	10	ug/l
Chromium	50	ug/l
Lead	15	ug/l
Mercury	2	ug/l
Selenium	50	ug/l
Silver	50	ug/l
Fluoride (3)	1400	ug/l
to	2400	ug/l
Nitrates as N	10000	ug/l
Chlorophenoxy Herbicides		
2,4-D	0	ug/l
2,4,5-TP	0	ug/l
Methoxychlor	0	ug/l

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

	Maximum Conc., ug/l - Acute Standards	
	Class 1C	Class 3A, 3B, 3C, 3D
	[2 Liters/Day for 70 Kg Person over 70 Yr.	[6.5 g for 70 Kg Person over 70 Yr.]
Antimony	5.6 ug/l	640 ug/l
Arsenic	A	A
Beryllium	C	C
Cadmium	C	C
Chromium III	C	C
Chromium VI	C	C
Copper	1,300 ug/l	
Lead	C	C
Mercury	A	A
Nickel	100 ug/l	4,600 ug/l
Selenium	A	4,200 ug/l
Silver		
Thallium	0.24 ug/l	6.3 ug/l
Zinc	7400 ug/l	26,000 ug/l
Cyanide	140 ug/l	220,000 ug/l
Asbestos	7.00E+06 Fibers/L	
2,3,7,8-TCDD Dioxin	5.0 E-9 ug/l	5.1 E-9 ug/l
Acrolein	190 ug/l	290 ug/l
Acrylonitrile	0.051 ug/l	0.25 ug/l
Alachlor	2 ug/l	
Benzene	2.2 ug/l	51 B ug/l
Bromoform	4.3 ug/l	140.00 ug/l
Carbofuran	40	
Carbon Tetrachloride	0.23 ug/l	1.60 ug/l
Chlorobenzene	100 ug/l	21,000 ug/l
Chlorodibromomethane	0.4 ug/l	13.00 ug/l
Chloroethane		
2-Chloroethylvinyl Ether		
Chloroform	5.7 ug/l	470.00 ug/l
Dalapon	200 ug/l	
Di(2ethylhexl)adipate	400 ug/l	

Dichlorobromopropane	0.2				
Dichlorobromomethane	0.55	ug/l		17.00	ug/l
1,1-Dichloroethane					
1,2-Dichloroethane	0.38	ug/l		37.00	ug/l
1,1-Dichloroethylene	7	ug/l		3.20	ug/l
Dichloroethylene (cis-1,2)	70				
Dinoseb	7				
Diquat	20				
1,2-Dichloropropane	0.5	ug/l		15.00	ug/l
1,3-Dichloropropene	0.34	ug/l		1,700	ug/l
Endothall	100				
Ethylbenzene	530	ug/l		29,000	ug/l
Ethyldibromide	0.05	ug/l			
Glyphosate	700	ug/l			
Haloacetic acids	60	ug/l E			
Methyl Bromide	47	ug/l		1,500	ug/l
Methyl Chloride	F			F	
Methylene Chloride	4.6	ug/l		590.00	ug/l
Ocamyl (vidate)	200	ug/l			
Picloram	500	ug/l			
Simazine	4	ug/l			
Styrene	100	ug/l			
1,1,2,2-Tetrachloroethane	0.17	ug/l		4.00	ug/l
Tetrachloroethylene	0.69	ug/l		3.30	ug/l
Toluene	1000	ug/l		200,000	ug/l
1,2 -Trans-Dichloroethylene	100	ug/l		140,000	ug/l
1,1,1-Trichloroethane	200	ug/l		F	
1,1,2-Trichloroethane	0.59	ug/l		16.00	ug/l
Trichloroethylene	2.5	ug/l		30.00	ug/l
Vinyl Chloride	0.025	ug/l		530.00	ug/l
Xylenes	10000	ug/l			
2-Chlorophenol	81	ug/l		150	ug/l
2,4-Dichlorophenol	77	ug/l		290	ug/l
2,4-Dimethylphenol	380	ug/l		850	ug/l
2-Methyl-4,6-Dinitrophenol	13	ug/l		280	ug/l
2,4-Dinitrophenol	69	ug/l		5,300	ug/l
2-Nitrophenol					
4-Nitrophenol					
3-Methyl-4-Chlorophenol					
Penetachlorophenol	0.27	ug/l		3.00	ug/l
Phenol	21000	ug/l		1,700,000	ug/l
2,4,6-Trichlorophenol	1.4	ug/l		2.40	ug/l
Acenaphthene	670	ug/l		990	ug/l
Acenaphthylene		ug/l			ug/l
Anthracene	8300	ug/l		40,000	ug/l
Benzidine	0.000086	ug/l	B	0.00	ug/l
BenzoaAnthracene	0.0038	ug/l		0.02	ug/l
BenzoaPyrene	0.0038	ug/l		0.02	ug/l
BenzobFluoranthene	0.0038	ug/l		0.02	ug/l
BenzoghiPerylene		ug/l			
BenzokFluoranthene	0.0038	ug/l		0.02	ug/l
Bis2-ChloroethoxyMethane		ug/l			
Bis2-ChloroethylEther	0.03	ug/l		0.53	ug/l
Bis2-Chloroisopropy1Ether	1400	ug/l		65,000	ug/l
Bis2-EthylbexylPhthalate	1.2	ug/l		2.20	ug/l
4-Bromophenyl Phenyl Ether		ug/l			
Butylbenzyl Phthalate	1500	ug/l		1,900	ug/l
2-Chloronaphthalene	1000	ug/l		1,600	ug/l
4-Chlorophenyl Phenyl Ether		ug/l			

Chrysene	0.0038 ug/l		0.02 ug/l
Dibenzoa, hAnthracene	0.0038 ug/l		0.02 ug/l
1,2-Dichlorobenzene	420 ug/l		17,000 ug/l
1,3-Dichlorobenzene	320 ug/l		960 ug/l
1,4-Dichlorobenzene	63 ug/l		2,600 ug/l
3,3-Dichlorobenzidine	0.021 ug/l		0.03 ug/l
Diethyl Phthalate	17000 ug/l		44,000 ug/l
Dimethyl Phthalate	270000 ug/l		1,100,000 ug/l
Di-n-Butyl Phthalate	2000 ug/l		4,500 ug/l
2,4-Dinitrotoluene	0.11 ug/l		3.40 ug/l
2,6-Dinitrotoluene	ug/l		
Di-n-Octyl Phthalate	ug/l		
1,2-Diphenylhydrazine	0.036 ug/l		0.20 ug/l
Fluoranthene	130 ug/l		140.00 ug/l
Fluorene	1100 ug/l		5,300 ug/l
Hexachlorobenzene	0.00028 ug/l		0.00029 B ug/l
Hexachlorobutedine	0.44 ug/l		18.00 ug/l
Hexachloroethane	1.4 ug/l		3.30 ug/l
Hexachlorocyclopentadiene	40 ug/l		17,000 ug/l
Ideno 1,2,3-cdPyrene	0.0038 ug/l		0.02 ug/l
Isophorone	35 ug/l	B	960.00 ug/l
Naphthalene			
Nitrobenzene	17 ug/l		690 ug/l
N-Nitrosodimethylamine	0.00069 ug/l		3.00 ug/l
N-Nitrosodi-n-Propylamine	0.005 ug/l		0.51 ug/l
N-Nitrosodiphenylamine	3.3 ug/l		6.00 ug/l
Phenanthrene			
Pyrene	830 ug/l		4,000 ug/l
1,2,4-Trichlorobenzene	260 ug/l		940 ug/l
Aldrin	0.000049 ug/l		0.000050 ug/l
alpha-BHC	0.0026 ug/l		0.00 ug/l
beta-BHC	0.0091 ug/l		0.02 ug/l
gamma-BHC (Lindane)	0.2 ug/l		0.06 ug/l
delta-BHC			
Chlordane	0.0008 ug/l		0.00 ug/l
4,4-DDT	0.00022 ug/l		0.00 ug/l
4,4-DDE	0.00022 ug/l		0.00 ug/l
4,4-DDD	0.00031 ug/l		0.00 ug/l
Dieldrin	0.000052 ug/l	B	0.000054 ug/l
alpha-Endosulfan	62 ug/l		89 ug/l
beta-Endosulfan	62 ug/l		89 ug/l
Endosulfan Sulfate	62 ug/l		89 ug/l
Endrin	0.059 ug/l		0.81 ug/l
Endrin Aldehyde	0.29 ug/l		0.30 ug/l
Heptachlor	0.000079 ug/l	B	0.000079 ug/l
Heptachlor Epoxide	0.000039 ug/l	B	0.000039 ug/l
Polychlorinated Biphenyls	0.000064 ug/l	B,D	0.000064 ug/l
Toxaphene	0.00028 ug/l		0.00028 ug/l

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 Water Quality 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) 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.

The Utah Reservoir and Lake Model is a simple round jet model which was received from EPA Region 8. It assumes a discharge expands into the receiving water as a 1/2 cone from the point of discharge with the appropriate dilution.

The dilution ratios for this wasteload analysis are as follows:

Acute Dilution Ratio:	**11.9 to 1**
Chronic Dilution Ration:	**68.0 to 1**

VIII. Modeling Information

The required information for the model may include the following information for both the lake and effluent conditions:

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
D.O. mg/l	

Other Conditions

In addition to the lake 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

Lake Information	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD mg/l	DO mg/l	TRC mg/l	TDS mg/l	Metals ug/l
	13.4	8.3	0.00	N/A	N/A	0.00	334.8	0.0

	Season	Flow, MGD	Temp.
Discharge Information	All Seasons	0.7	13.5

IX. Effluent Limitations based upon Water Quality Standards

Effluent Limitation for Flow

All Seasons

Not to Exceed:	0.65	MGD	Daily Average
	1.01	cfs	Daily Average

WET Requirements: As determined by Permits & Compliance Branch

Effluent Limitation for Biological Oxygen Demand (BOD)

	Concentration	
30 Day Average	25.0	mg/l as BOD5
30 Day Average	20.0	mg/l as CBOD5

Effluent Limitation for Dissolved Oxygen (DO)

	Concentration 1 Day Average (Acute)	
30 Day Average	5.00	mg/l

Effluent Limitation for Total Ammonia

	4 Day Average [Chronic] Concentration		Load	
All Seasons	202.94	mg/l as N	1099.9	lbs/day

	1 Hour Average [Acute] Concentration		Load	
	14.9	mg/l as N	80.8	lbs/day

Effluent Limitation for Total Residual Chlorine

	4 Day Average [Chronic] Concentration	Load
All Seasons	0.748 mg/l	4.1 lbs/day

	1 Hour Average [Acute] Concentration	Load
	0.226 mg/l	1.2 lbs/day

Effluent Limitations for Metals

	4 Day Average (Chronic) Concentration	Load	1 Hour Average (Acute) Concentration	Load
Aluminum	4710.26 ug/l*	16.5 lbs/day	8725.88 ug/l	30.6 lbs/day
Arsenic	9966.47 ug/l	34.9 lbs/day	4007.12 ug/l*	14.0 lbs/day
Barium			11895.56 ug/l	41.7 lbs/day
Cadmium	13.96 ug/l*	0.0 lbs/day	48.65 ug/l	0.2 lbs/day
Chromium III	6798.38 ug/l*	23.8 lbs/day	12381.05 ug/l	43.4 lbs/day
ChromiumVI	610.42 ug/l	2.1 lbs/day	167.99 ug/l*	0.6 lbs/day
Copper	1011.34 ug/l	3.5 lbs/day	304.96 ug/l*	1.1 lbs/day
Cyanide	61.86		261.70	
Iron			259.31 ug/l	0.9 lbs/day
Lead	334.20 ug/l*	1.2 lbs/day	1763.41 ug/l	6.2 lbs/day
Mercury	0.01 ug/l*	0.000 lbs/day	28.42 ug/l	0.1 lbs/day
Nickel	6592.75 ug/l*	23.1 lbs/day	10725.47 ug/l	37.6 lbs/day
Selenium	279.20 ug/l	1.0 lbs/day	213.43 ug/l*	0.7 lbs/day
Silver			139.18 ug/l	0.5 lbs/day
Zinc	111667.07 ug/l	391.2 lbs/day	2580.82 ug/l*	9.0

* Most stringent between Chronic & Acute Effluent Limitations

Effluent Limitations for Organics [Pesticides]

Pesticide	4 Day Average Concentration	Load	1 Hour Average Concentration	Load
Aldrin			17.8433 ug/l	0.063 lbs/day
Chlordane	0.2923 ug/l*	0.001 lbs/day	14.2747 ug/l	0.050 lbs/day
DDT, DDE	0.0680 ug/l*	0.000 lbs/day	6.5426 ug/l	0.023 lbs/day
Dieldrin	0.3807 ug/l*	0.001 lbs/day	2.8549 ug/l	0.010 lbs/day
Endosulfan	3.8066 ug/l	0.013 lbs/day	1.3085 ug/l*	0.005 lbs/day
Endrin	2.4471 ug/l	0.009 lbs/day	1.0230 ug/l*	0.004 lbs/day
Guthion			0.0000 ug/l	0.000 lbs/day
Heptachlor	0.2583 ug/l*	0.001 lbs/day	3.0928 ug/l	0.011 lbs/day
Lindane	5.4380 ug/l*	0.019 lbs/day	11.8956 ug/l	0.042 lbs/day
Methoxychlor			0.3569 ug/l	0.001 lbs/day
Mirex			0.0119 ug/l	0.000 lbs/day
Parathion			0.7851 ug/l	0.003 lbs/day
PCB's	0.9516 ug/l	0.003 lbs/day	0.0000 ug/l*	0.000 lbs/day
Pentachlorophenol	1019.6197 ug/l	3.572 lbs/day	226.0157 ug/l*	0.792 lbs/day
Toxephene	0.0136 ug/l*	0.000 lbs/day	8.6838 ug/l	0.030 lbs/day

Effluent Limitations for Protection of Human Health (Class 1C Waters)

Metals	1 Hour Average (Acute) Standard Concentration	Load
Arsenic	0.00 ug/l	0.00 lbs/day
Barium	0.00 ug/l	0.00 lbs/day
Cadmium	0.00 ug/l	0.00 lbs/day
Chromium	0.00 ug/l	0.00 lbs/day
Lead	0.00 ug/l	0.00 lbs/day
Mercury	0.00 ug/l	0.00 lbs/day
Selenium	0.00 ug/l	0.00 lbs/day
Silver	0.00 ug/l	0.00 lbs/day
Fluoride	0.00 ug/l	0.00 lbs/day
to	0.00 ug/l	0.00 lbs/day
Nitrates as N	0.00 ug/l	0.00 lbs/day
Pesticides		
2,4-D	0.00 ug/l	0.00 lbs/day
2,4,5-TP	0.00 ug/l	0.00 lbs/day
Methoxychlor	0.00 ug/l	0.00 lbs/day

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

	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Toxics Rule Parameters	[2 Liters/Day for 70 Kg Person over 70 Yr.		[6.5 g for 70 Kg Person over 70 Yr. Period]	
Antimony	0.00 ug/l	0.00 lbs/day	66.62 ug/l	0.2 lbs/day
Arsenic				
Beryllium				
Cadmium				
Chromium III				
Chromium VI				
Copper	0.00 ug/l	0.00 lbs/day	15464.23 ug/l	54.2 lbs/day
Lead				
Mercury		lbs/day	1189.56 ug/l	4.2 lbs/day
Nickel	0.00 ug/l	0.00 lbs/day		
Selenium			88027.17 ug/l	308.4 lbs/day
Silver			1665.38 ug/l	5.8 lbs/day
Thallium	0.00 ug/l	0.00 lbs/day		
Zinc	0.00 ug/l	0.00 lbs/day	2260.16 ug/l	7.9 lbs/day
Cyanide	0.00 ug/l	0.00 lbs/day	0.61 ug/l	0.0 lbs/day
Asbestos	0.00 ug/l	0.00E+00 lbs/day	51.15 ug/l	0.2 lbs/day
0	0.00 ug/l	0.00 lbs/day		
2,3,7,8-TCDD Dioxin	0.00 ug/l	0.00 lbs/day	1189.56 ug/l	4.2 lbs/day
Acrolein	0.00 ug/l	0.00 lbs/day	4.76 ug/l	0.0 lbs/day
Acrylonitrile	0.00 ug/l	0.00 lbs/day		
Benzene	0.00 ug/l	0.00 lbs/day		
Bromoform	0.00 ug/l	0.00 lbs/day	67.80 ug/l	0.2 lbs/day
Carbon Tetrachloride	0.00 ug/l	0.00 lbs/day		
Chlorobenzene	0.00 ug/l	0.00 lbs/day		
Chlorodibromomethane	0.00 ug/l	0.00 lbs/day	4.52 ug/l	0.0 lbs/day
Chloroethane	0.00 ug/l	0.00 lbs/day	83.27 ug/l	0.3 lbs/day
2-Chloroethylvinyl Ether	0.00 ug/l	0.00 lbs/day	5.95 ug/l	0.0 lbs/day
Chloroform	0.00 ug/l	0.00 lbs/day	4.04 ug/l	0.0 lbs/day
Dichlorobromomethane	0.00 ug/l	0.00 lbs/day	559.09 ug/l	2.0 lbs/day
1,1-Dichloroethane	0.00 ug/l	0.00 lbs/day		

1,2-Dichloroethane	0.00 ug/l	0.00 lbs/day	54.72 ug/l	0.2 lbs/day
1,1-Dichloroethylene	0.00 ug/l	0.00 lbs/day	2.02 ug/l	0.0 lbs/day
1,2-Dichloropropane	0.00 ug/l	0.00 lbs/day	11895.56 ug/l	41.7 lbs/day
1,3-Dichloropropene	0.00 ug/l	0.00 lbs/day	7.02 ug/l	0.0 lbs/day
Ethylbenzene	0.00 ug/l	0.00 lbs/day	29.74 ug/l	0.1 lbs/day
Methyl Bromide	0.00 ug/l	0.00 lbs/day	0.30 ug/l	0.0 lbs/day
Methyl Chloride	0.00 ug/l	0.00 lbs/day	963.54 ug/l	3.4 lbs/day
Methylene Chloride	0.00 ug/l	0.00 lbs/day	915.96 ug/l	3.2 lbs/day
1,1,2,2-Tetrachloroethane	0.00 ug/l	0.00 lbs/day	4520.31 ug/l	15.8 lbs/day
Tetrachloroethylene	0.00 ug/l	0.00 lbs/day	154.64 ug/l	0.5 lbs/day
Toluene	0.00 ug/l	0.00 lbs/day		
1,2 -Trans-Dichloroethylene	0.00 ug/l	0.00 lbs/day		
1,1,1-Trichloroethane	0.00 ug/l	0.00 lbs/day	3.21 ug/l	0.0 lbs/day
1,1,2-Trichloroethane	0.00 ug/l	0.00 lbs/day	249806.83 ug/l	875.2 lbs/day
Trichloroethylene	0.00 ug/l	0.00 lbs/day	16.65 ug/l	0.1 lbs/day
Vinyl Chloride	0.00 ug/l	0.00 lbs/day	7970.03 ug/l	27.9 lbs/day
2-Chlorophenol	0.00 ug/l	0.00 lbs/day		
2,4-Dichlorophenol	0.00 ug/l	0.00 lbs/day	98733.18 ug/l	345.9 lbs/day
2,4-Dimethylphenol	0.00 ug/l	0.00 lbs/day		
2-Methyl-4,6-Dinitrophenol	0.00 ug/l	0.00 lbs/day	0.05 ug/l	0.0 lbs/day
2,4-Dinitrophenol	0.00 ug/l	0.00 lbs/day	0.05 ug/l	0.0 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.05 ug/l	0.0 lbs/day
4-Nitrophenol	0.0000 ug/l	0.0000 lbs/day		
3-Methyl-4-Chlorophenol	0.0000 ug/l	0.0000 lbs/day	0.05 ug/l	0.000 lbs/day
Penetachlorophenol	0.0000 ug/l	0.0000 lbs/day		
Phenol	0.0000 ug/l	0.00E+00 lbs/day	0.36 ug/l	0.001 lbs/day
2,4,6-Trichlorophenol	0.0000 ug/l	0.0000 lbs/day	16653.79 ug/l	58.347 lbs/day
Acenaphthene	0.00 ug/l	0.00 lbs/day		
Acenaphthylene	0.00 ug/l	0.00 lbs/day	17843.35 ug/l	62.5 lbs/day
Anthracene	0.00 ug/l	0.00 lbs/day	11895.56 ug/l	41.7 lbs/day
Benzidine	0.00 ug/l	0.00 lbs/day		
BenzoaAnthracene	0.00 ug/l	0.00 lbs/day	0.05 ug/l	0.0 lbs/day
BenzoaPyrene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.0 lbs/day
BenzobFluoranthene	0.00 ug/l	0.00 lbs/day	4996.14 ug/l	17.5 lbs/day
BenzoghiPerylene	0.00 ug/l	0.00 lbs/day	3806.58 ug/l	13.3 lbs/day
BenzokFluoranthene				
Bis2-ChloroethoxyMethane				
Bis2-ChloroethylEther	0.0000 ug/l	0.00000 lbs/day	2.02E+05 ug/l	7.08E+02 lbs/day
Bis2-Chloroisopropy1Ether	0.0000 ug/l	0.00E+00 lbs/day	3.21E+06 ug/l	1.13E+04 lbs/day
Bis2-EthylbexylPhthalate	0.0000 ug/l	0.00000 lbs/day	######### ug/l	83.35221 lbs/day
4-Bromophenyl Phenyl Ether	0.0000 ug/l	0.00000 lbs/day	1.30851 ug/l	0.00458 lbs/day
Butylbenzyl Phthalate	0.0000 ug/l	0.00E+00 lbs/day		
2-Chloronaphthalene	0.0000 ug/l	0.00000 lbs/day		
4-Chlorophenyl Phenyl Ether	0.0000 ug/l	0.00000 lbs/day	0.42824 ug/l	0.00150 lbs/day
Chrysene	0.0000 ug/l	0.00000 lbs/day	######### ug/l	5.41789 lbs/day
Dibenzoa, hAnthracene	0.0000 ug/l	0.00000 lbs/day	######### ug/l	45.84372 lbs/day
1,2-Dichlorobenzene	0.0000 ug/l	0.00000 lbs/day	0.00333 ug/l	0.00001 lbs/day
1,3-Dichlorobenzene	0.0000 ug/l	0.00000 lbs/day	5.23405 ug/l	0.01834 lbs/day
1,4-Dichlorobenzene	0.0000 ug/l	0.00000 lbs/day	16.65379 ug/l	0.05835 lbs/day
3,3-Dichlorobenzidine				
Diethyl Phthalate				
Dimethyl Phthalate				
Di-n-Butyl Phthalate	0.00000 ug/l	0.00000 lbs/day		
2,4-Dinitrotoluene	0.00000 ug/l	0.00000 lbs/day	######### ug/l	0.708494 lbs/day
2,6-Dinitrotoluene	0.00000 ug/l	0.00000 lbs/day	0.008208 ug/l	0.000029 lbs/day
Di-n-Octyl Phthalate	0.00000 ug/l	0.00000 lbs/day	0.059478 ug/l	0.000208 lbs/day
1,2-Diphenylhydrazine	0.00000 ug/l	0.00000 lbs/day	39.255360 ug/l	0.137531 lbs/day
Fluoranthene	0.00000 ug/l	0.00000 lbs/day		
Fluorene	0.00000 ug/l	0.00000 lbs/day	9.87E+03 ug/l	3.46E+01 lbs/day

Hexachlorobenzene				
Hexachlorobutedine				
Hexachloroethane	0.00 ug/l	0.00 lbs/day		
Hexachlorocyclopentadiene				
Ideno 1,2,3-cdPyrene				
Isophorone	0.00 ug/l	0.00 lbs/day		
Naphthalene				
Nitrobenzene				
N-Nitrosodimethylamine	0.00 ug/l	0.00 lbs/day		
N-Nitrosodi-n-Propylamine	0.00 ug/l	0.00 lbs/day	0.00 ug/l	0.0 lbs/day
N-Nitrosodiphenylamine	0.00E+00 ug/l	0.00E+00 lbs/day		
Phenanthrene	0.00 ug/l	0.00 lbs/day	737.52 ug/l	2.6 lbs/day
Pyrene	0.00 ug/l	0.00 lbs/day		
1,2,4-Trichlorobenzene			737.52 ug/l	2.6 lbs/day
Aldrin			0.70 ug/l	0.0 lbs/day
alpha-BHC	0.00000000 ug/l	0.000000 lbs/day		
beta-BHC	0.00000000 ug/l	0.000000 lbs/day		
gamma-BHC (Lindane)	0.00000000 ug/l	0.000000 lbs/day		
delta-BHC		0.000000 lbs/day		
Chlordane	0.00000000 ug/l	0.000000 lbs/day		
4,4-DDT	0.00000000 ug/l	0.000000 lbs/day		
4,4-DDE	0.00000000 ug/l	0.000000 lbs/day		
4,4-DDD	0.00000000 ug/l	0.000000 lbs/day		
Dieldrin		0.000000 lbs/day		
alpha-Endosulfan	0.00 ug/l	0.000 lbs/day		
beta-Endosulfan	0.00 ug/l	0.000 lbs/day		
Endosulfan Sulfate	0.00 ug/l	0.000 lbs/day		
Endrin	0.00000000 ug/l	0.000 lbs/day		
Endrin Aldehyde	0.00000000 ug/l	0.000 lbs/day		
Heptachlor		lbs/day		
Heptachlor Epoxide		lbs/day		
Polychlorinated Biphenyls		lbs/day		
0	0.00000000 ug/l	0.000000 lbs/day		
Toxaphene	0.00000000 ug/l	0.000000 lbs/day		
Specific Parameter: TDS	0 ug/l	0.000000 lbs/day	1595.62 mg/l	5.6 tons / day

Effluent Limitations for the Protection of Agriculture

	1 Hour Average (Acute) Standard Concentration	Load
Arsenic	1189.56 ug/l	4.17 lbs / day
Boron	8921.67 ug/l	31.26 lbs / day
Cadmium	118.96 ug/l	0.42 lbs / day
Chromium	1189.56 ug/l	4.17 lbs / day
Copper	594.78 ug/l	2.08 lbs / day
Lead	1189.56 ug/l	4.17 lbs / day
Selenium	594.78 ug/l	2.08 lbs / day

Metals Effluent Limitations for Protection of All Beneficial Uses
Based upon Water Quality Standards and Toxics Rules

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		8725.88				8725.88	4710.26
Antimony			0.00			0.00	
Arsenic	1189.56	4007.12			10.00	10.00	9966.47
Asbestos							
Barium		11895.56			1000.00	1000.00	
Boron							
Cadmium	118.96	48.65			0.00	0.00	13.96
Chromium (III)		12381.1			50.00	50.00	6798.38
Chromium (VI)	1189.56	167.99				167.99	610.42
Copper	594.78	304.96				304.96	1011.34
Cyanide		261.70		0.00		0.00	61.86
Iron		259.31				259.31	
Lead	1189.56	1763.41			15.00	15.00	334.20
Mercury		28.4186			0.00	0.00	0.0120
Nickel		10725.47		0.00		0.00	6592.75
Selenium	594.78	213.43			50.00	50.00	279.20
Silver		139.18			0.00	0.00	
Thallium				0.00		0.00	
Zinc		2580.82				2580.82	111667.07

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

	Acute		Chronic	
	ug/l	lbs/day	ug/l	lbs/day
Aluminum	8725.88	47.3	4710.26	25.5
Antimony				
Arsenic	10.00	0.1	9966.47	54.0
Asbestos				
Cadmium	0.00	0.0	13.96	0.1
Chromium (III)	50.00	0.3	6798.38	36.8
Chromium (VI)	167.99	0.9	610.42	3.3
Copper	304.96	1.7	1011.34	5.5
Cyanide	0.00	0.0	61.86	0.3
Iron	259.31	1.4		
Lead	15.00	0.1	334.20	1.8
Mercury	0.00	0.0	0.01	0.0
Nickel	0.00	0.0	6592.75	35.7
Selenium	50.00	0.3	279.20	1.5
Silver	0.00	0.0		
Zinc	2580.82	14.0	111667.07	605.2

Effluent Indicators / Targets for Pollution Indicators

Water quality targets for pollution Indicators will be met with an effluent limit as follows:

	Indicator / Target mg/l	Target mg/l	lbs/day
Gross Beta (pCi/l)	50.0 pCi/L		
BOD	5.0	59.48	21791.68
Nitrates as N	4.0	47.58	17433.35
Total Phosphorus as P	0.05	0.59	217.92
Total Suspended Solids	90.0	1070.60	392250.28

Other Effluent Limitations are based upon R317-1.

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 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 interfer with existing water users.

Category III waters fall under special rules for the determination of effluent limits. These rules allow more stringent effluent limitations based upon additional factors, including: "blue-ribbon" fisheries, special recreation areas, and drinking water sources.

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 shown that this is not attainable. Refer to the Forum's Guidelines for additional information. This doesn’t apply to facilities that do not discharge to the Colorado River Basin.

The permit writers may utilize other information to adjust these limits and/or to determine other limits based upon best available technology and other considerations.

XII. Summary Comments

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

The permit writers may utilize other information to adjust these limits or to determine other limite based upon best available technology and other considerations. Under no circumstances however, may those alterations allow for the violation of water quality standards by the permitee.

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.

XIV. Notice of Availability of Information

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

Prepared by:
Suzan Tahir
Utah Division of Water Quality
801-536-4341

Duchesne Valley _WTP_WLA_3-2-21