

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

**WASTELOAD ANALYSIS [WLA]** [REDACTED] = not included in the WLA  
**Addendum: Statement of Basis**

|                  |
|------------------|
| <b>25-May-23</b> |
| <b>4:00 PM</b>   |

**Facilities:** Sunnyside Cogeneration  
**Discharging to:** Icelander and Grassy Trail Creeks -> Price River

**UPDES No:** UT-0024759

**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**

Icelander and Grassy Trail Creeks -> Price 2B,3C,4  
Antidegradation Review: Level I review completed. Level II review is 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)         | N/A   | 5.0 mg/l (30 Day Average)<br>mg/l (7Day Average)<br>3.0 mg/l (1 Day Average) |
| Maximum Total Dissolved Solids        | 3000.0 mg/l   | Background   |

**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**                     | 1.277 lbs/day | 750.00                          | ug/l | 11.008 lbs/day |
| Arsenic      | 150.00 ug/l                      | 2.202 lbs/day | 340.00                          | ug/l | 4.990 lbs/day  |
| Cadmium      | 2.74 ug/l                        | 0.040 lbs/day | 8.73                            | ug/l | 0.128 lbs/day  |
| Chromium III | 308.71 ug/l                      | 4.531 lbs/day | 6458.76                         | ug/l | 94.798 lbs/day |
| ChromiumVI   | 11.00 ug/l                       | 0.161 lbs/day | 16.00                           | ug/l | 0.235 lbs/day  |
| Copper       | 35.32 ug/l                       | 0.518 lbs/day | 60.76                           | ug/l | 0.892 lbs/day  |
| Iron         |                                  |               | 1000.00                         | ug/l | 14.677 lbs/day |
| Lead         | 23.12 ug/l                       | 0.339 lbs/day | 593.27                          | ug/l | 8.708 lbs/day  |
| Mercury      | 0.0120 ug/l                      | 0.000 lbs/day | 2.40                            | ug/l | 0.035 lbs/day  |
| Nickel       | 194.88 ug/l                      | 2.860 lbs/day | 1752.85                         | ug/l | 25.727 lbs/day |
| Selenium     | 4.60 ug/l                        | 0.068 lbs/day | 20.00                           | ug/l | 0.294 lbs/day  |
| Silver       | N/A ug/l                         | N/A lbs/day   | 55.18                           | ug/l | 0.810 lbs/day  |
| Zinc         | 448.55 ug/l                      | 6.583 lbs/day | 448.55                          | ug/l | 6.583 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

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Metals Standards Based upon a Hardness of 474.91 mg/l as CaCO<sub>3</sub>

**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                      | lbs/day        |
| Cadmium     |                                  |       | 10.0 ug/l                       | 0.07 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 |                                  |       | 3000.0 mg/l                     | 22.02 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       |                                  |       | ug/l                            | lbs/day |
| Barium        |                                  |       | ug/l                            | lbs/day |
| Cadmium       |                                  |       | ug/l                            | lbs/day |
| Chromium      |                                  |       | ug/l                            | lbs/day |
| Lead          |                                  |       | ug/l                            | lbs/day |
| Mercury       |                                  |       | ug/l                            | lbs/day |
| Selenium      |                                  |       | ug/l                            | lbs/day |
| Silver        |                                  |       | ug/l                            | lbs/day |
| Fluoride (3)  |                                  |       | ug/l                            | lbs/day |
| to            |                                  |       | ug/l                            | lbs/day |
| Nitrates as N |                                  |       | ug/l                            | lbs/day |

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

| Metals         | Maximum Conc., ug/l - Acute Standards |         |              |                 |
|----------------|---------------------------------------|---------|--------------|-----------------|
|                | Class 1C                              |         | Class 3A, 3B |                 |
| Antimony       | ug/l                                  | lbs/day |              |                 |
| Arsenic        | ug/l                                  | lbs/day | 4300.00 ug/l | 63.13 lbs/day   |
| Asbestos       | ug/l                                  | lbs/day |              |                 |
| Beryllium      |                                       |         |              |                 |
| Cadmium        |                                       |         |              |                 |
| Chromium (III) |                                       |         |              |                 |
| Chromium (VI)  |                                       |         |              |                 |
| Copper         |                                       |         |              |                 |
| Cyanide        | ug/l                                  | lbs/day | 2.2E+05 ug/l | 3229.79 lbs/day |
| Lead           | ug/l                                  | lbs/day |              |                 |
| Mercury        |                                       |         | 0.15 ug/l    | 0.00 lbs/day    |
| Nickel         |                                       |         | 4600.00 ug/l | 67.53 lbs/day   |
| Selenium       | ug/l                                  | lbs/day |              |                 |
| Silver         | ug/l                                  | lbs/day |              |                 |
| Thallium       |                                       |         | 6.30 ug/l    | 0.09 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

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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     |

**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**

|                        |        | Stream       |       |           |       |        |        |           |  |
|------------------------|--------|--------------|-------|-----------|-------|--------|--------|-----------|--|
|                        |        | Critical Low |       |           |       |        |        |           |  |
|                        | Flow   | Temp.        | pH    | T-NH3     | BOD5  | DO     | TRC    | TDS       |  |
|                        | cfs    | Deg. C       |       | mg/l as N | mg/l  | mg/l   | mg/l   | mg/l      |  |
| Summer (Irrig. Season) | 0.0    | 16.0         | 8.4   | 0.10      | 0.50  | 10.39  | 0.00   | 1968.0    |  |
| Fall                   | 0.0    | 14.4         | 8.2   | 0.10      | 0.50  | ---    | 0.00   | 1471.7    |  |
| Winter                 | 0.0    | 10.7         | 8.2   | 0.10      | 0.50  | ---    | 0.00   | 1471.7    |  |
| Spring                 | 0.0    | 13.6         | 8.4   | 0.10      | 0.50  | ---    | 0.00   | 1471.7    |  |
| Dissolved Metals       | Al     | As           | Cd    | CrIII     | CrVI  | Copper | Fe     | Pb        |  |
|                        | ug/l   | ug/l         | ug/l  | ug/l      | ug/l  | ug/l   | ug/l   | ug/l      |  |
| All Seasons            | 15.00  | 2.50         | 0.50  | 2.50      | 2.65* | 19.40  | 6940.0 | 1.50      |  |
| Dissolved Metals       | Hg     | Ni           | Se    | Ag        | Zn    | Boron  |        |           |  |
|                        | ug/l   | ug/l         | ug/l  | ug/l      | ug/l  | ug/l   |        |           |  |
| All Seasons            | 0.0000 | 0.53*        | 26.00 | 1.00      | 62.20 | 10.0   |        | * 1/2 MDL |  |

**Projected Discharge Information**

| Season | Flow, MGD | Temp. | TDS mg/l | TDS tons/day |
|--------|-----------|-------|----------|--------------|
|--------|-----------|-------|----------|--------------|

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|        |         |      |         |         |
|--------|---------|------|---------|---------|
| Summer | 1.76000 | 17.0 | 1174.00 | 8.61450 |
| Fall   | 1.76000 | 12.0 |         |         |
| Winter | 1.76000 | 8.0  |         |         |
| Spring | 1.76000 | 13.0 |         |         |

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 | 1.760 MGD     | 2.723 cfs |
| Fall   | 1.760 MGD     | 2.723 cfs |
| Winter | 1.760 MGD     | 2.723 cfs |
| Spring | 1.760 MGD     | 2.723 cfs |

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 1.76 MGD. If the discharger is allowed to have a flow greater than 1.76 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 ><br>IC25 > | EOP Effluent<br>100.0% Effluent | [Acute]<br>[Chronic]   | Receiving           |                        | Chronic<br>IC25 %<br>Effluent | Acute<br>LC50 %<br>Effluent |
|------------------|------------------|---------------------------------|------------------------|---------------------|------------------------|-------------------------------|-----------------------------|
|                  |                  |                                 |                        | Water Flow<br>(cfs) | Effluent<br>Flow (MGD) |                               |                             |
| Season           |                  | Effluent<br>Flow (cfs)          | Combined<br>Flow (cfs) | Totally<br>Mixed    |                        |                               |                             |
| Summer           |                  | 1.8                             | 2.7                    | YES                 | 100.0%                 | EOP                           |                             |
| Fall             |                  | 1.8                             | 2.7                    | YES                 | 100.0%                 | EOP                           |                             |
| Winter           |                  | 1.8                             | 2.7                    | YES                 | 100.0%                 | EOP                           |                             |
| Spring           |                  | 1.8                             | 2.7                    | YES                 | 100.0%                 | EOP                           |                             |

**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 | 25.0 mg/l as BOD5 | 366.9 lbs/day |
| Fall   | 25.0 mg/l as BOD5 | 366.9 lbs/day |
| Winter | 25.0 mg/l as BOD5 | 366.9 lbs/day |
| Spring | 25.0 mg/l as BOD5 | 366.9 lbs/day |

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

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

| Season | Concentration |
|--------|---------------|
| Summer | 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          |
|--------|----------------------|----------------|---------------|
| Summer | 4 Day Avg. - Chronic | 1.2 mg/l as N  | 18.0 lbs/day  |
|        | 1 Hour Avg. - Acute  | 5.1 mg/l as N  | 75.5 lbs/day  |
| Fall   | 4 Day Avg. - Chronic | 7.3 mg/l as N  | 107.0 lbs/day |
|        | 1 Hour Avg. - Acute  | 41.7 mg/l as N | 611.8 lbs/day |
| Winter | 4 Day Avg. - Chronic | 2.2 mg/l as N  | 33.0 lbs/day  |
|        | 1 Hour Avg. - Acute  | 7.0 mg/l as N  | 102.8 lbs/day |
| Spring | 4 Day Avg. - Chronic | 7.3 mg/l as N  | 107.0 lbs/day |
|        | 1 Hour Avg. - Acute  | 41.7 mg/l as N | 611.8 lbs/day |

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

**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 | 0.011 mg/l    | 0.16 lbs/day |
|        | 1 Hour Avg. - Acute  | 0.019 mg/l    | 0.28 lbs/day |
| Fall   | 4 Day Avg. - Chronic | 0.011 mg/l    | 0.16 lbs/day |
|        | 1 Hour Avg. - Acute  | 0.019 mg/l    | 0.28 lbs/day |
| Winter | 4 Day Avg. - Chronic | 0.011 mg/l    | 0.16 lbs/day |
|        | 1 Hour Avg. - Acute  | 0.019 mg/l    | 0.28 lbs/day |
| Spring | 4 Day Avg. - Chronic | 0.011 mg/l    | 0.16 lbs/day |
|        | 1 Hour Avg. - Acute  | 0.019 mg/l    | 0.28 lbs/day |

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

| Season |                      | Concentration | Load           |
|--------|----------------------|---------------|----------------|
| Summer | Maximum, Acute       | 3000.4 mg/l   | 22.02 tons/day |
| Fall   | Maximum, Acute       | 3000.6 mg/l   | 22.02 tons/day |
| Winter | Maximum, Acute       | 3000.5 mg/l   | 22.02 tons/day |
| Spring | 4 Day Avg. - Chronic | 3000.6 mg/l   | 22.02 tons/day |

Colorado Salinity Forum Limits                      Determined by Permitting Section

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

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In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 474.91 mg/l):

|                | 4 Day Average |             | 1 Hour Average |      |              |
|----------------|---------------|-------------|----------------|------|--------------|
|                | Concentration | Load        | Concentration  |      | Load         |
| Aluminum       | N/A           | N/A         | 750.3          | ug/l | 11.0 lbs/day |
| Arsenic        | 150.05 ug/l   | 1.4 lbs/day | 340.1          | ug/l | 5.0 lbs/day  |
| Cadmium        | 2.74 ug/l     | 0.0 lbs/day | 8.7            | ug/l | 0.1 lbs/day  |
| Chromium III   | 308.82 ug/l   | 2.9 lbs/day | 6,461.1        | ug/l | 94.8 lbs/day |
| Chromium VI    | 11.00 ug/l    | 0.1 lbs/day | 16.0           | ug/l | 0.2 lbs/day  |
| Copper         | 35.32 ug/l    | 0.3 lbs/day | 60.8           | ug/l | 0.9 lbs/day  |
| Iron           | N/A           | N/A         | 997.8          | ug/l | 14.6 lbs/day |
| Lead           | 23.13 ug/l    | 0.2 lbs/day | 593.5          | ug/l | 8.7 lbs/day  |
| Mercury        | 0.01 ug/l     | 0.0 lbs/day | 2.4            | ug/l | 0.0 lbs/day  |
| Nickel         | 194.95 ug/l   | 1.8 lbs/day | 1,753.5        | ug/l | 25.7 lbs/day |
| Selenium       | 4.59 ug/l     | 0.0 lbs/day | 20.0           | ug/l | 0.3 lbs/day  |
| Silver         | N/A           | N/A         | 55.2           | ug/l | 0.8 lbs/day  |
| Zinc           | 448.69 ug/l   | 4.3 lbs/day | 448.7          | ug/l | 6.6 lbs/day  |
| Cyanide (free) | 5.20 ug/l     | 0.0 lbs/day | 22.0           | ug/l | 0.3 lbs/day  |

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

|        |              |             |
|--------|--------------|-------------|
| Summer | 20.0 Deg. C. | 68.1 Deg. F |
| Fall   | 18.4 Deg. C. | 65.1 Deg. F |
| Winter | 14.7 Deg. C. | 58.4 Deg. F |
| Spring | 17.6 Deg. C. | 63.6 Deg. F |

**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:

| Metals         | Maximum Concentration |         |
|----------------|-----------------------|---------|
|                | Concentration         | Load    |
| Antimony       | ug/l                  | lbs/day |
| Arsenic        | ug/l                  | lbs/day |
| Asbestos       | ug/l                  | lbs/day |
| Beryllium      |                       |         |
| Cadmium        |                       |         |
| Chromium (III) |                       |         |
| Chromium (VI)  |                       |         |
| Copper         | ug/l                  | lbs/day |
| Cyanide        | ug/l                  | lbs/day |
| Lead           |                       |         |
| Mercury        | ug/l                  | lbs/day |
| Nickel         | ug/l                  | lbs/day |
| Selenium       |                       |         |
| Silver         |                       |         |
| Thallium       | ug/l                  | lbs/day |
| Zinc           |                       |         |

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

| Class 4<br>Acute<br>Agricultural | Class 3<br>Acute<br>Aquatic<br>Wildlife | Acute<br>Toxics<br>Drinking<br>Water<br>Source | Acute<br>Toxics<br>Wildlife | 1C Acute<br>Health<br>Criteria | Acute Most<br>Stringent | Class 3<br>Chronic<br>Aquatic<br>Wildlife |
|----------------------------------|---|--|-----------------------------|--------------------------------|-------------------------|---|
|----------------------------------|---|--|-----------------------------|--------------------------------|-------------------------|---|

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|                | ug/l  | ug/l   | ug/l     | ug/l   | ug/l | ug/l     | ug/l  |
|----------------|-------|--------|----------|--------|------|----------|-------|
| Aluminum       |       | 750.3  |          |        |      | 750.3    | N/A   |
| Antimony       |       |        |          | 4301.6 |      | 4301.6   |       |
| Arsenic        | 100.0 | 340.1  |          |        | 0.0  | 100.0    | 150.1 |
| Asbestos       |       |        |          |        |      | 0.00E+00 |       |
| Barium         |       |        |          |        |      | 0.0      |       |
| Beryllium      |       |        |          |        |      | 0.0      |       |
| Cadmium        | 10.0  | 8.7    |          |        | 0.0  | 8.7      | 2.7   |
| Chromium (III) |       | 6461.1 |          |        | 0.0  | 6461.1   | 308.8 |
| Chromium (VI)  | 100.0 | 16.0   |          |        | 0.0  | 16.00    | 11.00 |
| Copper         | 200.1 | 60.8   |          |        |      | 60.8     | 35.3  |
| Cyanide        |       | 22.0   | 220080.8 |        |      | 22.0     | 5.2   |
| Iron           |       | 997.8  |          |        |      | 997.8    |       |
| Lead           | 100.0 | 593.5  |          |        | 0.0  | 100.0    | 23.1  |
| Mercury        |       | 2.40   |          | 0.15   | 0.0  | 0.15     | 0.012 |
| Nickel         |       | 1753.5 |          | 4601.7 |      | 1753.5   | 195.0 |
| Selenium       | 50.0  | 20.0   |          |        | 0.0  | 20.0     | 4.6   |
| Silver         |       | 55.2   |          |        | 0.0  | 55.2     |       |
| Thallium       |       |        |          | 6.3    |      | 6.3      |       |
| Zinc           |       | 448.7  |          |        |      | 448.7    | 448.7 |
| Boron          | 750.3 |        |          |        |      | 750.3    |       |

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

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

|                | WLA Acute<br>ug/l | WLA Chronic<br>ug/l |                |
|----------------|-------------------|---------------------|----------------|
| Aluminum       | 750.3             | N/A                 |                |
| Antimony       | 4301.58           |                     |                |
| Arsenic        | 100.0             | 150.1               | Acute Controls |
| Asbestos       | 0.00E+00          |                     |                |
| Barium         |                   |                     |                |
| Beryllium      |                   |                     |                |
| Cadmium        | 8.7               | 2.7                 |                |
| Chromium (III) | 6461.1            | 309                 |                |
| Chromium (VI)  | 16.0              | 11.0                |                |
| Copper         | 60.8              | 35.3                |                |
| Cyanide        | 22.0              | 5.2                 |                |
| Iron           | 997.8             |                     |                |
| Lead           | 100.0             | 23.1                |                |
| Mercury        | 0.150             | 0.012               |                |
| Nickel         | 1753.5            | 195                 |                |
| Selenium       | 20.0              | 4.6                 |                |
| Silver         | 55.2              | N/A                 |                |
| Thallium       | 6.3               |                     |                |
| Zinc           | 448.7             | 448.7               |                |
| Boron          | 750.28            |                     |                |

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.

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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 is NOT required because the UPDES permit is being renewed and there is no increase in load or concentration over that which was approved in the previous permit.

**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.

This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**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 downstream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

**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.

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**APPENDIX - Coefficients and Other Model Information**

|  |   |   |   |  |  |  |   |
|--|---|---|---|--|--|--|---|
| CBOD<br>Coeff.<br>(Kd)20<br>1/day<br>2.000         | CBOD<br>Coeff.<br>FORCED<br>(Kd)/day<br>0.000     | CBOD<br>Coeff.<br>(Ka)T<br>1/day<br>0.804 | REAER.<br>Coeff.<br>(Ka)20<br>(Ka)/day<br>10779.494 | REAER.<br>Coeff.<br>FORCED<br>1/day<br>0.000 | REAER.<br>Coeff.<br>(Ka)T<br>1/day<br>6733.652 | NBOD<br>Coeff.<br>(Kn)20<br>1/day<br>0.400 | NBOD<br>Coeff.<br>(Kn)T<br>1/day<br>0.087 |
| Open<br>Coeff.<br>(K4)20<br>1/day<br>0.000         | Open<br>Coeff.<br>(K4)T<br>1/day<br>0.000         | NH3<br>LOSS<br>(K5)20<br>1/day<br>4.000   | NH3<br>(K5)T<br>1/day<br>1.608                      | NO2+NO3<br>LOSS<br>(K6)20<br>1/day<br>0.000  | NO2+NO3<br>(K6)T<br>1/day<br>0.000             | TRC<br>Decay<br>K(CI)20<br>1/day<br>32.000 | TRC<br>K(CI)(T)<br>1/day<br>10.071        |
| BENTHIC<br>DEMAND<br>(SOD)20<br>gm/m2/day<br>1.000 | BENTHIC<br>DEMAND<br>(SOD)T<br>gm/m2/day<br>0.287 |   |   |  |  |  |   |
| K1<br>CBOD<br>{theta}<br>1.0                       | K2<br>Reaer.<br>{theta}<br>1.0                    | K3<br>NH3<br>{theta}<br>1.1               | K4<br>Open<br>{theta}<br>1.0                        | K5<br>NH3 Loss<br>{theta}<br>1.0             | K6<br>NO2+3<br>{theta}<br>1.0                  | K(CI)<br>TRC<br>{theta}<br>1.1             | S<br>Benthic<br>{theta}<br>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 NOT required because the UPDES permit is being renewed and there is no increase in load or concentration over that which was approved in the previous permit.