

STATE OF UTAH  
DIVISION OF WATER QUALITY  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
SALT LAKE CITY, UTAH  
AUTHORIZATION TO DISCHARGE UNDER THE  
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM  
(UPDES)

In compliance with provisions of the *Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated (UCA) 1953, as amended* (the "Act"),

**CANYON FUEL COMPANY, LLC. – SUFCO MINE**

is hereby authorized to discharge from its facility located approximately six and one half (6.5) miles north of Salina Canyon (east on I-70 to Exit #73) in Convulsion Canyon, Sevier County, Utah, with the outfall(s) located as indicated in this permit, to receiving waters named

**North Fork of Quitchupah Creek and South Fork of the North Fork of Quitchupah Creek** (tributaries of the Colorado River),

in accordance with discharge point, effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on February 1, 2018.

This permit and the authorization to discharge shall expire at midnight, January 31, 2023.

Signed this 2<sup>nd</sup> day of January 2018.

Erica B. Gaddis  
Erica Brown Gaddis, PhD  
Director

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Definitions.

1. "7-day and weekly average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week whichever is applicable. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, beginning on Sunday and ending on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains the Saturday.
2. "10-year, 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in 10 years. This information is available in *Weather Bureau Technical Paper No. 40*, May 1961 and *National Oceanographic and Atmospheric Administration Atlas 2*, 1973 for the 11 Western States, and may be obtained from the National Climatic Center of the Environmental Data Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.
3. "30-day and monthly average" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
4. "Act" means the "*Utah Water Quality Act*".
5. "Best Management Practices" (BMP's) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMP's also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
6. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

7. "Chronic toxicity" occurs when the inhibitory concentration to 25% of the population (IC<sub>25</sub>) is less than or equal to 97 % effluent for Outfall 003, and less than or equal to 51% for Outfall 001.
8. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
9. "Composite samples" shall be flow proportioned. The composite sample shall contain, as a minimum, at least four (4) samples collected over the composite sample period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
  - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
  - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
  - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,
  - d. Continuous collection of sample, with sample collection rate proportional to flow rate.
10. "CWA" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
11. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
12. "EPA" means the United States Environmental Protection Agency.
13. "Director" means Director of the Utah Division of Water Quality.
14. "Grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
15. "IC<sub>25</sub>" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female or a 25% reduction in overall growth for the test population.

16. "Illicit discharge" means any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a UPDES process wastewater permit and discharges from firefighting activities, fire hydrant flushing, potable water sources including waterline flushing, uncontaminated ground water (including dewatering ground water infiltration), foundation or footing drains where flows are not contaminated with process materials (such as solvents), springs, riparian habitats, wetlands, irrigation water, exterior building wash down where there are no chemical or abrasive additives, pavement wash water where spills or leaks of toxic or hazardous materials have not occurred and where detergents are not used, and air conditioning condensate.
17. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
18. "Point Source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharges. This term does not include return flows from irrigated agriculture or agriculture storm water runoff.
19. "Runoff coefficient" means the fraction of total rainfall that will appear at a conveyance as runoff.
20. "*Section 313* water priority chemical" means a chemical or chemical categories which:
  - a. Are listed at *40 Code of Federal Regulations (CFR) 372.65* pursuant to *Section 313* of *Title III* of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III* of the *Superfund Amendments and Reauthorization Act* of 1986);
  - b. Are present at or above threshold levels at a facility subject to *EPCRA, Section 313* reporting requirements, and
  - c. Meet at least one of the following criteria:
    - (1) Are listed in *Appendix D* of *40 CFR 122* on *Table II* (organic priority pollutants), *Table III* (certain metals, cyanides, and phenols) or *Table IV* (certain toxic pollutants and hazardous substances);

- (2) Are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*;  
or
  - (3) Are pollutants for which EPA has published acute or chronic toxicity criteria.
21. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
22. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
23. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311* of the *Clean Water Act* (see *40 CFR 110.10* and *40 CFR 117.21*) or *Section 102* of *CERCLA* (see *40 CFR 302.4*).
24. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.
25. "Time-weighted composite" means a composite sample consisting of a mixture of equal volume aliquots collected at a constant time interval.
26. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
27. Acronym List  
BMP Best Management Practices

CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CFR	Code of Federal Regulations
DMR	Discharge Monitoring Report
EPCRA	Emergency Planning & Community Right-to-Know Act
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TRE	Toxicity Reduction Evaluation
TSS	Total Suspended Solids
UAC	Utah Administrative Code
UCA	Utah Code Annotated
UPDES	Utah Pollutant Discharge Elimination System
WET	Whole Effluent Toxicity

Unit List

mg/L	milligrams per liter
MGD	million gallons per day
ml/L	milliliters per liter
SU	standard units
µg/L	micrograms per liter

B. Description of Discharge Points.

The authorization to discharge provided under this permit is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are in violation of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Discharge of mine water from an eight-inch pipe. Located at latitude 38°54'54" N and longitude 111°24'54" W, with discharge to the South Fork of the North Fork of Quitchupah Creek.
002	Discharge from an eighteen-inch pipe serving as a discharge point from the lower sedimentation pond, located at latitude 38°54'32" N and longitude 111°24'57" W, with discharge to the South Fork of the North Fork of Quitchupah Creek.
003	Discharge of mine water from a twenty-four inch at a mine breakout at least 50 feet above the creek. Located at latitude

38°57'26" N and longitude 111°23'06" W,  
with discharge to the North Fork of  
Quitcupah Creek. .

C. Narrative Standard.

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

D. Specific Limitations and Self-monitoring Requirements.

1. Effective immediately and lasting the duration of this permit, there shall be no chronic toxicity in the effluent from Outfalls 001 and 003.
2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfalls 001, 002 and 003. Such discharges shall be limited and monitored by the permittee as specified below in *Parts I.D2.* through *I.D6.*

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, <sup>1</sup> MGD						
Outfall 001	0.01	<sup>2</sup> NA	NA	Report	2/Month	Measured
Outfall 002	0.5	NA	NA	Report	2/Month	Measured
Outfall 003	5.5	NA	NA	Report	2/Month	Measured
TSS, mg/L	25	35	NA	70	2/Month	Grab
Total Iron, mg/L						
Outfall 001	NA	NA	NA	1.7	2/Month	Grab
Outfall 002	NA	NA	NA	1.0	2/Month	Grab
Outfall 003	NA	NA	NA	1.0	2/Month	Grab
Dissolved Oxygen, mg/L	6.5a/	NA	4.0	NA	2/Month	Grab
Oil & Grease, mg/L b/	NA	NA	NA	10	Monthly	Grab
TDS, mg/L c/						
Outfall 001	Report	NA	NA	1673	2/Month	Grab
Outfall 002 (May-October)	Report	NA	NA	1206	2/Month	Grab
Outfall 002 (Nov-April)	Report	NA	NA	1289	2/Month	Grab
Outfall 003	Report	NA	NA	1227	2/Month	Grab
TDS lbs/day c/	NA	NA	NA	Report	2/Month	Grab
pH, standard units	NA	NA	6.5	9.0	2/Month	Grab
Temperature, °C	NA	NA	NA	NA	Monthly	Grab
Sanitary Waste d/	NA	NA	NA	None	2/Month	Visual
Oil and Grease, floating solids, visible foam, b/	NA	NA	NA	None	2/Month	Visual
Chronic Whole Effluent Toxicity <sup>3</sup>						
Outfall 001	NA	NA	NA	IC <sub>25</sub> > 51% effluent	Quarterly	Grab
Outfall 003	NA	NA	NA	IC <sub>25</sub> > 97% effluent	Quarterly	Grab
T-Arsenic, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Boron, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Cadmium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Chromium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Copper, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Lead, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Mercury, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Nickel, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Selenium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Silver, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Zinc, mg/L	NA	NA	NA	NA	Quarterly	Grab

<sup>1</sup>MGD: million gallons per day <sup>2</sup>NA: not applicable <sup>3</sup>See Biomonitoring Requirements <sup>4</sup>T: total metals

- a/ Dissolved oxygen limitations shall be immediately applicable to Outfall 001. Dissolved oxygen limitations shall be applicable at Outfalls 002 & 003 as provided in the compliance schedule below:

1. Beginning with the effective date of this permit and lasting through the first 24 months of this permit, SUFCO will collect dissolved oxygen data at the affected Outfalls (002 & 003). Monitoring should be at least monthly unless conditions are unsafe to collect a sample. DWQ shall receive a report of this information, including a statistical analysis, within 30 days following the end of each 12 month period.
  2. Within 36 months of the effective date of the permit, SUFCO, as requested by the Director, will develop plans for a treatment system that is capable of meeting dissolved oxygen limits at the affected Outfalls as required by the UPDES permit. This plan shall be submitted to DWQ 90-days before construction begins.
  3. Two years from the completion of the treatment system construction SUFCO will meet the dissolved oxygen limits as required by this permit. If the dissolved oxygen limits are not met by the completed treatment system SUFCO will be considered in non-compliance of permit requirements.
- b/ In addition to monthly sampling for oil and grease, a visual inspection for oil and grease, floating solids, and visible foam shall be performed at least twice per month. There shall be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.
- c/ **Concentration:** The TDS concentration from Outfall 001 shall not be greater than 1673 mg/L and Outfall 003 shall not exceed 1227 mg/L as daily maximum limits. Outfall 002 shall be limited seasonally to a TDS daily maximum concentration effluent limit of 1206 mg/L for the months of May through October each year and a TDS daily maximum concentration effluent limit of 1289 mg/L for the months of November through April each year.

**Loading:** No tons per day loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1 ton per day as a sum from all discharge points. Upon previous determinations by the Director that the permittee is not able to meet the 500 mg/L 30-day average or the 1 ton per day loading limit, the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include TDS credits on a ton-for-ton basis for which the permittee is over the 1 ton per day loading limit. The tonnage reduction from the offset project must be calculated by a method similar to one used by the Natural Resources Conservation Service, Colorado River Basin Salinity Control Forum, or other applicable agency.

If the permittee will be participating in the construction and implementation of a new salinity-offset project, then a project description and implementation schedule shall be submitted to the Director at least six (6) months prior to the implementation date of the project, which will then be reviewed for approval. The salinity offset project description and implementation schedule must be approved by the Director and shall be appended to this permit.

If the permittee will be funding any additional salinity-offset projects through third parties, the permittee shall provide satisfactory evidence to the Director that the required funds have been deposited to the third party within six (6) months of project approval by the Director. A monitoring and adjustment plan to track the TDS credits shall continue to be submitted to the Director for each monthly monitoring period during the life of this permit. Any changes to the monitoring and adjustment plan must be approved by the Director and upon approval shall be appended to this permit.

d/ There shall be no discharge of sanitary waste.

3. Should any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period that is less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may, at outfall 002, substitute the following limitations for the limitations contained in *Part I.D.2*. All other limitations and monitoring not listed below remain the same.

Parameter	Alternative Effluent Limitations			
	Average Monthly	Average Weekly	Minimum Daily	Maximum Daily
Flow, MGD	Report			Report
pH, standard units			6.5	9.0
Settleable solids (SS), milliliter/liter				0.5
Total Suspended Solids (TSS), mg/L	Report	Report		Report
Total Iron, mg/L				Report
Total Dissolved Solids (TDS) mg/L b/	Report			Report

In order to substitute the above limitations, the sample collected during the storm event must be analyzed for all permitted parameters specified under *Part I.D.2*. Such analyses shall be conducted on either grab or composite samples. All manual pond dewatering must meet all limitations of *Part I.D.2*.

4. Should any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period that is greater

than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may, at outfall 002, substitute the following limitations for the limitations contained in *Part I.D.2*. All other limitations and monitoring not listed below remain the same.

Parameter	Alternative Effluent Limitations			
	Average Monthly	Average Weekly	Minimum Daily	Maximum Daily
Flow, MGD	Report			Report
pH, standard units			6.5	9.0
Settleable solids (SS), milliliter/liter				Report
Total Suspended Solids (TSS), mg/L	Report	Report		Report
Total Iron, mg/L				Report
Total Dissolved Solids (TDS) mg/L b/	Report			Report

In order to substitute the above limitation, the sample collected during the storm event must be analyzed for all permitted parameters specified under *Part I.D.2*. Such analyses shall be conducted on either grab or composite samples. All manual pond decants shall have the burden of proof that the increase in discharge was caused by the applicable precipitation event described in *Part I.D.3* and *I.D.4*. The alternate limitations in *Part I.D.3* and *I.D.4* shall not apply to treatment systems that treat exclusively underground mine water (i.e. Outfalls 001 and 003). The alternate limitations apply to Outfall 002 only.

For rainfall, to waive TSS and total iron limitations, the permittee must prove that the discharge occurred during the precipitation event or within 48 hours after measurable precipitation has stopped. In addition, to waive settleable solids limitations, the permittee must prove that the discharge occurred during the precipitation event, or within 48 hours after precipitation greater than the 10-year, 24-hour event has stopped.

For snowmelt, to waive TSS and total iron limitations, the permittee must prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow has stopped. In addition, to waive settleable solids limitations, the permittee must prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow volume greater than the 10-year, 24-hour event has stopped.

The permittee must submit documentation that the treatment facilities were properly operated and maintained prior to and

during the storm event with any request for relief from primary limitations. The division shall determine the adequacy of proof. As part of this determination, the division shall evaluate whether the permittee could have controlled the discharge in such a manner that primary limitations could have been met, whether proper sediment storage levels were maintained and the ponds had sufficient water and sediment capacity for the storm event, plus other relevant factors. All manual pond dewatering must meet all limitations of *Part I.D.2.*

All data/documentation required by the permittee which cannot be reported on applicable discharge monitoring report forms (DMRs) shall be reported in a letter as an attachment to the DMR. Submittal of documentation of containment, maintenance and precipitation records above does not exempt the permittee from the notification requirements of this permit.

5. Whole Effluent Testing - Chronic Toxicity.

Starting on the effective date of this permit, the permittee shall quarterly conduct chronic short-term toxicity tests on a grab sample of the final effluent. The sample shall be collected at outfalls 001 and 003.

The monitoring frequency shall be quarterly. Samples shall be collected on a two-day progression; i.e., if the first sample is on a Monday, during the next sampling period, sampling shall be on a Wednesday. If chronic toxicity is detected, the test shall be repeated in less than four weeks from the date the initial sample was taken. The need for any additional samples, and/or a Toxicity Reduction Evaluation (TRE, see Part I.D.6.) shall be determined by the Director. If the second test shows no chronic toxicity, routine monitoring shall be resumed.

The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. October 2002, EPA-821-R-02-013* as per 40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS. Test species shall consist of Ceriodaphnia dubia and Pimephales promelas (fathead minnow). A five dilution test shall be used. A CO<sub>2</sub> atmosphere may be used (in conjunction with an unmodified test) in order to account for artificial pH drift, as previously authorized by the Director.

Chronic toxicity occurs at Outfall 001 when the  $IC_{25} < 51\%$  effluent using a five dilution test. Chronic toxicity occurs at Outfall 003 when the  $IC_{25} < 97\%$  effluent also using a five dilution test. If any of the acceptable control performance criteria are not met, the test shall be considered invalid.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting calendar month coinciding with the end of the quarterly period. The format for the report shall be consistent with the latest revision of the *Region VIII Guidance for Chronic Whole Effluent Reporting* and shall include all the physical testing as specified.

The current Utah whole effluent toxicity (WET) policy is in the process of being updated and revised to assure its consistency with the Environmental Protection Agency's national and regional WET policy. When said revised WET policy has been finalized and officially adopted, this permit may be reopened and modified to incorporate satisfactory follow-up chronic toxicity language (chronic pattern of toxicity, PTI and/or TIE/TRE, etc.) without a public notice, as warranted and appropriate.

6. Toxicity Reduction Evaluation (TRE).

If toxicity is detected and it is determined by the Director that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. The purpose of the TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

A TRE may include but is not limited to one, all, or a combination of the following:

- a. Phase I - Toxicity Characterization
- b. Phase II - Toxicity Identification Procedures
- c. Phase III - Toxicity Control Procedures
- d. Any other appropriate procedures for toxicity source elimination and control

If the TRE establishes that the toxicity cannot be immediately eliminated the permittee shall submit a proposed compliance plan to the Director. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving

control. If the approach and schedule are acceptable to the Director, this permit may be reopened and modified.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations, the permittee may:

- a. Submit an alternative control program for compliance with the numerical requirements.
- b. If necessary, provide a modified biomonitoring protocol which compensates for the pollutant(s) being controlled numerically.

If acceptable to the Director, this permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the Director, and/or a modified biomonitoring protocol.

Failure to conduct an adequate TRE, or failure to submit a plan or program as described above, or the submittal of a plan or program judged inadequate by the Director, shall be considered a violation of this permit.

II. STORM WATER DISCHARGE REQUIREMENTS

A. Coverage of This Section.

1. Discharges Covered Under This Section. The requirements listed under this section shall apply to storm water discharges from the industrial facility.

a. Site Coverage. This section covers discharges of storm water associated with industrial activity to waters of the State from the confines of the facility listed on the cover page. Specific monitoring requirements have been included and are based on the requirements of the UPDES Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity, Permit No. UTR000000.

B. Prohibition of Non-Storm Water Discharges.

The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from firefighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

C. Storm Water Pollution Prevention Plan Requirements: Contents of the Plan.

The plan shall include, at a minimum, the following:

1. Pollution Prevention Team. Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities

and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

2. Description of Potential Pollutant Sources. Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:
  - a. **Drainage.** A site map must be maintained indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the waste water treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:
    - (1) Drainage direction and discharge points from all wastewater associated discharges.
    - (2) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
    - (3) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.
    - (4) Locations where any major spills or leaks of toxic or hazardous materials have occurred
    - (5) Location of any sand or salt piles.

- (6) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
  - (7) Location of receiving streams or other surface water bodies.
  - (8) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- b. **Inventory of Exposed Materials.** An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.
  - c. **Spills and Leaks.** A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.
  - d. **Sampling Data.** A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.
  - e. **Summary of Potential Pollutant Sources and Risk Assessment.** A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes;

and onsite waste disposal practices. Specific potential pollutants shall be identified where known.

3. Measures and Controls. The facility shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
  - a. Good Housekeeping. All areas that may contribute pollutants to storm waters discharges shall be maintained in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Areas where good housekeeping practices should be implemented are storage areas for raw materials, waste materials and finished products; loading/unloading areas and waste disposal areas for hazardous and non-hazardous wastes. Examples of good housekeeping measures include; sweeping; labeling drums containing hazardous materials; and preventive monitoring practices or equivalent measures.
  - b. Preventive Maintenance. A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
  - c. Spill Prevention and Response Procedures. Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

- d. Inspections. In addition to the comprehensive site evaluation required under *Part II.D.*, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; and vents and stacks from industrial activities. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.
- e. Employee Training. Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping practices; proper procedures for using fertilizers, herbicides and pesticides.
- f. Record Keeping and Internal Reporting Procedures. A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under *Part II.C.* Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.
- g. Non-storm Water Discharges.
- (1) Certification. The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of

potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part V.G.* of this permit.

- (2) Exceptions. Except for flows from firefighting activities, sources of non-storm water listed in *Part II.B. (Prohibition of Non-storm Water Discharges)* that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
  - (3) Failure to Certify. Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the Director within 180 days of the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State that are not authorized by a UPDES permit are unlawful, and must be terminated.
- h. Sediment and Erosion Control. The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
  - i. Management of Runoff. The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants)

used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity (*see Part II.C.2, Description of Potential Pollutant Sources*) shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.

D. Comprehensive Site Compliance Evaluation

Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

1. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.
2. Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part II.C.2. (Description of Potential Pollutant Sources)* and pollution prevention measures and controls identified in the plan in accordance with *Part II.C.3. (Measures and Controls)* shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

3. A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with *Part II.C.3.i.* shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part IV.G (Signatory Requirements)* of this permit.
4. **Deadlines for Plan Preparation and Compliance.** The facility shall prepare and implement a plan in compliance with the provisions of *Part II* of this permit within 270 days of the permit effective date.
5. **Keeping Plans Current.** The facility shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

E. Monitoring and Reporting Requirements

1. **Semi-annual Visual Examination of Storm Water Quality.** The facility shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January through June; July through December.
  - a. **Sample and Data Collection.** Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a

well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges.

- b. **Visual Storm Water Discharge Examination Reports.** Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.
- c. **Representative Discharge.** If the permittee reasonably believes multiple outfalls discharge substantially identical effluents, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by an outfall, the permittee may collect a sample of effluent from one such outfall and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- d. **Adverse Conditions.** When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions

for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

- e. Inactive and Unstaffed Site. When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

F. EPCRA Section 313 Requirements.

- 1. In areas where *Section 313* water priority chemicals are stored, processed or otherwise handled, appropriate containment, drainage control and/or diversionary structures shall be provided. At a minimum, one of the following preventive systems or its equivalent shall be used:
  - a. Curbing, culverting, gutters, sewers, or other forms of drainage control to prevent or minimize the potential for storm water run-on to come into contact with significant sources of pollutants; or
  - b. Roofs, covers or other forms of appropriate protection to prevent storage piles from exposure to storm water and wind.
- 2. No tank or container shall be used for the storage of a *Section 313* water priority chemical unless its material and construction are compatible with the material stored and conditions of storage such as pressure and temperature, etc.

Liquid storage areas for *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* chemicals. Appropriate measures to minimize discharges of *Section 313* chemicals may include secondary containment provided for at least the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation, a strong spill contingency and integrity testing plan, and/or other equivalent measures.

- 3. Material storage areas for *Section 313* water priority chemicals other than liquids that are subject to runoff, leaching, or wind shall

incorporate drainage or other control features that will minimize the discharge of *Section 313* water priority chemicals by reducing storm water contact with *Section 313* water priority chemicals.

4. Truck and rail car loading and unloading areas for liquid *Section 313* water priority chemicals shall be operated to minimize discharges of *Section 313* water priority chemicals. Protection such as overhangs or door skirts to enclose trailer ends at truck loading/unloading docks shall be provided as appropriate. Appropriate measures to minimize discharges of *Section 313* chemicals may include: the placement and maintenance of drip pans (including the proper disposal of materials collected in the drip pans) where spillage may occur (such as hose connections, hose reels and filler nozzles) for use when making and breaking hose connections; a strong spill contingency and integrity testing plan; and/or other equivalent measures.
5. Processing equipment and materials handling equipment shall be operated so as to minimize discharges of *Section 313* water priority chemicals. Materials used in piping and equipment shall be compatible with the substances handled. Drainage from process and materials handling areas shall minimize storm water contact with *Section 313* water priority chemicals. Additional protection such as covers or guards to prevent exposure to wind, spraying or releases from pressure relief vents from causing a discharge of *Section 313* water priority chemicals to the drainage system shall be provided as appropriate. Visual inspections or leak tests shall be provided for overhead piping conveying *Section 313* water priority chemicals without secondary containment.
6. Drainage from areas covered by *Parts II.F. 1, 2, 3, or 4* should be restrained by valves or other positive means to prevent the discharge of a spill or other excessive leakage of *Section 313* water priority chemicals. Where containment units are employed, such units may be emptied by pumps or ejectors; however, these shall be manually activated.

Flapper-type drain valves shall not be used to drain containment areas. Valves used for the drainage of containment areas should, as far as is practical, be of manual, open-and-closed design. If facility drainage is not engineered as above, the final discharge of all in-facility storm sewers shall be equipped to be equivalent with a diversion system that could, in the event of an uncontrolled spill of *Section 313* water priority chemicals, return the spilled material to the facility.

Records shall be kept of the frequency and estimated volume (in gallons) of discharges from containment areas.

7. Other areas of the facility (those not addressed in *Parts II.F. 1, 2, 3, or 4*, from which runoff that may contain *Section 313* water priority chemicals or spills of *Section 313* water priority chemicals could cause a discharge shall incorporate the necessary drainage or other control features to prevent discharge of spilled or improperly disposed material and ensure the mitigation of pollutants in runoff or leachate.
8. All areas of the facility shall be inspected at specific intervals identified in the plan for leaks or conditions that could lead to discharges of *Section 313* water priority chemicals or direct contact of storm water with raw materials, intermediate materials, waste materials or products. In particular, facility piping, pumps, storage tanks and bins, pressure vessels, process and material handling equipment, and material bulk storage areas shall be examined for any conditions or failures that could cause a discharge. Inspection shall include examination for leaks, wind blowing, corrosion, support or foundation failure, or other forms of deterioration or non-containment. Inspection intervals shall be specified in the plan and shall be based on design and operational experience. Different areas may require different inspection intervals. Where a leak or other condition is discovered that may result in significant releases of *Section 313* water priority chemicals to waters of the State, action to stop the leak or otherwise prevent the significant release of *Section 313* water priority chemicals to waters of the State shall be immediately taken or the unit or process shut down until such action can be taken. When a leak or non-containment of a *Section 313* water priority chemical has occurred, contaminated soil, debris, or other material must be promptly removed and disposed in accordance with Federal, State, and local requirements and as described in the plan.
9. Facilities shall have the necessary security systems to prevent accidental or intentional entry that could cause a discharge. Security systems described in the plan shall address fencing, lighting, vehicular traffic control, and securing of equipment and buildings.
10. Facility employees and contractor personnel that work in areas where *Section 313* water priority chemicals are used or stored shall be trained in and informed of preventive measures at the facility. Employee training shall be conducted at intervals specified in the plan, but not less than once per year. Training shall address:

pollution control laws and regulations, the storm water pollution prevention plan and the particular features of the facility and its operation that are designed to minimize discharges of *Section 313* water priority chemicals. The plan shall designate a person who is accountable for spill prevention at the facility and who will set up the necessary spill emergency procedures and reporting requirements so that spills and emergency releases of *Section 313* water priority chemicals can be isolated and contained before a discharge of a *Section 313* water priority chemical can occur. Contractor or temporary personnel shall be informed of facility operation and design features in order to prevent discharges or spills from occurring.

III. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling.

Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Sludge samples, if applicable shall be collected at a location representative of the quality of sludge immediately prior to the use-disposal practice.

B. Monitoring Procedures.

Monitoring must be conducted according to test procedures approved under *Utah Administrative Code (UAC) R317-2-10*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering.

The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results.

Monitoring results obtained during the previous month shall be summarized for each month and reported via NetDMR, or on a DMR Form (EPA No. 3320-1) if NetDMR is not available, completed no later than the 28<sup>th</sup> day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported via NetDMR. Legible copies of these, and all other reports including WET test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (Part V.G.)*, and submitted via NetDMR, or otherwise submitted to the Division of Water Quality at the following address:

original to: Department of Environmental Quality  
Division of Water Quality  
195 North 1950 West  
PO Box 144870  
Salt Lake City, Utah 84114-4870

E. Compliance Schedules.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee.

If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* or as otherwise specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

G. Records Contents.

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records.

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance that may seriously endanger health or environment as soon as possible, but no later than 24 hours from the time the permittee first became

aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
  - a. Any noncompliance that may endanger health or the environment;
  - b. Any unanticipated bypass that exceeds any effluent limitation in the permit (*see Part IV.G, Bypass of Treatment Facilities.*);
  - c. Any upset which exceeds any effluent limitation in the permit (*see Part IV.H, Upset Conditions.*); or,
  - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.
3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected; and,
  - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
  - e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.
4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.
5. Reports shall be submitted to the addresses in *Part III.D, Reporting of Monitoring Results.*

J. Other Noncompliance Reporting.

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part III.D* are submitted. The reports shall contain the information listed in *Part III.I.3*.

K. Inspection and Entry.

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location.

IV. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply.

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions of the Act is subject to a fine not exceeding \$25,000 per day of violation; Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at *Part IV.G, Bypass of Treatment Facilities* and *Part IV.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar

systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances.

Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to *Parts IV.G.2. and IV.G.3.*

2. Prohibition of Bypass.

a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
- (3) The permittee submitted notices as required under *Part IV.G.3.*

b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in *Part IV.G.2a. (1)(2) and (3).*

3. Notice.
- a. Anticipated bypass. Except as provided in *Part IV.G.2. and Part IV.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Director:
- (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages;
  - (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;
  - (3) Description of specific measures to be taken to minimize environmental and public health impacts;
  - (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;
  - (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and
  - (6) Any additional information requested by the Director.
- b. Emergency Bypass. Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *Part IV.G.3.a.(1)* through *(6)* to the extent practicable.
- c. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part III.I., Twenty-four-Hour Notice of Non-Compliance Reporting*. The permittee shall also immediately notify the Director of the Department of Natural Resources, the

public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of *Part IV.H.2.* are met. Director's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated;
  - c. The permittee submitted notice of the upset as required under *Part III.I, Twenty-four Hour Notice of Noncompliance Reporting*; and,
  - d. The permittee complied with any remedial measures required under *Part IV.D, Duty to Mitigate*.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants.

The permittee shall comply with effluent standards or prohibitions established under *Section 307(a) of The Water Quality Act of 1987* for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances.

Notification shall be provided to the Director as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - a. One hundred micrograms per liter (100 µg/L);
  - b. Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(7)* or (10); or,
  - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.
  
2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
  - a. Five hundred micrograms per liter (500 µg/L);
  - b. One milligram per liter (1 mg/L) for antimony;
  - c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(9)*; or,
  - d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.

K. Industrial Pretreatment.

Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to *Section 307 of The Water Quality Act of 1987*, the permittee shall comply with all applicable federal General

Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters.

In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

V. GENERAL REQUIREMENTS

A. Planned Changes.

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance.

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

C. Permit Actions.

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply.

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information.

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records this permit requires to be kept.

F. Other Information.

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. Signatory Requirements.

All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Director, and,
  - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to authorization. If an authorization under *Part V.G.2.* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *Part V.G.2.* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under *Part V.G.* shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure

that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports.

The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports.

Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Director. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential

J. Oil and Hazardous Substance Liability.

Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.

K. Property Rights.

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability.

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any

circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers.

This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in *Part V.M.2.*

N. State Laws.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117.*

O. Water Quality-Reopener Provision.

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occur:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
3. A revision to the current Water Quality Management Plan is approved and adopted which calls for different effluent limitations than contained in this permit.

P. Toxicity Limitation - Reopener Provision.

This permit may be reopened and modified (following proper administrative procedures) to include, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur:

1. Toxicity is detected, as per *Part I.D.5 through I.D.6* of this permit, during the duration of this permit.
2. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits, and the Director agrees that numerical controls are the most appropriate course of action.
3. Following the implementation of numerical control(s) of toxicant(s), the Director agrees that a modified biomonitoring protocol is necessary to compensate for those toxicants that are controlled numerically.
4. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.

DWQ-2017-000688

**FACT SHEET STATEMENT OF BASIS  
CANYON FUEL COMPANY, LLC. – SUFCO MINE  
UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES)  
PERMIT NUMBER: UT0022918  
MAJOR INDUSTRIAL RENEWAL**

**FACILITY CONTACTS**

Facility Contact:	Amanda Richard	Responsible Official:	John Byars
Position:	Env. Engineer	Position:	General Manager
Phone:	(435) 286-4489	Phone:	(435) 286-4880

Facility Contact:	Vicky Miller
Position:	Environmental Engineer
Phone:	(435) 286-4481

**DESCRIPTION OF FACILITY**

Facility Name:	Canyon Fuel Company, LLC – SUFCO Mine
Mailing Address:	597 South S.R. 24 Salina, Utah 84654
Physical Location:	Convulsion Canyon east of Salina, Utah off I-70 from Exit #73
Coordinates:	Latitude: 38° 54' 54", Longitude: 111° 24' 54"
Standard Industrial Classification (SIC):	1222 - Bituminous Coal Underground Mining (NAICS 212112)

Canyon Fuel Company, LLC – SUFCO Mine (SUFCO) is an active underground coal mining facility. Since the last permit renewal SUFCO has entered into a salinity off-set program to meet their salinity permit loading requirements. In addition, the facility personnel have worked hard to meet the TDS concentration requirements at Outfall 002 and were successful in doing so this last winter. Outfall 002 discharges to East Spring Canyon drainage which is a tributary of Quitchupah Creek.

**DESCRIPTION OF DISCHARGE**

SUFCO has three discharge points known as Outfalls 001, 002, and 003. Outfall 003 discharges mine water on a continuous basis from a mine breakout point into the North Fork of Quitchupah Creek. The water discharged from 003 drops down a steep canyon slope with final impact on bedrock before entering the North Fork of Quitchupah Creek. The discharge from Outfall 003 has an average flow of 3.07 MGD with a daily maximum flow (design flow) of 5.5 MGD. Outfall 002, which drains the entire disturbed area of the surface facilities, is from a second sedimentation pond in a series of two sedimentation ponds. This sedimentation pond water is aerated by flowing through a culvert between the sedimentation ponds. Discharge is to the South Fork of the North Fork of Quitchupah Creek, also known as East Spring Canyon Drainage. The discharge from

Outfall 002 has an average flow of 0.0564 MGD with a maximum daily flow (design flow) of 0.5 MGD. Outfall 001 is associated with previous mine dewatering operations and has not discharged in several years and is not anticipated to discharge during this permit period. If discharge were to occur, it would also go to the South Fork of the North Fork of Quitchupah Creek. The outfalls as described in the proposed UPDES permit are as follows:

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Discharge of mine water from an eight-inch pipe. Located at latitude 38°54'54" N and longitude 111°24'54" W, with discharge to the South Fork of the North Fork of Quitchupah Creek.
002	Discharge from an eighteen-inch pipe serving as a discharge point from the lower sedimentation pond, located at latitude 38°54'32" N and longitude 111°24'57" W, with discharge to the South Fork of the North Fork of Quitchupah Creek.
003	Discharge of mine water from a twenty-four inch pipe at a mine breakout at least 50 feet above the creek. Located at latitude 38°57'26" N and longitude 111°23'06" W, with discharge to the North Fork of Quitchupah Creek.

### **RECEIVING WATERS AND STREAM CLASSIFICATION**

The South Fork of the North Fork and the North Fork of Quitchupah Creek are classified under *Utah Administrative Code (UAC) R317-2-13* as follows:

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.

### **SIGNIFICANT CHANGES FROM PREVIOUS PERMIT**

There are several changes in this renewal permit, including the addition of 11 total metal analyses, dissolved oxygen, and 30-day average flow monitoring for all Outfalls. The following total metals will be required to be monitored quarterly at all discharging Outfalls: boron, selenium, nickel,

zinc, arsenic, cadmium, chromium, copper, lead, mercury, and silver. This renewal permit has additional requirements for claiming the alternate effluent limits for sampling during rainfall and snow melt runoff events, both the less than 10-year/24-hour storm events and the greater than 10-year/24-hour storm events. A chronic WET limit was added to the permit and acute WET testing was dropped from the permit. Quarterly chronic WET testing using two species is included in the renewal permit. A thirty day average minimum dissolved oxygen and daily minimum were added to the permit. Monitoring for temperature on a monthly basis was also added.

## **WASTE LOAD ANALYSIS AND ANTIDegradation REVIEW**

Effluent limitations may be derived using a Waste Load Analysis (WLA), which is appended to this statement of basis as Addendum I. The WLA incorporates Secondary Treatment Standards, Water Quality Standards, Anti-degradation Reviews (ADR), as appropriate and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were performed. An ADR Level I review was performed and concluded that an ADR Level II review was not required. The WLA indicates that the effluent limitations should be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters.

### **Reasonable Potential Analysis**

Since January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. RP for this permit renewal was conducted following DWQ's September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance). There are four outcomes defined in the RP Guidance: Outcome A, B, C, or D. These Outcomes provide a frame work for what routine monitoring or effluent limitations are required.

A qualitative RP review was performed on the available metals data. The review compared the maximum detected concentration with the maximum allowable effluent concentration from the waste-load allocation (WLA). The qualitative RP review for metals is included in Addendum II.

Based on this review a quantitative RP analysis was conducted on available boron, nickel, selenium, and zinc data at Outfall 002 and boron, nickel and selenium data at Outfall 003. The RP analysis had resulted in Outcome A at Outfall 002 for boron, selenium, and zinc and at Outfall 003 for boron. There were only two samples for each metal taken at Outfalls 002 and 003. Because of the low number of samples, monitoring for these metals will be included monthly for; boron, nickel, selenium, and zinc and quarterly for; arsenic, cadmium, chromium, copper, lead, mercury and silver. If any of the metals concentrations exceed values related to water quality standards, the permit may be reopened and modified as per Part V.O of the UPDES permit to include effluent limits for those metals.

Below is a table of the metal guidance values as taken from the WLA for reference:

	Outfall 001	WLA concentration not to exceed in mg/L	Outfall 002	WLA concentration not to exceed in mg/L	Outfall 003	WLA concentration not to exceed in mg/L
*T-Arsenic		0.197		0.101		0.103
T-Boron		1.47		0.76		0.77
T- Cadmium		0.0015		0.0008		0.0008
T – Chromium		0.573		0.279		0.278
T – Copper		0.0647		0.0318		0.0315
T – Lead		0.0409		0.0197		0.0193
T – Mercury		0.000024		0.000012		0.000012
T – Nickel		0.361		0.176		0.174
T – Selenium		0.0075		0.0046		0.0047
T – Silver		0.0964		0.0441		0.0415
T - Zinc		0.83		0.41		0.39

\*T – metal means total recoverable metal concentrations as analyzed by the laboratory.

### **BASIS FOR EFFLUENT LIMITATIONS**

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *UAC R317-8-4.2*, effluent limitations are derived from technology-based effluent limitation guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). In cases where multiple limits have been developed, those that are more stringent apply. In cases where no underlying standards have been developed, Best Professional Judgment (BPJ) may be used where applicable to set effluent limits.

- 1) SUFCO’s discharge meets the EPA definition of “alkaline mine drainage.” The term “alkaline mine drainage” means mine drainage which, before any treatment, has a pH equal to or greater than 6.0 and total iron concentration of less than 10 mg/l. As such, it is subject to the categorical based effluent limitations in *40 CFR Part 434.45*. Technology based limits used in the permit are listed below.
  - a. Total suspended solids (TSS) daily maximum limit.
  - b. For discharges composed of surface water or mine water commingled with surface water (Outfall 002 only), *40 CFR Part 434.63* allows alternate effluent limits to be applied when discharges result from specific runoff events, detailed in the Effluent Limitations for Precipitation Events Section and in the permit. SUFCO has the burden of proof that the described runoff event occurred and to provide documentation required by the permit.
- 2) TSS 30-day and 7-day averages are based on Utah Secondary Treatment Standards.
- 3) Daily minimum and daily maximum limitations on pH are derived from Utah Secondary Treatment Standards and Water Quality Standards.

- 4) Total dissolved solids (TDS) are limited according to Water Quality Standards, BPJ, and policies established by the Colorado River Basin Salinity Control Forum. TDS are limited by both mass loading and concentration requirements as described below:
- a. Since discharges from SUFCO eventually reach the Colorado River, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the "*Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program*" (Policy), with the most current subsequent triennial revision dated October 2017. Based on Forum Policy, provisions have previously been made for salinity-offset projects to account for any TDS loading in excess of the permit requirement. Salinity-offset provisions have been included in SUFCO's permit as the facility remains current on the requirements included therein to account for all excess TDS loading. These provisions and requirements, as described further in the permit, will remain in SUFCO's renewal permit as appropriate. It is also pertinent to mention that there is a site specific TDS requirement of 10,044 tons of TDS per year for SUFCO as contained in the "*Price River, San Rafael River and Muddy Creek TMDLs for Dissolved Solids –West Colorado Watershed Management Unit, Utah*" April 2004, p. 56, Table 4-2.
  - b. A Waste Load Analysis (WLA) was completed in 2017 for Outfalls 001, 002, and 003. Based on the WLA for Outfall 001, a TDS effluent concentration of 1673 mg/L will be included in the renewal permit. For Outfall 003, a limit of 1227 will be included in the permit. For Outfall 002, based on the WLA and BPJ, a seasonal TDS effluent concentration limit will be included in the renewal permit. Outfall 002 shall be limited seasonally to TDS as a daily maximum concentration effluent limit of 1206 mg/L based upon the 2017 WLA for the months of May through October each year and TDS as a daily maximum concentration effluent limit of 1289 mg/L based upon the previous 2014 permit and WLA for the months of November through April each year. Based upon the permitting authority's BPJ, this seasonal limit will allow SUFCO to safely de-ice the mountainous roads during those months of inclement weather.
- 5) The limitation on total recoverable iron is water quality based and derived in the WLA. The iron limitation is based upon the State Water Quality Standard of 1.0 mg/L (*UAC R317-2 Table 2.14.2*). The WLA through use of various mass balance equations has calculated a limit of 1.0 mg/L for total recoverable iron at Outfalls 003 and 002, while Outfall 001 can have 1.70 mg/L for total recoverable iron.
- 6) Oil and Grease are limited to 10 mg/L by BPJ, as this is consistent with other industrial facilities statewide.

- 7) Based on Utah's 2014 303(d) Water Quality Assessment report, the water quality in this section of Quitchupah Creek (Highway 10 to headwaters) is impaired for dissolved oxygen, observed versus expected bioassessment, and temperature. Whenever a water body or stretch of stream does not meet water quality standards based on a specific statistical analysis done by DWQ, the water body or stretch of stream is considered impaired. Whatever UPDES Outfalls discharge to that impaired water body or stretch of stream, must meet the water quality standard of the parameter(s) impaired to prevent adding to the impairment. Because it is unknown if SUFCO can meet dissolved oxygen water quality standards at Outfalls 002 & 003, a compliance schedule has been included below. It is anticipated that the dissolved oxygen concentrations can be met at Outfall 001, so it is not be included on the compliance schedule.
- 8) The temperature impairment for Quitchupah Creek is based on an exceedance of the 20°C temperature standard for beneficial use Class 3A. The effluent temperature is consistently less than 20°C and will not cause or contribute to the impairment. Since the DWQ will be further refining its temperature criteria, no limits will be included in the permit, but monitoring for temperature on a monthly basis will be included in the permit at all three discharge points.

### **Compliance Schedule to Meet 30-Day Minimum Average for Dissolved Oxygen at Outfalls 002 and 003**

UPDES Discharge Point 002 is located at the outlet to the Sediment Pond #2 overflow structure. The water discharging from the outlet of the overflow structure includes not only water from the pond but also spring water collected in a French drain located within and along the west dike abutment and pond bank. The spring water contains very little Dissolved Oxygen (DO) and often dilutes the DO of the mixed pond and spring water to a level below 6.5 mg/L. SUFCO proposes to measure the DO of the UPDES Discharge Point 002 of the pond water at a point close to the overflow structure. Recent field measurements indicate the DO in the pond is greater than the minimum 6.5 mg/L limit. However, the pond freezes during the winter months and the ratio of pond and spring water may change during the winter causing more DO poor spring water to be discharged during the winter.

UPDES Discharge Point 003 is located in the North Fork of the Quitchupah Creek Canyon approximately 4.5 miles upstream of the confluence of the North Fork of Quitchupah Creek with the South Fork of Quitchupah/Convulsion Canyon Creek. The mine water collected within the mine is naturally occurring ground water and typically contains very low concentrations of DO but relatively stable temperatures. Currently the quality of the water discharged at 003 is measured at a weir located at a point approximately 100 feet inside the mine portal where the water is discharged. The monitoring point is located here since no additional water is collected in the discharge system downstream of the weir and the temperature in the winter typically stays above freezing. Water is carried from the weir by a 24" ABS pipe to a location a few tens of feet away

from the North Fork stream channel. The water discharges from the pipe onto bedrock before entering the stream channel.

Past DO measurements taken from the water at the weir have demonstrated the water typically has DO in concentrations below the minimum limit of 6.5 mg/L. However, DO measurements obtained in the discharge water below the end of the pipe but upstream of the discharge water confluence with the North Fork channel demonstrate DO levels above the 6.5 mg/L minimum limit. SUFCO proposes to obtain simultaneous monthly DO measurements at the weir and at the final discharge point over the next 24 months, excluding winter months when the actual pipe discharge is not safely accessible, to create a correlation table of the measurements obtained at the two points. The table will allow the mine to compare DO concentrations in the mine water at the weir and at the pipe discharge near the stream channel and determine the typical increase in DO concentrations of the water between the two points. Based on the information obtained in the 24-month study, a graph will be created that can be used to plot DO at the weir and extrapolate the DO concentration in the water at the actual discharge point. The accuracy of the graph will be periodically checked and, if necessary, adjusted by obtaining simultaneous DO measurements at the weir and final discharge point. The compliance schedule is as follows:

1. Beginning with the effective date of the permit, and lasting through the first 24 months of this permit, SUFCO will collect enough dissolved oxygen data at the affected Outfalls to determine if dissolved oxygen is or is not a compliance issue. Monitoring should be at least monthly or as often as determined by SUFCO personnel to establish a reasonable statistical analysis. DWQ shall receive a report of this information within 30 days following the end of each 12 month period.
2. Within 36 months of the effective date of the permit, SUFCO, as requested by the Director, will develop plans for a treatment system that is capable of meeting dissolved oxygen limits at the affected Outfalls as required by the UPDES permit. This plan shall be submitted to DWQ 90-days before construction begins.
3. Two years from the completion of the treatment system construction SUFCO will meet the dissolved oxygen limits as required by this permit. If the dissolved oxygen limits are not met by the completed treatment system SUFCO will be considered in non-compliance of permit requirements.

### **EFFLUENT LIMITATIONS, SELF-MONITORING, AND REPORTING REQUIREMENTS**

The effluent limitations and monitoring requirements for Outfalls 001, 002 and 003 are as outlined in the table below. Effluent self-monitoring requirements are taken from the *Utah Monitoring, Recording and Reporting Frequency Guidelines* as effective December 1, 1991. Reports shall be made via NetDMR and are due 28 days after the end of the monitoring period (month, quarter, year, etc.). Lab sheets for biomonitoring may be attached to the biomonitoring NetDMR.

Effluent Characteristics	Effluent Limitations				Monitoring Requirements	
	30 Day Average	7 Day Average	Daily Minimum	Daily Maximum	Sample Frequency	Sample Type
Flow, <sup>1</sup> MGD						
Outfall 001	0.01	<sup>2</sup> NA	NA	Report	2/Month	Measured
Outfall 002	0.5	NA	NA	Report	2/Month	Measured
Outfall 003	5.5	NA	NA	Report	2/Month	Measured
TSS, mg/L	25	35	NA	70	2/Month	Grab
Total Iron, mg/L						
Outfall 001	NA	NA	NA	1.7	2/Month	Grab
Outfall 002	NA	NA	NA	1.0	2/Month	Grab
Outfall 003	NA	NA	NA	1.0	2/Month	Grab
Dissolved Oxygen, mg/L	6.5a/	NA	4.0	NA	2/Month	Grab
Oil & Grease, mg/L b/	NA	NA	NA	10	Monthly	Grab
TDS, mg/L c/						
Outfall 001	Report	NA	NA	1673	2/Month	Grab
Outfall 002 (May-October)	Report	NA	NA	1206	2/Month	Grab
Outfall 002 (November-April)	Report	NA	NA	1289	2/month	Grab
Outfall 003	Report	NA	NA	1227	2/Month	Grab
TDS lbs/day c/	NA	NA	NA	Report	2/Month	Grab
pH, standard units	NA	NA	6.5	9.0	2/Month	Grab
Temperature, °C	NA	NA	NA	NA	Monthly	Grab
Sanitary Waste d/	NA	NA	NA	None	2/Month	Visual
Oil and Grease, floating solids, visible foam, b/	NA	NA	NA	None	2/Month	Visual
Chronic Whole Effluent Toxicity <sup>3</sup>						
Outfall 001	NA	NA	NA	IC <sub>25</sub> > 51% effluent	Quarterly	Grab
Outfall 003	NA	NA	NA	IC <sub>25</sub> > 97% effluent	Quarterly	Grab
<sup>4</sup> T-Arsenic, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Boron, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Cadmium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Chromium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Copper, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Lead, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Mercury, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Nickel, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Selenium, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Silver, mg/L	NA	NA	NA	NA	Quarterly	Grab
T-Zinc, mg/L	NA	NA	NA	NA	Quarterly	Grab

<sup>1</sup>MGD: million gallons per day <sup>2</sup>NA: not applicable <sup>3</sup>See Biomonitoring Requirements <sup>4</sup>T: total metals

- a/ Dissolved oxygen is a thirty day minimum and shall be immediately applicable at Outfall 001. Dissolved oxygen shall be applicable at Outfalls 002 & 003 as provided in the compliance schedule.

b/ In addition to monthly sampling for oil and grease, a visual inspection for oil and grease, floating solids, and visible foam shall be performed twice per month. There shall be no sheen, floating solids, or visible foam in other than trace amounts. If sheen is observed, a sample of the effluent shall be collected immediately thereafter and oil and grease shall not exceed 10 mg/L in concentration.

c/ **Concentration:** The TDS concentrations from Outfall 001 shall not be greater than 1673 mg/L and Outfall 003 shall not exceed 1227 mg/L as daily maximum limits. Outfall 002 shall be limited seasonally to a TDS daily maximum concentration effluent limit of 1206 mg/L for the months of May through October each year and a TDS daily maximum concentration effluent limit of 1289 mg/L for the months of November through April each year.

**Loading:** No tons per day loading limit will be applied if the concentration of TDS if the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1 ton per day as a sum from all discharge points. Upon previous determinations by the Director that the permittee is not able to meet the 500 mg/L 30-day average or the 1 ton per day loading limit, the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include TDS credits on a ton-for-ton basis for which the permittee is over the 1 ton per day loading limit. The tonnage reduction from the offset project must be calculated by a method similar to one used by the Natural Resources Conservation Service, Colorado River Basin Salinity Control Forum, or other applicable agency.

If the permittee will be participating in the construction and implementation of a new salinity-offset project, then a project description and implementation schedule shall be submitted to the Director at least six (6) months prior to the implementation date of the project, which will then be reviewed for approval. The salinity offset project description and implementation schedule must be approved by the Director and shall be appended to this permit.

If the permittee will be funding any additional salinity-offset projects through third parties, the permittee shall provide satisfactory evidence to the Director that the required funds have been deposited to the third party within six (6) months of project approval by the Director. A monitoring and adjustment plan to track the TDS credits shall continue to be submitted to the Director for each monthly monitoring period during the life of this permit. Any changes to the monitoring and adjustment plan must be approved by the Director and upon approval shall be appended to this permit.

d/ There shall be no discharge of sanitary waste.

## **EFFLUENT LIMITATIONS FOR PRECIPITATION EVENTS**

In conformance with 40 CFR 434.63, the Division has incorporated the alternative effluents for discharge of mine drainage caused by larger than regulatory design standards. The permittee has the burden of proof when requesting application of these alternative limitations. Relief shall be granted only when necessary and shall not be granted when the permittee has control over the discharge. The permittee should endeavor to meet the primary limitations whenever possible. Relief is not available for mine drainage from underground workings of underground mines that are not commingled with discharges eligible for alternate limitations (i.e., surface runoff). This is the case for Outfalls 001 and 003. Thus, the alternate limitations may only be applied to Outfall 002.

For rainfall, to apply to the alternative limitations in *Part I.D.3.* of the permit, it is necessary to prove that the discharge occurred during the precipitation event, or within 48 hours after measurable precipitation has stopped. In addition, to apply the alternative limitations in *Part I.D.4.*, it is necessary to prove that the discharge occurred during the precipitation event, or within 48 hours after precipitation greater than the 10-year, 24-hour event has stopped.

For snowmelt, to apply to the alternative limitations in *Part I.D.3.*, it is necessary to prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow has stopped. In addition, to apply the alternative limitations in *Part I.D.4.*, it is necessary to prove that the discharge occurred during pond inflow from the snow melt event, or within 48 hours after pond inflow volume greater than the 10-year, 24-hour event has stopped.

Documentation that the treatment facilities were properly operated and maintained prior to and during the storm event must be submitted with any request for relief from primary limitations. The division shall determine the adequacy of proof. As part of this determination, the division shall evaluate whether the permittee could have controlled the discharge in such a manner that primary limitations could have been met, whether proper sediment storage levels were maintained and the ponds had sufficient water and sediment capacity for the storm event plus other relevant factors. All manual pond dewatering must meet all limitations of *Part I.D.2.*

## **STORM WATER REQUIREMENTS**

The storm water requirements are based on the UPDES Multi-Sector General Permit (MSGP) for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000. All sections of the MSGP that pertain to discharges from the mine have been included and sections which are redundant or do not pertain have been deleted.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the facility. Required elements of this plan are:

- 1) Development of a pollution prevention team,
- 2) Development of drainage maps and material stockpiles,
- 3) An inventory of exposed material,

- 4) Spill reporting and response procedures,
- 5) A preventative maintenance program,
- 6) Employee training,
- 7) Certification that storm water discharges are not mixed with non-storm water discharges,
- 8) Compliance site evaluations and potential pollutant source identification, and
- 9) Visual examinations of storm water discharges.

This plan is required to be maintained on-site to reflect current site conditions and made available for review upon request and/or inspections.

### **PRETREATMENT REQUIREMENTS**

This facility does not discharge process wastewater to a sanitary sewer system. Any process wastewater that the facility may discharge to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to federal, state, and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

The permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. The notification must be completed per the requirements of the pretreatment regulations, R317-8-8.11 (14)(d), and the permit.

### **BIOMONITORING REQUIREMENTS**

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring (2/1991))*. Authority to require effluent biomonitoring is provided in UAC R317-8, *Utah Pollutant Discharge Elimination System* and UAC R317-2, *Water Quality Standards*.

A review of the past four years of WET testing reports indicates that SUFCO has had some WET failures. In September of 2015 SUFCO failed a chronic test for Ceriodaphnia, the chronic test was subsequently repeated in October of 2015 and Ceriodaphnia again failed the test. SUFCO initiated a TRE/TIE in November of 2015. Preliminary results were presented to the DWQ on January 8, 2016 which indicated that high bicarbonate may be the problem. Since that meeting additional potential causes have been discovered, such as the difference in hardness between the laboratory dilution water and the receiving water in Quitcupah Creek. The EPA recommends that dilution water should match as closely as possible the hardness and/or salinity of the receiving water. In August of 2016 SUFCO passed chronic and acute tests and as a result was requested by the State to continue with normal WET monitoring.

SUFCO will continue to have WET testing requirements in their permit. As a result of the chronic WET testing failures and the uncertainty as to the reason(s) for the failures, chronic WET limits will be included in SUFCO's permit. SUFCO will be required to monitor for chronic toxicity on a quarterly basis. SUFCO's discharge comprises about 97 of the flow in Quitchupah Creek at Outfall 003. Therefore, the chronic limit in the permit should reflect an IC<sub>25</sub> greater than 97% effluent for Outfall 003. For Outfall 001 the IC<sub>25</sub> should be greater than 51%, as derived from the WLA, with monitoring occurring on a quarterly basis. Because of previous WET failures, two species testing shall be used each quarter of chronic testing. A WET re-opener clause is included in the permit if testing reveals that changes need to be made in the WET portion of the permit.

### **PERMIT DURATION**

As stated in *UAC R317-8-5.1(1)*, UPDES permits shall be effective for a fixed term not to exceed five (5) years.

Drafted by Jeff Studenka and Mike Herkimer (ret.)  
Environmental Scientists  
Utah Division of Water Quality  
October 25, 2017

### **DRAFT PERMIT REVIEWS**

Pretreatment – Jennifer Robinson  
Storm Water – Mike George  
TMDL – Amy Dickey  
RP Analysis – Ken Hoffman  
Salinity Forum – Matthew Garn  
WET – Mike Herkimer (ret.)  
WLA/ADR – Nick Von Stackelberg and Dave Wham

### **PUBLIC NOTICE INFORMAZTION**

Began: December 5, 2017  
Ended: January 5, 2018

The draft Fact Sheet Statement of Basis, Addendums, and draft UPDES permit were public noticed in the Richfield Reaper and also under "Public Participation" on the Division of Water Quality Web Site at [www.waterquality.utah.gov](http://www.waterquality.utah.gov), from December 5, 2017 through January 5, 2018. No comments were received. Staff recommends issuance of the permit as drafted.

Permit Writer: Jeff Studenka Date: January 9, 2018

**ADDENDUMS**

- I.) Waste Load Analysis, Anti-Degradation Reviews (ADR)
- II.) Reasonable Potential Analysis

DWQ-2017-000689

**ADDENDUM I**

**Wasteload Analysis and Anti-degradation Review**



Utah Division of Water Quality  
Salt Lake City, Utah

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

10-Jan-17
4:00 PM

**Facilities:** SUFCO 001 Discharge  
**Discharging to:** Quitchupah Creek

**UPDES No:** UT-0022918

**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**

Quitchupah Creek:	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	ug/l	Load*
Aluminum	87.00 ug/l**	0.005 lbs/day	750.00	ug/l	0.042 lbs/day
Arsenic	190.00 ug/l	0.011 lbs/day	340.00	ug/l	0.019 lbs/day
Cadmium	0.82 ug/l	0.000 lbs/day	9.70	ug/l	0.001 lbs/day
Chromium III	291.91 ug/l	0.016 lbs/day	6107.28	ug/l	0.342 lbs/day
ChromiumVI	11.00 ug/l	0.001 lbs/day	16.00	ug/l	0.001 lbs/day
Copper	33.31 ug/l	0.002 lbs/day	56.97	ug/l	0.003 lbs/day
Iron			1000.00	ug/l	0.056 lbs/day
Lead	21.19 ug/l	0.001 lbs/day	543.85	ug/l	0.030 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.000 lbs/day
Nickel	183.94 ug/l	0.010 lbs/day	1654.41	ug/l	0.093 lbs/day
Selenium	4.60 ug/l	0.000 lbs/day	20.00	ug/l	0.001 lbs/day
Silver	N/A ug/l	N/A lbs/day	49.06	ug/l	0.003 lbs/day
Zinc	423.32 ug/l	0.024 lbs/day	423.32	ug/l	0.024 lbs/day

\* Allowed below discharge

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

Metals Standards Based upon a Hardness of 443.55 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration	ug/l	Load*
Aldrin			1.500	ug/l	0.000 lbs/day
Chlordane	0.004 ug/l	0.000 lbs/day	1.200	ug/l	0.000 lbs/day
DDT, DDE	0.001 ug/l	0.000 lbs/day	0.550	ug/l	0.000 lbs/day
Dieldrin	0.002 ug/l	0.000 lbs/day	1.250	ug/l	0.000 lbs/day
Endosulfan	0.056 ug/l	0.006 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.000 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.000 lbs/day	0.260	ug/l	0.000 lbs/day
Lindane	0.080 ug/l	0.009 lbs/day	1.000	ug/l	0.000 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.002 lbs/day	2.000	ug/l	0.000 lbs/day
Pentachlorophenol	13.00 ug/l	1.427 lbs/day	20.000	ug/l	0.001 lbs/day
Toxephene	0.0002 ug/l	0.000 lbs/day	0.7300	ug/l	0.000 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.00 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	0.03 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			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
<b>Chlorophenoxy Herbicides</b>				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
ocyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	0.30 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	0.09 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.00 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	0.01 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.00 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	2.31 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	0.01 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.00 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	0.00 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.00 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.00 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	0.47 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.00 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	0.05 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	0.04 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	1.87 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	0.29 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	0.29 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.00 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	0.09 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.00 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	0.19 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	0.25 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.00 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.00 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	3.18 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	0.04 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	18.66 lbs/day
Bis(2-chloroethoxy) methane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	0.18 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	0.04 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.00 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.00 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	0.01 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	1.87 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	0.07 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	0.21 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	1.54 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	0.08 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.00 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.00 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1.4 ug/l	0.00 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.00 lbs/day

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Phenol	ug/l	lbs/day	4.6E+06 ug/l	5.05E+02 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.00 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	0.57 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	1.32 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	13.17 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	3.18E+02 lbs/day
Benzo(a)anthracene (P/	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	1.21 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.00 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	21.95 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	0.01 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	0.06 lbs/day
				lbs/day
				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	2.0 ug/l	0.00 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.00 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.00 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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**Metals**

	ug/l	lbs/day		
Antimony				
Arsenic	ug/l	lbs/day	4300.00 ug/l	0.47 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	24.15 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	0.50 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.00 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.

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(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		pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
	Critical	Low						
	Flow cfs	Temp. Deg. C						
Summer (Irrig. Season)	0.01	15.8	8.3	0.01	0.05	9.51	0.00	603.0
Fall	0.01	5.2	8.3	0.01	0.05	---	0.00	710.0
Winter	0.01	5.2	8.3	0.01	0.05	---	0.00	710.0
Spring	0.01	18.1	8.2	0.01	0.05	---	0.00	625.0
Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
All Seasons	2.385*	0.795*	0.0795*	0.795*	3.975*	0.8*	280.0	0.795*
Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l		
All Seasons	0.0000	0.795*	1.59*	0.15*	0.0795*	1.59*		* ~80% MDL

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.00670	15.5	840.00	0.02346
Fall	0.00670	7.2		
Winter	0.00670	7.8		
Spring	0.00670	12.7		

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	0.007 MGD	0.010 cfs
Fall	0.007 MGD	0.010 cfs
Winter	0.007 MGD	0.010 cfs
Spring	0.007 MGD	0.010 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.0067 MGD. If the discharger is allowed to have a flow greater than 0.0067 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	50.9% 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	25.0 mg/l as BOD5	1.4 lbs/day
Fall	25.0 mg/l as BOD5	1.4 lbs/day
Winter	25.0 mg/l as BOD5	1.4 lbs/day
Spring	25.0 mg/l as BOD5	1.4 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	4.00
Fall	4.00
Winter	4.00
Spring	4.00

**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	6.3 mg/l as N	0.4 lbs/day
	1 Hour Avg. - Acute	9.6 mg/l as N	0.5 lbs/day
Fall	4 Day Avg. - Chronic	7.0 mg/l as N	0.4 lbs/day
	1 Hour Avg. - Acute	10.9 mg/l as N	0.6 lbs/day
Winter	4 Day Avg. - Chronic	6.3 mg/l as N	0.4 lbs/day
	1 Hour Avg. - Acute	9.6 mg/l as N	0.5 lbs/day
Spring	4 Day Avg. - Chronic	7.0 mg/l as N	0.4 lbs/day
	1 Hour Avg. - Acute	10.9 mg/l as N	0.6 lbs/day

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

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

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

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	0.021	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.036	mg/l	0.00	lbs/day
Fall	4 Day Avg. - Chronic	0.021	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.036	mg/l	0.00	lbs/day
Winter	4 Day Avg. - Chronic	0.021	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.036	mg/l	0.00	lbs/day
Spring	4 Day Avg. - Chronic	0.021	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.036	mg/l	0.00	lbs/day

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

Season		Concentration		Load	
Summer	Maximum, Acute	1776.0	mg/l	0.05	tons/day
Fall	Maximum, Acute	1672.7	mg/l	0.05	tons/day
Winter	Maximum, Acute	1672.7	mg/l	0.05	tons/day
Spring	4 Day Avg. - Chronic	1754.8	mg/l	0.05	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 443.55 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum*	N/A	N/A	1,471.3	ug/l	0.1 lbs/day
Arsenic*	372.54 ug/l	0.0 lbs/day	667.3	ug/l	0.0 lbs/day
Cadmium	1.53 ug/l	0.0 lbs/day	19.0	ug/l	0.0 lbs/day
Chromium III	572.77 ug/l	0.0 lbs/day	11,998.8	ug/l	0.7 lbs/day
Chromium VI*	17.78 ug/l	0.0 lbs/day	27.6	ug/l	0.0 lbs/day
Copper	64.69 ug/l	0.0 lbs/day	111.2	ug/l	0.0 lbs/day
Iron*	N/A	N/A	1,694.7	ug/l	0.1 lbs/day
Lead	40.87 ug/l	0.0 lbs/day	1,067.8	ug/l	0.1 lbs/day
Mercury*	0.02 ug/l	0.0 lbs/day	4.7	ug/l	0.0 lbs/day
Nickel	360.63 ug/l	0.0 lbs/day	3,249.8	ug/l	0.2 lbs/day
Selenium*	7.50 ug/l	0.0 lbs/day	37.8	ug/l	0.0 lbs/day
Silver	N/A ug/l	N/A lbs/day	96.4	ug/l	0.0 lbs/day

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Zinc	831.65 ug/l	0.0 lbs/day	831.7	ug/l	0.0 lbs/day
Cyanide*	10.22 ug/l	0.0 lbs/day	43.2	ug/l	0.0 lbs/day

\*Limits for these metals are based on the dissolved standard.

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

Summer	19.7 Deg. C.	67.5 Deg. F
Fall	9.1 Deg. C.	48.4 Deg. F
Winter	9.1 Deg. C.	48.4 Deg. F
Spring	20.0 Deg. C.	68.0 Deg. F

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

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

	<b>4 Day Average</b>		<b>1 Hour Average</b>		
	<b>Concentration</b>	<b>Load</b>	<b>Concentration</b>		<b>Load</b>
Aldrin			1.5E+00	ug/l	1.30E-04 lbs/day
Chlordane	4.30E-03 ug/l	2.40E-04 lbs/day	1.2E+00	ug/l	1.04E-04 lbs/day
DDT, DDE	1.00E-03 ug/l	5.59E-05 lbs/day	5.5E-01	ug/l	4.76E-05 lbs/day
Dieldrin	1.90E-03 ug/l	1.06E-04 lbs/day	1.3E+00	ug/l	1.08E-04 lbs/day
Endosulfan	5.60E-02 ug/l	3.13E-03 lbs/day	1.1E-01	ug/l	9.53E-06 lbs/day
Endrin	2.30E-03 ug/l	1.28E-04 lbs/day	9.0E-02	ug/l	7.79E-06 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	8.66E-07 lbs/day
Heptachlor	3.80E-03 ug/l	2.12E-04 lbs/day	2.6E-01	ug/l	2.25E-05 lbs/day
Lindane	8.00E-02 ug/l	4.47E-03 lbs/day	1.0E+00	ug/l	8.66E-05 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.60E-06 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	8.66E-07 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	3.46E-06 lbs/day
PCB's	1.40E-02 ug/l	7.82E-04 lbs/day	2.0E+00	ug/l	1.73E-04 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.26E-01 lbs/day	2.0E+01	ug/l	1.73E-03 lbs/day
Toxephene	2.00E-04 ug/l	1.12E-05 lbs/day	7.3E-01	ug/l	6.32E-05 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	0.3 lbs/day
Nitrates as N	4.0 mg/l	0.2 lbs/day
Total Phosphorus as P	0.05 mg/l	0.0 lbs/day
Total Suspended Solids	90.0 mg/l	5.0 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	5.30E+03 ug/l	2.96E-01 lbs/day
Acrolein	1.53E+03 ug/l	8.56E-02 lbs/day
Acrylonitrile	1.30E+00 ug/l	7.24E-05 lbs/day
Benzene	1.40E+02 ug/l	7.79E-03 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	8.65E+00 ug/l	4.83E-04 lbs/day
Chlorobenzene	4.13E+04 ug/l	2.31E+00 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	1.51E-03 ug/l	8.45E-08 lbs/day
1,2-Dichloroethane	1.95E+02 ug/l	1.09E-02 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.75E+01 ug/l	9.77E-04 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	8.25E+01 ug/l	4.61E-03 lbs/day
1,1,2,2-Tetrachloroethane	2.16E+01 ug/l	1.21E-03 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	2.75E+00 ug/l	1.54E-04 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	8.45E+03 ug/l	4.72E-01 lbs/day
2,4,6-Trichlorophenol	1.28E+01 ug/l	7.13E-04 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	9.23E+02 ug/l	5.16E-02 lbs/day
2-Chlorophenol	7.86E+02 ug/l	4.39E-02 lbs/day
1,2-Dichlorobenzene	3.34E+04 ug/l	1.87E+00 lbs/day
1,3-Dichlorobenzene	5.11E+03 ug/l	2.85E-01 lbs/day

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1,4-Dichlorobenzene	5.11E+03 ug/l	2.85E-01 lbs/day
3,3'-Dichlorobenzidine	1.51E-01 ug/l	8.45E-06 lbs/day
1,1-Dichloroethylene	6.29E+00 ug/l	3.51E-04 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.55E+03 ug/l	8.67E-02 lbs/day
1,2-Dichloropropane	7.66E+01 ug/l	4.28E-03 lbs/day
1,3-Dichloropropylene	3.34E+03 ug/l	1.87E-01 lbs/day
2,4-Dimethylphenol	4.52E+03 ug/l	2.52E-01 lbs/day
2,4-Dinitrotoluene	1.79E+01 ug/l	9.99E-04 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	1.06E+00 ug/l	5.93E-05 lbs/day
Ethylbenzene	5.70E+04 ug/l	3.18E+00 lbs/day
Fluoranthene	7.27E+02 ug/l	4.06E-02 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	3.34E+05 ug/l	1.87E+01 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	3.14E+03 ug/l	1.76E-01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	7.07E+02 ug/l	3.95E-02 lbs/day
Dichlorobromomethane(HM)	4.32E+01 ug/l	2.41E-03 lbs/day
Chlorodibromomethane (HM)	6.68E+01 ug/l	3.73E-03 lbs/day
Hexachlorocyclopentadiene	3.34E+04 ug/l	1.87E+00 lbs/day
Isophorone	1.18E+03 ug/l	6.59E-02 lbs/day
Naphthalene		
Nitrobenzene	3.73E+03 ug/l	2.09E-01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	2.75E+04 ug/l	1.54E+00 lbs/day
4,6-Dinitro-o-cresol	1.50E+03 ug/l	8.40E-02 lbs/day
N-Nitrosodimethylamine	1.59E+01 ug/l	8.89E-04 lbs/day
N-Nitrosodiphenylamine	3.14E+01 ug/l	1.76E-03 lbs/day
N-Nitrosodi-n-propylamine	2.75E+00 ug/l	1.54E-04 lbs/day
Pentachlorophenol	1.61E+01 ug/l	9.00E-04 lbs/day
Phenol	9.04E+06 ug/l	5.05E+02 lbs/day
Bis(2-ethylhexyl)phthalate	1.16E+01 ug/l	6.48E-04 lbs/day
Butyl benzyl phthalate	1.02E+04 ug/l	5.71E-01 lbs/day
Di-n-butyl phthalate	2.36E+04 ug/l	1.32E+00 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	2.36E+05 ug/l	1.32E+01 lbs/day
Dimethyl phthlate	5.70E+06 ug/l	3.18E+02 lbs/day
Benzo(a)anthracene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Benzo(a)pyrene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Benzo(b)fluoranthene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Benzo(k)fluoranthene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Chrysene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	6.09E-02 ug/l	3.40E-06 lbs/day

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Pyrene (PAH)	2.16E+04 ug/l	1.21E+00 lbs/day
Tetrachloroethylene	1.75E+01 ug/l	9.77E-04 lbs/day
Toluene	3.93E+05 ug/l	2.20E+01 lbs/day
Trichloroethylene	1.59E+02 ug/l	8.89E-03 lbs/day
Vinyl chloride	1.03E+03 ug/l	5.76E-02 lbs/day

**Pesticides**

Aldrin	2.75E-04 ug/l	1.54E-08 lbs/day
Dieldrin	2.75E-04 ug/l	1.54E-08 lbs/day
Chlordane	1.16E-03 ug/l	6.48E-08 lbs/day
4,4'-DDT	1.16E-03 ug/l	6.48E-08 lbs/day
4,4'-DDE	1.16E-03 ug/l	6.48E-08 lbs/day
4,4'-DDD	1.65E-03 ug/l	9.22E-08 lbs/day
alpha-Endosulfan	3.93E+00 ug/l	2.20E-04 lbs/day
beta-Endosulfan	3.93E+00 ug/l	2.20E-04 lbs/day
Endosulfan sulfate	3.93E+00 ug/l	2.20E-04 lbs/day
Endrin	1.59E+00 ug/l	8.89E-05 lbs/day
Endrin aldehyde	1.59E+00 ug/l	8.89E-05 lbs/day
Heptachlor	4.13E-04 ug/l	2.31E-08 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1254 (Arochlor 1254)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1221 (Arochlor 1221)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1232 (Arochlor 1232)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1248 (Arochlor 1248)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1260 (Arochlor 1260)	8.84E-05 ug/l	4.94E-09 lbs/day
PCB-1016 (Arochlor 1016)	8.84E-05 ug/l	4.94E-09 lbs/day

**Pesticide**

Toxaphene	1.47E-03 ug/l	8.23E-08 lbs/day
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**Metals**

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		

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**Dioxin**  
Dioxin (2,3,7,8-TCDD)                      2.75E-08 ug/l                      1.54E-12 lbs/day

**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		1471.3				1471.3	N/A
Antimony				8448.6		8448.6	
Arsenic	196.5	667.3			0.0	196.5	372.5
Barium						0.0	
Beryllium						0.0	
Cadmium	19.6	19.0			0.0	19.0	1.5
Chromium (III)		11998.8			0.0	11998.8	572.8
Chromium (VI)	195.7	27.6			0.0	27.60	17.78
Copper	392.2	111.2				111.2	64.7
Cyanide		43.2	432254.8			43.2	10.2
Iron		1694.7				1694.7	
Lead	195.7	1067.8			0.0	195.7	40.9
Mercury		4.72		0.29	0.0	0.29	0.024
Nickel		3249.8		9038.1		3249.8	360.6
Selenium	96.7	37.8			0.0	37.8	7.5
Silver		96.4			0.0	96.4	
Thallium				12.4		12.4	
Zinc		831.7				831.7	831.7
Boron	1473.6					1473.6	

**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	1471.3	N/A	
Antimony	8448.62		
Arsenic	196.5	372.5	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	19.0	1.5	
Chromium (III)	11998.8	573	
Chromium (VI)	27.6	17.8	
Copper	111.2	64.7	

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Cyanide	43.2	10.2
Iron	1694.7	
Lead	195.7	40.9
Mercury	0.295	0.024
Nickel	3249.8	361
Selenium	37.8	7.5
Silver	96.4	N/A
Thallium	12.4	
Zinc	831.7	831.7
Boron	1473.60	

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 is not required. Basic renewal, no increase in effluent flow or concentration.

#### **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 downstream 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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**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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**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 the proposed discharge will not require a Level II Antidegradation Review. The Proposed permit is a simple renewal. No increase in effluent flow or concentration.**





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

21-Nov-16
4:00 PM

**Facilities:** SUFCO 002 Discharge  
**Discharging to:** Qultchupah Creek

**UPDES No:** UT-0022918

**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**

Quitcupah Creek:	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**	0.363 lbs/day	750.00	ug/l	3.133 lbs/day
Arsenic	190.00 ug/l	0.794 lbs/day	340.00	ug/l	1.420 lbs/day
Cadmium	0.78 ug/l	0.003 lbs/day	9.04	ug/l	0.038 lbs/day
Chromium III	275.88 ug/l	1.152 lbs/day	5771.90	ug/l	24.111 lbs/day
Chromium VI	11.00 ug/l	0.046 lbs/day	16.00	ug/l	0.067 lbs/day
Copper	31.41 ug/l	0.131 lbs/day	53.39	ug/l	0.223 lbs/day
Iron			1000.00	ug/l	4.177 lbs/day
Lead	19.41 ug/l	0.081 lbs/day	498.14	ug/l	2.081 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.010 lbs/day
Nickel	173.51 ug/l	0.725 lbs/day	1560.65	ug/l	6.519 lbs/day
Selenium	4.60 ug/l	0.019 lbs/day	20.00	ug/l	0.084 lbs/day
Silver	N/A ug/l	N/A lbs/day	43.57	ug/l	0.182 lbs/day
Zinc	399.29 ug/l	1.668 lbs/day	399.29	ug/l	1.668 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 413.99 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	0.006 lbs/day
Chlordane	0.004 ug/l	0.018 lbs/day	1.200	ug/l	0.005 lbs/day
DDT, DDE	0.001 ug/l	0.004 lbs/day	0.550	ug/l	0.002 lbs/day
Dieldrin	0.002 ug/l	0.008 lbs/day	1.250	ug/l	0.005 lbs/day
Endosulfan	0.056 ug/l	0.236 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.010 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.016 lbs/day	0.260	ug/l	0.001 lbs/day
Lindane	0.080 ug/l	0.338 lbs/day	1.000	ug/l	0.004 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.059 lbs/day	2.000	ug/l	0.008 lbs/day
Pentachlorophenol	13.00 ug/l	54.900 lbs/day	20.000	ug/l	0.084 lbs/day
Toxophene	0.0002 ug/l	0.001 lbs/day	0.7300	ug/l	0.003 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.02 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	2.51 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
<b>Chlorophenoxy Herbicides</b>				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
γ-cyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	11.40 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	3.29 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.00 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	0.30 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.02 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	88.68 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	0.42 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.04 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	0.18 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.05 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	18.16 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.03 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	1.98 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	1.69 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	71.79 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	10.98 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	10.98 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.01 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	3.34 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.16 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	7.18 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	9.71 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.04 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.00 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	122.47 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	1.56 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	717.92 lbs/day
Bis(2-chloroethoxy) methane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	6.76 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	1.52 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.09 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.14 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	0.21 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	71.79 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	2.53 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	8.02 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	59.12 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	3.23 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.03 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.07 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.03 lbs/day

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Phenol	ug/l	lbs/day	4.6E+06 ug/l	1.94E+04 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.02 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	21.96 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	50.68 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	506.77 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	1.22E+04 lbs/day
Benzo(a)anthracene (P)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	46.45 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.04 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	844.61 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	0.34 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	2.22 lbs/day
				lbs/day
				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	2.0 ug/l	0.01 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.01 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.01 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10'	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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**Metals**

	ug/l	lbs/day		
Antimony				
Arsenic	ug/l	lbs/day	4300.00 ug/l	18.16 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	929.07 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	19.43 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.03 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.

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(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**

	<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>	<b>mg/l</b>
Summer (Irrig. Season)	0.01	15.8	8.3	0.01	0.05	9.51	0.00	603.0	
Fall	0.01	5.2	8.3	0.01	0.05	---	0.00	710.0	
Winter	0.01	5.2	8.3	0.01	0.05	---	0.00	710.0	
Spring	0.01	18.1	8.2	0.01	0.05	---	0.00	625.0	
<b>Dissolved Metals</b>	<b>Al</b>	<b>As</b>	<b>Cd</b>	<b>CrIII</b>	<b>CrVI</b>	<b>Copper</b>	<b>Fe</b>	<b>Pb</b>	
	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	
All Seasons	2.385*	0.795*	0.0795*	0.795*	3.975*	0.8*	280.0	0.795*	
<b>Dissolved Metals</b>	<b>Hg</b>	<b>Ni</b>	<b>Se</b>	<b>Ag</b>	<b>Zn</b>	<b>Boron</b>			
	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>	<b>ug/l</b>			
All Seasons	0.0000	0.795*	1.59*	0.15*	0.0795*	1.59*			* ~80% MDL

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.50000	15.5	840.00	1.75105
Fall	0.50000	7.2		
Winter	0.50000	7.8		
Spring	0.50000	12.7		

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	0.500 MGD	0.774 cfs
Fall	0.500 MGD	0.774 cfs
Winter	0.500 MGD	0.774 cfs
Spring	0.500 MGD	0.774 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.5 MGD. If the discharger is allowed to have a flow greater than 0.5 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	98.7% 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	25.0 mg/l as BOD5	104.2 lbs/day
Fall	25.0 mg/l as BOD5	104.2 lbs/day
Winter	25.0 mg/l as BOD5	104.2 lbs/day
Spring	25.0 mg/l as BOD5	104.2 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	4.00
Fall	4.00
Winter	4.00
Spring	4.00

**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	2.3 mg/l as N	9.4 lbs/day
	1 Hour Avg. - Acute	4.8 mg/l as N	20.0 lbs/day
Fall	4 Day Avg. - Chronic	2.6 mg/l as N	10.7 lbs/day
	1 Hour Avg. - Acute	5.6 mg/l as N	23.2 lbs/day
Winter	4 Day Avg. - Chronic	2.2 mg/l as N	9.2 lbs/day
	1 Hour Avg. - Acute	5.1 mg/l as N	21.1 lbs/day
Spring	4 Day Avg. - Chronic	2.6 mg/l as N	10.7 lbs/day
	1 Hour Avg. - Acute	5.6 mg/l as N	23.2 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.0%.

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

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

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	0.011 mg/l	0.05 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.08 lbs/day
Fall	4 Day Avg. - Chronic	0.011 mg/l	0.05 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.08 lbs/day
Winter	4 Day Avg. - Chronic	0.011 mg/l	0.05 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.08 lbs/day
Spring	4 Day Avg. - Chronic	0.011 mg/l	0.00 lbs/day
	1 Hour Avg. - Acute	0.019 mg/l	0.00 lbs/day

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

Season		Concentration	Load
Summer	Maximum, Acute	1207.7 mg/l	2.52 tons/day
Fall	Maximum, Acute	1206.3 mg/l	2.51 tons/day
Winter	Maximum, Acute	1206.3 mg/l	2.51 tons/day
Spring	4 Day Avg. - Chronic	1207.4 mg/l	2.52 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 413.99 mg/l):

	4-Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aluminum*	N/A	N/A	759.7 ug/l	3.2 lbs/day
Arsenic*	192.45 ug/l	0.5 lbs/day	344.4 ug/l	1.4 lbs/day
Cadmium	0.78 ug/l	0.0 lbs/day	9.2 ug/l	0.0 lbs/day
Chromium III	279.43 ug/l	0.8 lbs/day	5,846.5 ug/l	24.4 lbs/day
Chromium VI*	11.09 ug/l	0.0 lbs/day	16.2 ug/l	0.1 lbs/day
Copper	31.80 ug/l	0.1 lbs/day	54.1 ug/l	0.2 lbs/day
Iron*	N/A	N/A	1,009.3 ug/l	4.2 lbs/day
Lead	19.65 ug/l	0.1 lbs/day	504.6 ug/l	2.1 lbs/day
Mercury*	0.01 ug/l	0.0 lbs/day	2.4 ug/l	0.0 lbs/day
Nickel	175.75 ug/l	0.5 lbs/day	1,580.8 ug/l	6.6 lbs/day
Selenium*	4.64 ug/l	0.0 lbs/day	20.2 ug/l	0.1 lbs/day
Silver	N/A ug/l	N/A lbs/day	44.1 ug/l	0.2 lbs/day

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Zinc	404.45 ug/l	1.1 lbs/day	404.5	ug/l	1.7 lbs/day
Cyanide*	5.27 ug/l	0.0 lbs/day	22.3	ug/l	0.1 lbs/day

\*Limits for these metals are based on the dissolved standard.

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

Summer	17.8 Deg. C.	64.1 Deg. F
Fall	7.2 Deg. C.	45.0 Deg. F
Winter	7.2 Deg. C.	45.0 Deg. F
Spring	20.0 Deg. C.	68.0 Deg. F

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

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

	<b>4 Day Average</b>		<b>1 Hour Average</b>		
	<b>Concentration</b>	<b>Load</b>	<b>Concentration</b>		<b>Load</b>
Aldrin			1.5E+00	ug/l	9.69E-03 lbs/day
Chlordane	4.30E-03 ug/l	1.79E-02 lbs/day	1.2E+00	ug/l	7.75E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	4.17E-03 lbs/day	5.5E-01	ug/l	3.55E-03 lbs/day
Dieldrin	1.90E-03 ug/l	7.92E-03 lbs/day	1.3E+00	ug/l	8.08E-03 lbs/day
Endosulfan	5.60E-02 ug/l	2.33E-01 lbs/day	1.1E-01	ug/l	7.11E-04 lbs/day
Endrin	2.30E-03 ug/l	9.59E-03 lbs/day	9.0E-02	ug/l	5.82E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	6.46E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.58E-02 lbs/day	2.6E-01	ug/l	1.68E-03 lbs/day
Lindane	8.00E-02 ug/l	3.34E-01 lbs/day	1.0E+00	ug/l	6.46E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	1.94E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	6.46E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	2.58E-04 lbs/day
PCB's	1.40E-02 ug/l	5.84E-02 lbs/day	2.0E+00	ug/l	1.29E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	5.42E+01 lbs/day	2.0E+01	ug/l	1.29E-01 lbs/day
Toxephene	2.00E-04 ug/l	8.34E-04 lbs/day	7.3E-01	ug/l	4.72E-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:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	20.9 lbs/day
Nitrates as N	4.0 mg/l	16.7 lbs/day
Total Phosphorus as P	0.05 mg/l	0.2 lbs/day
Total Suspended Solids	90.0 mg/l	376.0 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:

Toxic Organics	Maximum Concentration	
	Concentration	Load
Acenaphthene	2.73E+03 ug/l	1.14E+01 lbs/day
Acrolein	7.90E+02 ug/l	3.29E+00 lbs/day
Acrylonitrile	6.69E-01 ug/l	2.79E-03 lbs/day
Benzene	7.19E+01 ug/l	3.00E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	4.46E+00 ug/l	1.86E-02 lbs/day
Chlorobenzene	2.13E+04 ug/l	8.87E+01 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.80E-04 ug/l	3.25E-06 lbs/day
1,2-Dichloroethane	1.00E+02 ug/l	4.18E-01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	9.02E+00 ug/l	3.76E-02 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.25E+01 ug/l	1.77E-01 lbs/day
1,1,2,2-Tetrachloroethane	1.11E+01 ug/l	4.65E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.42E+00 ug/l	5.91E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	4.36E+03 ug/l	1.82E+01 lbs/day
2,4,6-Trichlorophenol	6.58E+00 ug/l	2.74E-02 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.76E+02 ug/l	1.98E+00 lbs/day
2-Chlorophenol	4.05E+02 ug/l	1.69E+00 lbs/day
1,2-Dichlorobenzene	1.72E+04 ug/l	7.18E+01 lbs/day
1,3-Dichlorobenzene	2.63E+03 ug/l	1.10E+01 lbs/day

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1,4-Dichlorobenzene	2.63E+03 ug/l	1.10E+01 lbs/day
3,3'-Dichlorobenzidine	7.80E-02 ug/l	3.25E-04 lbs/day
1,1-Dichloroethylene	3.24E+00 ug/l	1.35E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	8.00E+02 ug/l	3.34E+00 lbs/day
1,2-Dichloropropane	3.95E+01 ug/l	1.65E-01 lbs/day
1,3-Dichloropropylene	1.72E+03 ug/l	7.18E+00 lbs/day
2,4-Dimethylphenol	2.33E+03 ug/l	9.71E+00 lbs/day
2,4-Dinitrotoluene	9.22E+00 ug/l	3.84E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	5.47E-01 ug/l	2.28E-03 lbs/day
Ethylbenzene	2.94E+04 ug/l	1.22E+02 lbs/day
Fluoranthene	3.75E+02 ug/l	1.56E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.72E+05 ug/l	7.18E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.62E+03 ug/l	6.76E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.65E+02 ug/l	1.52E+00 lbs/day
Dichlorobromomethane(HM)	2.23E+01 ug/l	9.29E-02 lbs/day
Chlorodibromomethane (HM)	3.44E+01 ug/l	1.44E-01 lbs/day
Hexachlorocyclopentadiene	1.72E+04 ug/l	7.18E+01 lbs/day
Isophorone	6.08E+02 ug/l	2.53E+00 lbs/day
Naphthalene		
Nitrobenzene	1.92E+03 ug/l	8.02E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.42E+04 ug/l	5.91E+01 lbs/day
4,6-Dinitro-o-cresol	7.75E+02 ug/l	3.23E+00 lbs/day
N-Nitrosodimethylamine	8.20E+00 ug/l	3.42E-02 lbs/day
N-Nitrosodiphenylamine	1.62E+01 ug/l	6.76E-02 lbs/day
N-Nitrosodi-n-propylamine	1.42E+00 ug/l	5.91E-03 lbs/day
Pentachlorophenol	8.31E+00 ug/l	3.46E-02 lbs/day
Phenol	4.66E+06 ug/l	1.94E+04 lbs/day
Bis(2-ethylhexyl)phthalate	5.98E+00 ug/l	2.49E-02 lbs/day
Butyl benzyl phthalate	5.27E+03 ug/l	2.20E+01 lbs/day
Di-n-butyl phthalate	1.22E+04 ug/l	5.07E+01 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.22E+05 ug/l	5.07E+02 lbs/day
Dimethyl phthlate	2.94E+06 ug/l	1.22E+04 lbs/day
Benzo(a)anthracene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Benzo(a)pyrene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Benzo(b)fluoranthene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Benzo(k)fluoranthene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Chrysene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.14E-02 ug/l	1.31E-04 lbs/day

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Pyrene (PAH)	1.11E+04 ug/l	4.65E+01 lbs/day
Tetrachloroethylene	9.02E+00 ug/l	3.76E-02 lbs/day
Toluene	2.03E+05 ug/l	8.45E+02 lbs/day
Trichloroethylene	8.20E+01 ug/l	3.42E-01 lbs/day
Vinyl chloride	5.32E+02 ug/l	2.22E+00 lbs/day

**Pesticides**

Aldrin	1.42E-04 ug/l	5.91E-07 lbs/day
Dieldrin	1.42E-04 ug/l	5.91E-07 lbs/day
Chlordane	5.98E-04 ug/l	2.49E-06 lbs/day
4,4'-DDT	5.98E-04 ug/l	2.49E-06 lbs/day
4,4'-DDE	5.98E-04 ug/l	2.49E-06 lbs/day
4,4'-DDD	8.51E-04 ug/l	3.55E-06 lbs/day
alpha-Endosulfan	2.03E+00 ug/l	8.45E-03 lbs/day
beta-Endosulfan	2.03E+00 ug/l	8.45E-03 lbs/day
Endosulfan sulfate	2.03E+00 ug/l	8.45E-03 lbs/day
Endrin	8.20E-01 ug/l	3.42E-03 lbs/day
Endrin aldehyde	8.20E-01 ug/l	3.42E-03 lbs/day
Heptachlor	2.13E-04 ug/l	8.87E-07 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1254 (Arochlor 1254)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1221 (Arochlor 1221)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1232 (Arochlor 1232)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1248 (Arochlor 1248)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1260 (Arochlor 1260)	4.56E-05 ug/l	1.90E-07 lbs/day
PCB-1016 (Arochlor 1016)	4.56E-05 ug/l	1.90E-07 lbs/day

**Pesticide**

Toxaphene	7.60E-04 ug/l	3.17E-06 lbs/day
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**Metals**

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		



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Cyanide	22.3	5.3
Iron	1009.3	
Lead	101.3	19.7
Mercury	0.152	0.012
Nickel	1580.8	176
Selenium	20.2	4.6
Silver	44.1	N/A
Thallium	6.4	
Zinc	404.5	404.5
Boron	759.70	

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 is not required. Basic renewal, no increase in effluent flow or concentration.

#### **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 downstream 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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**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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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 the proposed discharge will not require a Level II Antidegradation Review. The Proposed permit is a simple renewal. No increase in effluent flow or concentration.**



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

**Discharging Facility:** SUFCO 003 Discharge  
UPDES No: UT-0022918  
Current Flow: 5.50 MGD Design Flow  
Design Flow 5.50 MGD

**Receiving Water:** North Fork Quiltchupah Creek  
Stream Classification: 2B, 3A, 4  
Stream Flows [cfs]:  
0.26 Summer (July-Sept) 20th Percentile  
0.26 Fall (Oct-Dec) 20th Percentile  
0.26 Winter (Jan-Mar) 20th Percentile  
0.26 Spring (Apr-June) 20th Percentile  
1.5 Average  
Stream TDS Values:  
245.0 Summer (July-Sept) Average  
311.0 Fall (Oct-Dec) Average  
311.0 Winter (Jan-Mar) Average  
260.0 Spring (Apr-June) Average

<b>Effluent Limits:</b>		<b>WQ Standard:</b>
Flow, MGD:	5.50 MGD Design Flow	
BOD, mg/l:	25.0 Summer	5.0 Indicator
Dissolved Oxygen, mg/l	4.0 Summer	6.5 30 Day Average
TNH <sub>3</sub> , Chronic, mg/l:	3.4 Summer	Varies Function of pH and Temperature
TDS, mg/l:	1228.8 Summer	1200.0

**Modeling Parameters:**  
Acute River Width: 0.0% Plume Model Used  
Chronic River Width: 100.0% Plume Model Used

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

Date: 1/10/2017

Permit Writer:

WLA by:

WQM Sec. Approval:

TMDL Sec. Approval:

\_\_\_\_\_  
*[Signature]* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Utah Division of Water Quality  
Salt Lake City, Utah

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

10-Jan-17
4:00 PM

**Facilities:** SUFCO 003 Discharge  
**Discharging to:** North Fork Quitchupah Creek

**UPDES No:** UT-0022918

**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**

North Fork Quitchupah Creek:	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**	3.998 lbs/day	750.00	ug/l	34.462 lbs/day
Arsenic	190.00 ug/l	8.730 lbs/day	340.00	ug/l	15.623 lbs/day
Cadmium	0.76 ug/l	0.035 lbs/day	8.78	ug/l	0.403 lbs/day
Chromium III	269.43 ug/l	12.380 lbs/day	5636.92	ug/l	259.015 lbs/day
ChromiumVI	11.00 ug/l	0.505 lbs/day	16.00	ug/l	0.735 lbs/day
Copper	30.64 ug/l	1.408 lbs/day	51.95	ug/l	2.387 lbs/day
Iron			1000.00	ug/l	45.950 lbs/day
Lead	18.71 ug/l	0.860 lbs/day	480.16	ug/l	22.063 lbs/day
Mercury	0.0120 ug/l	0.001 lbs/day	2.40	ug/l	0.110 lbs/day
Nickel	169.32 ug/l	7.780 lbs/day	1522.96	ug/l	69.980 lbs/day
Selenium	4.60 ug/l	0.211 lbs/day	20.00	ug/l	0.919 lbs/day
Silver	N/A ug/l	N/A lbs/day	41.46	ug/l	1.905 lbs/day
Zinc	389.63 ug/l	17.904 lbs/day	389.63	ug/l	17.904 lbs/day

\* Allowed below discharge

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

Metals Standards Based upon a Hardness of 402.2 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.069 lbs/day
Chlordane	0.004 ug/l	0.203 lbs/day	1.200	ug/l	0.055 lbs/day
DDT, DDE	0.001 ug/l	0.047 lbs/day	0.550	ug/l	0.025 lbs/day
Dieldrin	0.002 ug/l	0.090 lbs/day	1.250	ug/l	0.057 lbs/day
Endosulfan	0.056 ug/l	2.646 lbs/day	0.110	ug/l	0.005 lbs/day
Endrin	0.002 ug/l	0.109 lbs/day	0.090	ug/l	0.004 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.180 lbs/day	0.260	ug/l	0.012 lbs/day
Lindane	0.080 ug/l	3.780 lbs/day	1.000	ug/l	0.046 lbs/day
Methoxychlor			0.030	ug/l	0.001 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.002 lbs/day
PCB's	0.014 ug/l	0.661 lbs/day	2.000	ug/l	0.092 lbs/day
Pentachlorophenol	13.00 ug/l	614.199 lbs/day	20.000	ug/l	0.919 lbs/day
Toxephene	0.0002 ug/l	0.009 lbs/day	0.7300	ug/l	0.034 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.23 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	27.57 tons/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
<b>Metals</b>				
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
<b>Chlorophenoxy Herbicides</b>				
2,4-D			ug/l	lbs/day
2,4,5-TP			ug/l	lbs/day
Endrin			ug/l	lbs/day
γ-cyclohexane (Lindane)			ug/l	lbs/day
Methoxychlor			ug/l	lbs/day
Toxaphene			ug/l	lbs/day

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	127.56 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	36.85 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.03 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	3.35 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.21 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	992.17 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	4.68 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.42 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	1.98 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.52 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.07 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	203.16 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.31 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	22.21 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	18.90 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	803.18 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	122.84 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	122.84 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.15 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	37.32 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	1.84 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	80.32 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	108.67 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.43 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.03 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	1370.14 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	17.48 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	8031.83 lbs/day
Bis(2-chloroethoxy) methane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	75.59 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	17.01 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	1.04 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	1.61 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	2.36 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	803.18 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	28.35 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	89.77 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	661.44 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	36.14 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.38 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.76 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1.4 ug/l	0.07 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.39 lbs/day

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Phenol	ug/l	lbs/day	4.6E+06 ug/l	2.17E+05 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.28 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	245.68 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	566.95 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	5669.53 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	1.37E+05 lbs/day
Benzo(a)anthracene (P/	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	519.71 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.42 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	9449.21 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	3.83 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	24.80 lbs/day
				lbs/day
<b>Pesticides</b>				lbs/day
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	2.0 ug/l	0.09 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.09 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.09 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.04 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.04 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 122	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10'	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
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	4300.00 ug/l	203.16 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	10394.13 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.01 lbs/day
Nickel			4600.00 ug/l	217.33 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.30 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.

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(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**

	<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)	0.26	12.0	8.6	0.01	0.05	7.29	0.00	245.0	
Fall	0.26	2.8	8.5	0.01	0.05	---	0.00	311.0	
Winter	0.26	2.8	8.5	0.01	0.05	---	0.00	311.0	
Spring	0.26	14.8	8.6	0.01	0.05	---	0.00	260.0	
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	2.385*	0.795*	0.0795*	0.795*	3.975*	0.8*	900.0	0.795*	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	0.795*	1.59*	0.15*	0.0795*	1.59*		* ~80% MDL	

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	5.50000	14.8	753.00	17.26660
Fall	5.50000	13.4		
Winter	5.50000	13.5		
Spring	5.50000	14.4		

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	5.500 MGD	8.509 cfs
Fall	5.500 MGD	8.509 cfs
Winter	5.500 MGD	8.509 cfs
Spring	5.500 MGD	8.509 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 5.5 MGD. If the discharger is allowed to have a flow greater than 5.5 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	97.1% 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	25.0 mg/l as BOD5	1146.5 lbs/day
Fall	25.0 mg/l as BOD5	1146.5 lbs/day
Winter	25.0 mg/l as BOD5	1146.5 lbs/day
Spring	25.0 mg/l as BOD5	1146.5 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	4.00
Fall	4.00
Winter	4.00
Spring	4.00

**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	3.4 mg/l as N	155.4 lbs/day
	1 Hour Avg. - Acute	9.2 mg/l as N	420.0 lbs/day
Fall	4 Day Avg. - Chronic	3.2 mg/l as N	148.0 lbs/day
	1 Hour Avg. - Acute	8.7 mg/l as N	398.7 lbs/day
Winter	4 Day Avg. - Chronic	3.2 mg/l as N	145.0 lbs/day
	1 Hour Avg. - Acute	9.6 mg/l as N	441.8 lbs/day
Spring	4 Day Avg. - Chronic	3.1 mg/l as N	143.9 lbs/day
	1 Hour Avg. - Acute	8.7 mg/l as N	398.7 lbs/day

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

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

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

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	0.011 mg/l	0.52 lbs/day
	1 Hour Avg. - Acute	0.020 mg/l	0.90 lbs/day
Fall	4 Day Avg. - Chronic	0.011 mg/l	0.52 lbs/day
	1 Hour Avg. - Acute	0.020 mg/l	0.90 lbs/day
Winter	4 Day Avg. - Chronic	0.011 mg/l	0.52 lbs/day
	1 Hour Avg. - Acute	0.020 mg/l	0.90 lbs/day
Spring	4 Day Avg. - Chronic	0.011 mg/l	0.00 lbs/day
	1 Hour Avg. - Acute	0.020 mg/l	0.00 lbs/day

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

Season		Concentration	Load
Summer	Maximum, Acute	1228.8 mg/l	28.18 tons/day
Fall	Maximum, Acute	1226.9 mg/l	28.13 tons/day
Winter	Maximum, Acute	1226.9 mg/l	28.13 tons/day
Spring	4 Day Avg. - Chronic	1228.4 mg/l	28.17 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 402.2 mg/l):

	4 Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aluminum*	N/A	N/A	750.0 ug/l	34.5 lbs/day
Arsenic*	195.71 ug/l	5.8 lbs/day	340.0 ug/l	15.6 lbs/day
Cadmium	0.78 ug/l	0.0 lbs/day	8.8 ug/l	0.4 lbs/day
Chromium III	277.54 ug/l	8.2 lbs/day	5,636.9 ug/l	259.0 lbs/day
Chromium VI*	11.21 ug/l	0.3 lbs/day	16.0 ug/l	0.7 lbs/day
Copper	31.54 ug/l	0.9 lbs/day	52.0 ug/l	2.4 lbs/day
Iron*	N/A	N/A	1,000.0 ug/l	45.9 lbs/day
Lead	19.25 ug/l	0.6 lbs/day	480.2 ug/l	22.1 lbs/day
Mercury*	0.01 ug/l	0.0 lbs/day	2.4 ug/l	0.1 lbs/day
Nickel	174.41 ug/l	5.2 lbs/day	1,523.0 ug/l	70.0 lbs/day
Selenium*	4.69 ug/l	0.1 lbs/day	20.0 ug/l	0.9 lbs/day
Silver	N/A ug/l	N/A lbs/day	41.5 ug/l	1.9 lbs/day

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Zinc	401.40 ug/l	11.9 lbs/day	389.6	ug/l	17.9 lbs/day
Cyanide*	5.36 ug/l	0.2 lbs/day	22.0	ug/l	1.0 lbs/day

\*Limits for these metals are based on the dissolved standard.

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

Summer	14.1 Deg. C.	57.3 Deg. F
Fall	4.9 Deg. C.	40.7 Deg. F
Winter	4.9 Deg. C.	40.7 Deg. F
Spring	16.8 Deg. C.	62.3 Deg. F

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

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

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aldrin			1.5E+00	ug/l	1.07E-01 lbs/day
Chlordane	4.30E-03 ug/l	1.97E-01 lbs/day	1.2E+00	ug/l	8.53E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	4.59E-02 lbs/day	5.5E-01	ug/l	3.91E-02 lbs/day
Dieldrin	1.90E-03 ug/l	8.71E-02 lbs/day	1.3E+00	ug/l	8.89E-02 lbs/day
Endosulfan	5.60E-02 ug/l	2.57E+00 lbs/day	1.1E-01	ug/l	7.82E-03 lbs/day
Endrin	2.30E-03 ug/l	1.05E-01 lbs/day	9.0E-02	ug/l	6.40E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	7.11E-04 lbs/day
Heptachlor	3.80E-03 ug/l	1.74E-01 lbs/day	2.6E-01	ug/l	1.85E-02 lbs/day
Lindane	8.00E-02 ug/l	3.67E+00 lbs/day	1.0E+00	ug/l	7.11E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	2.13E-03 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	7.11E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	2.84E-03 lbs/day
PCB's	1.40E-02 ug/l	6.42E-01 lbs/day	2.0E+00	ug/l	1.42E-01 lbs/day
Pentachlorophenol	1.30E+01 ug/l	5.96E+02 lbs/day	2.0E+01	ug/l	1.42E+00 lbs/day
Toxephene	2.00E-04 ug/l	9.17E-03 lbs/day	7.3E-01	ug/l	5.19E-02 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:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	229.7 lbs/day
Nitrates as N	4.0 mg/l	183.8 lbs/day
Total Phosphorus as P	0.05 mg/l	2.3 lbs/day
Total Suspended Solids	90.0 mg/l	4135.5 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:

Toxic Organics	Maximum Concentration	
	Concentration	Load
Acenaphthene	2.78E+03 ug/l	1.28E+02 lbs/day
Acrolein	8.04E+02 ug/l	3.69E+01 lbs/day
Acrylonitrile	6.80E-01 ug/l	3.12E-02 lbs/day
Benzene	7.31E+01 ug/l	3.35E+00 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	4.53E+00 ug/l	2.08E-01 lbs/day
Chlorobenzene	2.16E+04 ug/l	9.92E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.93E-04 ug/l	3.64E-05 lbs/day
1,2-Dichloroethane	1.02E+02 ug/l	4.68E+00 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	9.17E+00 ug/l	4.20E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.33E+01 ug/l	1.98E+00 lbs/day
1,1,2,2-Tetrachloroethane	1.13E+01 ug/l	5.20E-01 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.44E+00 ug/l	6.61E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	4.43E+03 ug/l	2.03E+02 lbs/day
2,4,6-Trichlorophenol	6.70E+00 ug/l	3.07E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.84E+02 ug/l	2.22E+01 lbs/day
2-Chlorophenol	4.12E+02 ug/l	1.89E+01 lbs/day
1,2-Dichlorobenzene	1.75E+04 ug/l	8.03E+02 lbs/day
1,3-Dichlorobenzene	2.68E+03 ug/l	1.23E+02 lbs/day

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1,4-Dichlorobenzene	2.68E+03 ug/l	1.23E+02 lbs/day
3,3'-Dichlorobenzidine	7.93E-02 ug/l	3.64E-03 lbs/day
1,1-Dichloroethylene	3.30E+00 ug/l	1.51E-01 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	8.14E+02 ug/l	3.73E+01 lbs/day
1,2-Dichloropropane	4.02E+01 ug/l	1.84E+00 lbs/day
1,3-Dichloropropylene	1.75E+03 ug/l	8.03E+01 lbs/day
2,4-Dimethylphenol	2.37E+03 ug/l	1.09E+02 lbs/day
2,4-Dinitrotoluene	9.37E+00 ug/l	4.30E-01 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	5.56E-01 ug/l	2.55E-02 lbs/day
Ethylbenzene	2.99E+04 ug/l	1.37E+03 lbs/day
Fluoranthene	3.81E+02 ug/l	1.75E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.75E+05 ug/l	8.03E+03 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.65E+03 ug/l	7.56E+01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.71E+02 ug/l	1.70E+01 lbs/day
Dichlorobromomethane(HM)	2.27E+01 ug/l	1.04E+00 lbs/day
Chlorodibromomethane (HM)	3.50E+01 ug/l	1.61E+00 lbs/day
Hexachlorocyclopentadiene	1.75E+04 ug/l	8.03E+02 lbs/day
Isophorone	6.18E+02 ug/l	2.83E+01 lbs/day
Naphthalene		
Nitrobenzene	1.96E+03 ug/l	8.98E+01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.44E+04 ug/l	6.61E+02 lbs/day
4,6-Dinitro-o-cresol	7.88E+02 ug/l	3.61E+01 lbs/day
N-Nitrosodimethylamine	8.34E+00 ug/l	3.83E-01 lbs/day
N-Nitrosodiphenylamine	1.65E+01 ug/l	7.56E-01 lbs/day
N-Nitrosodi-n-propylamine	1.44E+00 ug/l	6.61E-02 lbs/day
Pentachlorophenol	8.45E+00 ug/l	3.87E-01 lbs/day
Phenol	4.74E+06 ug/l	2.17E+05 lbs/day
Bis(2-ethylhexyl)phthalate	6.08E+00 ug/l	2.79E-01 lbs/day
Butyl benzyl phthalate	5.36E+03 ug/l	2.46E+02 lbs/day
Di-n-butyl phthalate	1.24E+04 ug/l	5.67E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.24E+05 ug/l	5.67E+03 lbs/day
Dimethyl phthlate	2.99E+06 ug/l	1.37E+05 lbs/day
Benzo(a)anthracene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(a)pyrene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(b)fluoranthene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Benzo(k)fluoranthene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Chrysene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	3.19E-02 ug/l	1.46E-03 lbs/day

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Pyrene (PAH)	1.13E+04 ug/l	5.20E+02 lbs/day
Tetrachloroethylene	9.17E+00 ug/l	4.20E-01 lbs/day
Toluene	2.06E+05 ug/l	9.45E+03 lbs/day
Trichloroethylene	8.34E+01 ug/l	3.83E+00 lbs/day
Vinyl chloride	5.41E+02 ug/l	2.48E+01 lbs/day

**Pesticides**

Aldrin	1.44E-04 ug/l	6.61E-06 lbs/day
Dieldrin	1.44E-04 ug/l	6.61E-06 lbs/day
Chlordane	6.08E-04 ug/l	2.79E-05 lbs/day
4,4'-DDT	6.08E-04 ug/l	2.79E-05 lbs/day
4,4'-DDE	6.08E-04 ug/l	2.79E-05 lbs/day
4,4'-DDD	8.65E-04 ug/l	3.97E-05 lbs/day
alpha-Endosulfan	2.06E+00 ug/l	9.45E-02 lbs/day
beta-Endosulfan	2.06E+00 ug/l	9.45E-02 lbs/day
Endosulfan sulfate	2.06E+00 ug/l	9.45E-02 lbs/day
Endrin	8.34E-01 ug/l	3.83E-02 lbs/day
Endrin aldehyde	8.34E-01 ug/l	3.83E-02 lbs/day
Heptachlor	2.16E-04 ug/l	9.92E-06 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1254 (Arochlor 1254)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1221 (Arochlor 1221)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1232 (Arochlor 1232)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1248 (Arochlor 1248)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1260 (Arochlor 1260)	4.64E-05 ug/l	2.13E-06 lbs/day
PCB-1016 (Arochlor 1016)	4.64E-05 ug/l	2.13E-06 lbs/day

**Pesticide**

Toxaphene	7.73E-04 ug/l	3.54E-05 lbs/day
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**Metals**

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		



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Cyanide	22.0	5.4	
Iron	1000.0		
Lead	103.0	19.3	
Mercury	0.155	0.012	
Nickel	1523.0	174	
Selenium	20.0	4.7	
Silver	41.5	N/A	
Thallium	6.5		
Zinc	389.6	401.4	Acute Controls
Boron	772.65		

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 is not required. Basic renewal, no increase in effluent flow or concentration.

**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 downstream 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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**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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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 the proposed discharge will not require a Level II Antidegradation Review. The Proposed permit is a simple renewal. No increase in effluent flow or concentration.**

## **ADDENDUM II**

**Reasonable Potential Analysis for Organics and Metals at Outfalls 002 & 003**

Summary of Results of Reasonable Potential Statistical Analysis for SUFCo

Parameter	Outfall	Number of Samples	Outcome		Result
			Acute	Chronic	
Total Boron	002	2	*MEC > MAC*	MEC > MAC	Acute and Chronic limit required**
Total Nickel	002	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**
Total Selenium	002	2	MEC < MAC	MEC > MAC	Chronic limit required**
Total Zinc	002	2	MEC > MAC	MEC > MAC	Acute and Chronic limit required**
Total Boron	003	2	MEC > MAC	MEC > MAC	Acute and Chronic limit required**
Total Nickel	003	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**
Total Selenium	003	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**

\*MEC – Maximum expected effluent concentration as determined from Reasonable Potential statistical analysis.

\*MAC – UPDES permit limit developed from the wasteload allocation process.

\*\*Based upon the policy “Reasonable Potential Analysis Guidance”, developed by the Utah Division of Water Quality and implemented on September 10, 2015, page 3, paragraph 2; it was determined not to include any total metal effluent limits in the permit because only two values of the total metals were provided for statistical analysis. Instead, the Division requires the permittee to monitor all of the total metals used in the study on a quarterly basis throughout the next five year permit cycle. This will provide enough of a data base to make a more accurate determination as to what effluent metal limits will be required in the next permit cycle.

Summary of Results of Reasonable Potential Statistical Analysis for SUFCo

Parameter	Outfall	Number of Samples	Outcome		Result
			Acute	Chronic	
Total Boron	002	2	*MEC > MAC*	MEC > MAC	Acute and Chronic limit required**
Total Nickel	002	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**
Total Selenium	002	2	MEC < MAC	MEC > MAC	Chronic limit required**
Total Zinc	002	2	MEC > MAC	MEC > MAC	Acute and Chronic limit required**
Total Boron	003	2	MEC > MAC	MEC > MAC	Acute and Chronic limit required**
Total Nickel	003	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**
Total Selenium	003	2	MEC < MAC	MEC < MAC	No Acute or Chronic limit required**

\*MEC – Maximum expected effluent concentration as determined from Reasonable Potential statistical analysis.

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