

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
SALT LAKE CITY, UTAH

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Industrial Permit No. **UT0022616**
Storm water Permit No. **UTR000000**

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

BRONCO UTAH OPERATIONS, LLC, EMERY UNDERGROUND MINE

is hereby authorized to discharge from its facility located 4 miles south of the town of Emery Utah, (Emery County) with outfalls located as indicated in the permit, to receiving waters named

**Quitcupah Creek, a tributary of Muddy Creek and the Price River,
Christiansen Wash, a tributary of Quitcupah Creek**

in accordance with specific limitations, outfalls, and other conditions set forth herein.

This permit shall become effective on January 1, 2018

This permit expires at midnight on December 31, 2022

Signed this 11th day of December, 2017.


Erica Brown Gaddis, PhD
Director

Table of Contents

<u>Outline</u>	<u>Page Number</u>
I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS	1
A. Description of Discharge Points	1
B. Narrative Standard	2
C. Specific Limitations and Self-Monitoring Requirements	3
D. Reporting of Wastewater Monitoring Results	7
II. STORM WATER REQUIREMENTS	8
A. Coverage of This Section	8
B. Prohibition of Non-Storm Water Discharges	8
C. Storm Water Pollution Prevention Plan Requirements	8
D. Comprehensive Site Compliance Evaluation	13
E. Monitoring and Reporting Requirements	14
F. EPCRA Section 313 Requirements	15
III. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS	19
A. Representative Sampling	19
B. Monitoring Procedures	19
C. Penalties for Tampering	19
D. Compliance Schedules	19
E. Additional Monitoring by the Permittee	19
F. Records Contents	19
G. Retention of Records	19
H. Twenty-four Hour Notice of Noncompliance Reporting	20
I. Other Noncompliance Reporting	21
J. Inspection and Entry	21
VI. COMPLIANCE RESPONSIBILITIES	22
A. Duty to Comply	22
B. Penalties for Violations of Permit Conditions	22
C. Need to Halt or Reduce Activity not a Defense	22
D. Duty to Mitigate	22
E. Proper Operation and Maintenance	22
F. Removed Substances	22
G. Bypass of Treatment Facilities	22
H. Upset Conditions	24
VII. GENERAL REQUIREMENTS	25
A. Planned Changes	25
B. Anticipated Noncompliance	25
C. Permit Actions	25
D. Duty to Reapply	25
E. Duty to Provide Information	25
F. Other Information	25
G. Signatory Requirements	25
H. Penalties for Falsification of Reports	26
I. Availability of Reports	26
J. Oil and Hazardous Substance Liability	26
K. Property Rights	27
L. Severability	27
M. Transfers	27
N. State or Federal Laws	27
O. Water Quality - Reopener Provision	27

DISCHARGE PERMIT NO. UT0023680

Q. Toxicity Limitation - Reopener Provision 28
R. Storm Water-Reopener Provision 28
VIII. DEFINITIONS 29
 A. Wastewater..... 29

I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. 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 violations 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 Numbers</u>	<u>Location of Discharge Outfalls</u>
001	Discharge of mine water at latitude 38° 51'' 38' and longitude 111° 16'' 09' from Sediment Pond #1 to Quitchupah Creek.
002	Discharge of storm water at latitude 38° 51'' 34' and longitude 111° 15'' 24' from Sediment Pond #2 to Quitchupah Creek.
003	Discharge of mine water at latitude 38° 52'' 33' and longitude 111° 16'' 53' from Sediment Pond #6 to Quitchupah Creek.
004	Discharge of mine water at latitude 38° 52'' 48' and longitude 111° 16'' 51' from Sediment Farmers Pond to Quitchupah Creek.
005	Discharge of mine water at latitude 38° 51'' 34' and longitude 111° 15'' 23' from Sediment Pond #3 to Quitchupah Creek.
006	Discharge of storm water at latitude 38° 51'' 32' and longitude 111° 15'' 30' from Sediment Pond #3 to Quitchupah Creek.
007	Discharge of storm water at latitude 38° 51'' 45' and longitude 111° 15'' 45' from Sediment Pond #5 to Quitchupah Creek.
008	Slurry emergency discharge at latitude 38° 51'' 45' and longitude 111° 16'' 15' from proposed Sediment Pond #7 to Quitchupah Creek
009	Discharge of storm water at latitude 38° 52'' 30' and longitude 111° 14'' 08' from Sediment Pond #9 to Christiansen Wash.

PART I
DISCHARGE PERMIT NO. UT0022616

- B. 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 a bioassay or other tests performed in accordance with standard procedures.

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfalls 001-009. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations *a				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow *a*b	1.5	--	--	--	--
TSS, mg/L	25	35	--	--	70
Sulfate, mg/L*g	--	--	--	--	3,366
TDS, mg/L	--	--	--	--	4,766
WET, Chronic Biomonitoring*c*e	--	--	--	--	IC ₂₅ > 48.9% effluent
Oil & Grease, mg/L*d	--	--	--	--	10.0
pH, Standard Units	--	--	--	6.5	9
Total Iron, mg/L	--	--	--	--	1.4
Sanitary Waste	--	--	--	--	None

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow *b	Twice Monthly	Recorder	MGD
TSS	Twice Monthly	Grab	mg/L
pH	Twice Monthly	Grab	SU
WET – Biomonitoring *c *e Ceriodaphnia - Chronic Fathead Minnows – Chronic	Quarterly, Alternating Species each quarter when mine is discharging.	Composite Composite Composite Composite	Pass/Fail Pass/Fail Pass/Fail Pass/Fail
Oil & Grease *d	When Sheen Observed	Grab	mg/L
TDS, mg/L	Monthly	Grab	mg/L
Sulfate, mg/L	Monthly	Grab	mg/L
Sanitary Waste	Monthly	Visual	
Metals*f	Monthly	Grab	mg/L

- *a See Definitions, *Part VIII*, for definition of terms.
- *b Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- *c Chronic WET monitoring is required on outfalls 001, 003, 004, and 005 only. Each chronic WET test shall alternate between Ceriodaphnia and the fathead minnows.
- *d Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.
- *e Monitoring frequency will be annually while mine is idle and quarterly at commencement of mining activities.
- *f 10 monthly sampling events for metals shall occur during the first 10 months that Bronco Emery Mine is discharging. These months are not required to be consecutive. Reasonable potential will

PART I
DISCHARGE PERMIT NO. UT0022616

then be conducted on this data set. RP analysis for arsenic, cadmium, chromium, copper, mercury, nickel, selenium, lead, silver, zinc and cyanide will be conducted.

*g Sulfate and TDS sampling events shall occur concurrently.

2. Samples collected in compliance with the monitoring requirements specified above shall be collected at all outfalls prior to mixing with the receiving water.
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 outfalls 002, substitute the following limitations for the limitations contained in *Part I.C.1*. 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			6.0	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	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.C.1*. Such analyses shall be conducted on either grab or composite samples. All manual pond dewatering must meet all limitations of *Part I.C.1*.

4. The operator shall have the burden of proof that the increase in discharge was caused by the applicable precipitation event described in *Part I.C.3* and *I.C.4*. The alternate limitations in *Part I.C.3* and *I.C.4* shall not apply to treatment systems that treat exclusively underground mine water (i.e. Outfalls 001 and 003 and 004). The alternate limitations apply to Outfalls 002, 006, 007, 008 and 009 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

PART I
DISCHARGE PERMIT NO. UT0022616

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.C.1.*

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. Chronic Whole Effluent Testing. Effective immediately, the permittee shall quarterly conduct chronic short-term toxicity tests on a composite sample of the final effluent. The sample shall be collected at outfalls 001,003, 004 and 005.

The monitoring frequency shall be quarterly when the mine is operational and yearly otherwise. 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.C.4.b* shall be determined by the Director. If the second test shows no chronic toxicity, routine monitoring shall be resumed.

Chronic whole effluent Testing. 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 Water to Freshwater Organisms, 4th Edition, (EPA 821-R-02-013), October 2002* as per 40 CFR 136.3(a) *TABLE 1A-LIST OF APPROVED BIOLOGICAL METHODS*. Test species shall consist of *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow).

Chronic toxicity occurs when the IC₂₅ is less than 48.9 percent effluent. A five dilution test is required to determine the IC₂₅. If any of the acceptable control performance criteria are not met, the test shall be considered invalid. IC₂₅ is the inhibition 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.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting calendar quarter (e.g.,

PART I
DISCHARGE PERMIT NO. UT0022616

biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28). All test results shall be reported along with the DMR submitted for that reporting 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.

If the results for a minimum of ten consecutive tests indicate no chronic toxicity, the permittee may request a reduction in testing frequency and/or reduction to one species. The Director may approve, partially approve, or deny the request based on results and other available information. If approval is given, the modification will take place without a public notice. Major facilities will not be allowed less than a quarterly monitoring period.

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 will 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.

- a. *Toxicity Reduction Evaluation (TRE)*. If toxicity is detected during the life of this permit 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 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:

- (1) Phase I – Toxicity Characterization
- (2) Phase II – Toxicity Identification Procedures
- (3) Phase III – Toxicity Control Procedures
- (4) 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.

PART I
DISCHARGE PERMIT NO. UT0022616

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.

- D. Reporting of Wastewater Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1) or by NetDMR, post-marked or entered into NetDMR no later than the 28th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part V.G)*, and submitted by NetDMR, or to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
PO Box 144870
Salt Lake City, Utah 84114-4870

II. STORM WATER 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 fire fighting 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. The permittee must have (on site) or develop and implement a storm water pollution prevention plan as a condition of this permit.

1. Contents of the Plan. The plan shall include, at a minimum, the following items:

- a. *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.
- b. *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

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:

- (1) *Drainage.* A site map 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:
 - (a) Drainage direction and discharge points from all wastewater associated activities including but not limited to grit screen cleaning, bio-solids drying beds and transport, chemical/material loading, unloading and storage areas, vehicle maintenance areas, salt or sand storage areas.
 - (b) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
 - (c) Location of bio-solids drying beds where exposed to precipitation or where the transportation of bio-solids may be spilled onto internal roadways or tracked off site.
 - (d) Location where grit screen cleaning or other routinely performed industrial activities are located and are exposed to precipitation.
 - (e) 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.
 - (f) Locations where any major spills or leaks of toxic or hazardous materials have occurred.
 - (g) Location of any sand or salt piles.
 - (h) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
 - (i) Location of receiving streams or other surface water bodies.

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

- (j) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- (2) *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 and the present; 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.
- (3) *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.
- (4) *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.
- (5) *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.
- (6) *Measures and Controls.* The permittee 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:
- (7) *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

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

other control measures at the discharge outlets. Where applicable, such measures or other equivalent measures would include the following: sweepers and covered storage to minimize dust generation and storm runoff; conservation of vegetation where possible to minimize erosion; sweeping of haul roads, bio-solids access points, and exits to reduce or eliminate off site tracking; sweeping of sand or salt storage areas to minimize entrainment in storm water runoff; collection, removal, and proper disposal of waste oils and other fluids resulting from vehicle and equipment maintenance; other equivalent measures to address identified potential sources of pollution.

- (8) *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.
- (9) *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.
- (10) *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: access roads/rail lines, equipment storage and maintenance areas (both indoor and outdoor areas); fueling; material handling areas, residual treatment, storage, and disposal areas; and wastewater treatment areas. 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.
- (11) *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

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

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.

(12) *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 this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

(13) *Non-storm Water Discharges.*

(a) *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.

(b) *Exceptions.* Except for flows from fire fighting activities, sources of non-storm water listed in *Part II.B. (Prohibition of Non-storm Water Discharges)* of this permit 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.

(c) *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 after 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, which are not, authorized by a *UPDES* permit are unlawful, and must be terminated.

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

- (14) *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.
- (15) *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 *Part II.C.1.b* (Description of Potential Pollutant Sources) of this permit] 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:

- (a) 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.
- (b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part II.C.1.b* (Description of Potential Pollutant Sources) of this section and pollution prevention measures and controls identified in the plan in accordance with *Part II.C.1.b.(6)* (Measures and Controls) of this section shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

- (c) 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 paragraph *i.* (above) 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 V.G* (Signatory Requirements) of this permit.
- (2) *Deadlines for Plan Preparation and Compliance.* The permittee shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit. If the permittee already has a plan, it shall be revised according to *Part II.D.*, Comprehensive Site Evaluation.
- (3) *Keeping Plans Current.* The permittee 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. Quarterly Visual Examination of Storm Water Quality. Facilities 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 March; April through June; July through September; and October 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.

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

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 for entire permit term.

- 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.* When the permittee has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls 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.

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

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

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

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.

PART II
DISCHARGE PERMIT NO. UT0022616
STORM WATER PERMIT NO. UTR000000

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 & GENERAL 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. Samples of biosolids shall be collected at a location representative of the quality of biosolids 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 and 40CFR Part 503*, 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. 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.
- E. 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 and 40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.
- F. 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.
- G. 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 five 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

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (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, or 24-hour answering service (801) 536-4123.
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 which may endanger health or the environment;
 - b. Any unanticipated bypass, which 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.*);
 - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit; or,
 - e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.
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;
 - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,
 - 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.

PART III
DISCHARGE PERMIT NO. UT0022616

5. Reports shall be submitted to the addresses in *Part I.D, Reporting of Monitoring Results*.
- I. 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 I.D* are submitted. The reports shall contain the information listed in *Part III.H.3*
- J. 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, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;
 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, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,
 5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Director, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

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 reissuance, 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, which 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 or 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, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.
- 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, which 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 disposed of in such a manner so as 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.

**PART IV
DISCHARGE PERMIT NO. UT0022616**

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 paragraph 2 and 3 of this section.

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 judgement 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.2.a (1), (2) and (3)*.

3. Notice.
 - a. *Anticipated bypass*. Except as provided above in *Part IV.G.2* and below in *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;

PART IV
DISCHARGE PERMIT NO. UT0022616

- (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.H, Twenty Four Hour 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 paragraph 2 of this section 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 IV.H, 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.

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 parameters discharged or pollutant sold or given away. This notification applies to pollutants, which 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, which 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 reissuance, 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 required to be kept by this permit.
- 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:

PART V
DISCHARGE PERMIT NO. UT0022616

- 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 this section 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*.

PART V
DISCHARGE PERMIT NO. UT0022616

- 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 provisions 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 permittee's 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 paragraph 2 above.
- N. State or Federal 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* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.
- 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 occurs:
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. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and

PART V
DISCHARGE PERMIT NO. UT0022616

adopted by DWQ 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.C.5.* 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 toxicant 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.
- Q. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

VI. DEFINITIONS

A. Wastewater.

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 diversion of waste streams from any portion of a treatment facility.
7. "Chronic toxicity" occurs when the survival, growth, or reproduction for either test species exposed to a specific percent effluent dilution is significantly less (at the 95 percent confidence level) than the survival, growth, or reproduction of the control specimens. A five dilution test will be used.
8. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

PART VI
DISCHARGE PERMIT NO. UT0022616

9. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing 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 sample volume, 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 Division of the Utah Division of Water Quality.
14. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
15. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
16. "IC₂₅" 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.
17. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a UPDES permit (other than the UPDES permit for discharges from the municipal separate storm sewer) and discharges from fire fighting 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,

PART VI
DISCHARGE PERMIT NO. UT0022616

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.

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

PART VI
DISCHARGE PERMIT NO. UT0022616

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. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.
24. "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 preventative maintenance, or careless or improper operation.
25. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

DWQ-2017-002464

**FACT SHEET AND STATEMENT OF BASIS
BRONCO UTAH OPERATIONS LLC, EMERY UNDERGROUND MINE
RENEWAL PERMIT: DISCHARGE & STORM WATER
UPDES PERMIT NUMBER: UT0022616
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR000000
MAJOR INDUSTRIAL**

FACILITY CONTACTS

Person Name: Dan R Baker
Position: CEO/President, Bronco Utah Operations LLC
Phone Number: (801) 286-2301

Person Name: John C. (Kit) Pappas
Position: Environmental Manager
Phone Number: (435) 650-7339

DESCRIPTION OF FACILITY

Facility Name: Emery Underground Mine
Mailing and Facility Address: P.O. Box 527
Emery, Utah 84522
Telephone: 435-650-7339
Actual Address: 3300 North 1200 West

Classification (SIC): *1222 - Bituminous Coal Underground Mining (NAICS 212112)*

Bronco Utah Operations, LLC (Formerly Consol Coal) owns and operates an underground coal mine located 4 miles south of the town of Emery in Emery County, Utah, Township 22 South, Range 6 East. In 2009, the Emery Mine produced about 1.2 million short tons of coal. Production at the mine ceased. The mine has been idle for several years, but recent progress is being made to re-open the mine and resume the mining operation. It is anticipated that within this permit cycle, Emery Underground Mine will be operational.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

Biomonitoring requirements have changed to remove Acute WET testing, with the addition of Chronic WET testing being required quarterly.

DISCHARGE

Over the last 5 years, Emery Mine has only had need to discharged from Outfall 003. There has not been enough accumulated storm water to discharge from any of the storm water settling ponds for over 15 years. Historically, discharges from this facility have been exclusively comprised of intercepted groundwater from the mine area.

Outfall 008 has not been developed to date. However, this outfall is identified in a plan for future activities maintained by the Division of Oil Gas and Mining. Therefore, it is included as an outfall in this renewal permit.

As the mine has been developed, outfall 005, which previously only received storm water, has now been redesigned to receive and discharge intercepted mine water.

Emery Underground Mine is authorized to discharge intercepted groundwater and storm water from the following outfalls:

Outfall Number	Description of Discharge Point
001	Discharge of mine water at latitude 38° 51" 38'and longitude 111° 16" 09' from Sediment Pond #1 to Quitchupah Creek.
002	Discharge of storm water at latitude 38° 51" 34'and longitude 111° 15" 24' from Sediment Pond #2 to Quitchupah Creek.
003	Discharge of mine water at latitude 38° 52" 33'and longitude 111° 16" 53' from Sediment Pond #6 to Quitchupah Creek.
004	Discharge of mine water at latitude 38° 52" 48'and longitude 111° 16" 51' from Sediment Farmers Pond to Quitchupah Creek.
005	Discharge of mine water at latitude 38° 51" 34'and longitude 111° 15" 23' from Sediment Pond #3 to Quitchupah Creek.
006	Discharge of storm water at latitude 38° 51" 32'and longitude 111° 15" 30' from Sediment Pond #3 to Quitchupah Creek.
007	Discharge of storm water at latitude 38° 51" 45'and longitude 111° 15" 45' from Sediment Pond #5 to Quitchupah Creek.
008	Slurry emergency discharge at latitude 38° 51" 45'and longitude 111° 16" 15' from proposed Sediment Pond #7 to Quitchupah Creek.
009	Discharge of storm water at latitude 38° 52" 30'and longitude 111° 14" 08' from Sediment Pond #9 to Christiansen Wash.

RECEIVING WATERS AND STREAM CLASSIFICATION

Discharges 001- 008 flow into Quitchupah Creek, a tributary of Muddy Creek. The receiving water is classified as 2B, 3C, and 4 (Utah Administrative Code (UAC) R317-2-13.1).

Discharge 009 flows into Christiansen Wash, a tributary of Quitchupah Creek. The receiving water is classified as 2B, 3C, and 4 (Utah Administrative Code (UAC) R317-2-13.1).

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 3C -- Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 -- Protected for agricultural uses including irrigation of crops and stock watering.

BASIS FOR EFFLUENT LIMITATIONS

The daily maximum TSS effluent limit is a technology based limit for coal mines found in 40 CFR 434. The TSS and pH effluent limitations are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. The Oil and Grease and sanitary waste limitations are based on best professional judgment (BPJ).

The iron effluent limit was retained from the previous permit, as it is more stringent than limits determined by the current WLA. This is in agreement with anti-backsliding requirements found in *UAC R317-8-4.2(11)*. Further, this limit is more stringent than the 7.0 mg/L as per the applicable categorical limit, 40 CFR 434 Coal Mining Point Source Category.

Chronic Whole effluent toxicity effluent limits are based on the current Waste Load Analysis and replaced acute whole effluent testing in accordance with UAC R317-2-5, which states that chronic whole effluent toxicity testing is required if the ratio of receiving water to effluent is less than 20:1.

Sulfate and TDS limits were retained from the previous permit, as they are more stringent than limits determined by the current WLA.

Discharges from Emery Underground Mine may eventually reach the Colorado River, which places it in the guidance of the Colorado River Basin Salinity Control Forum (CRBSCF) for total dissolved solids (TDS) mass loading limitations, which is authorized in UAC R317-2-4 to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the CRBSCF 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 2014, which states that if a no-salt (i.e., no-TDS) discharge cannot be achieved, then the facility is limited to discharging one-ton per day of TDS unless a demonstration is made that it is not economically feasible and/or practicable to do so.

Emery Underground Mine's TDS discharge exceeds the one ton per day loading imitation guideline as set by the CRBSCF, therefore a cost analysis of alternative plans was prepared in response to the 1977 Policy and was completed on January 12, 1984. The analysis indicates that a zero discharge (no-salt) or one-ton per day discharge of TDS is not economically feasible or practical considering the low production yields of

the extraction system. Since the initial 1984 assessment, both the policy and mining activities have changed. Bronco Utah Operations, LLC (Consol at the time) revisited the applicability of their exemption from the CRBSCF policy in a letter dated August 28, 2006. For this permit cycle, Bronco Utah Operations, LLC, was required to reevaluate and submit a justification to DWQ for exemption from the CRBSCF policy.

Bronco Utah Operations, LLC successfully demonstrated that the exemption is still applicable in a letter dated May 17, 2017. As the State permitting authority for the CRBSCF Policy, Utah Division of Water Quality staff reviewed the May 17, 2017 demonstration as submitted and concurs that the demonstrated exemption to the Policy is still applicable since production trends have been decreasing over time. The TDS concentration limit is based on a site specific standard for Quitchipah Creek.

EFFLUENT LIMITATIONS FOR PRECIPITATION EVENTS

In conformance with 40 CFR 434.63, the Division has incorporated the alternative effluent limits for discharge of mine drainage caused by precipitation events 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, 003,004. Thus, the alternate limitations may only be applied to Outfalls 002,005,006,007,008 and 009.

For rainfall, to apply the alternative limitations in Part I.C.3., 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.C.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 the alternative limitations in Part I.C.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.C.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.C.1.

Alternative effluent limits for precipitation events are as follows:

Parameter	Alternative Effluent Limitations			
	Average Monthly	Average Weekly	Minimum Daily	Maximum Daily
Flow, MGD	Report			Report
pH, standard units			6.0	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	Report			Report

REASONABLE POTENTIAL ANALYSIS

Since January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. Historically, the Emery Underground Mine has not been required to analyze mine water for any metals other than Iron. An Iron effluent limit was included in the previous permit, which was retained in this renewal. Because of this, Iron did not require a formal reasonable potential analysis. In addition, because of limited data of metal concentrations in Bronco Emery mine discharge; this renewed permit will require accelerated metals analysis during the first 10 months the mine is discharging. Because the initial discharges at Emery Underground may be sporadic, it is acceptable if sampling events not be conducted during concurrent months. Metals to be analyzed include arsenic, cadmium, chromium, copper, mercury, nickel, lead, silver, zinc and boron.

Once 10 data sets are completed, a more robust RP analysis will be conducted following DWQ’s September 10, 2015 Reasonable Potential Analysis Guidance. At which point, if required this permit will be modified to reflect the outcome of the analysis.

TDS AND SULFATE SITE SPECIFIC STANDARD

According to Utah’s 2014 303(d) Water Quality Assessment, the assessment unit for this section of Quitchipah Creek (Quitchipah Creek and tributaries from the confluence with Ivie Creek to U-10 crossing; UT14070002-007) was listed as impaired for O/E Bioassessment (Class 3C use), and total dissolved solids (Class 4 use). Total dissolved solids (TDS) values in this area are naturally elevated due to the presence of shale layers. Several site-specific TDS Standards have been developed in the watershed (Quitchipah, Ivie and Muddy Creeks). Quitchipah Creek’s listing for total dissolved solids (TDS) was based solely on samples obtained from Christiansen Wash, a tributary to Quitchipah Creek, were values were compared to the state standard of 1200 mg/L, instead of Quitchipah Creek’s site specific standard of 3,800 mg/L. While it shares the same characteristics as Quitchipah, Christiansen Wash was inadvertently not included in the site specific language for Quitchipah Creek and should share the same 3,800 mg/L standard. The site specific TDS standard is 3,800 mg/L provided that the in-stream sulfate concentration does not exceed 2,000 mg/L. This is the first sulfate standard in the State of Utah. The new standard allows for a higher TDS concentration in Emery Underground Mine’s effluent while being protective of the existing livestock watering agricultural use by limiting sulfate concentrations. Sulfate is the primary constituent of TDS that

is toxic to ruminants.

The permit effluent limits are as follows:

Parameter	Effluent Limitations *a				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow *a*b	1.5	--	--	--	--
TSS, mg/L	25	35	--	--	70
Sulfate, mg/L*g	--	--	--	--	3,366
TDS, mg/L	--	--	--	--	4,766
WET, Chronic Biomonitoring*c*e	--	--	--	--	IC ₂₅ > 48.9% effluent
Oil & Grease, mg/L*d	--	--	--	--	10.0
pH, Standard Units	--	--	--	6.5	9
Total Iron, mg/L	--	--	--	--	1.4
Sanitary Waste	--	--	--	--	None

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are different than the previous permit. Monitoring frequency was changed to twice monthly monitoring from weekly. Weekly monitoring was required in the previous permit renewal, due to an increase in permitted flow. No issues were noted with during that permit cycle, and therefore will be reverted back to previous monitoring frequency. The permit will require reports to be submitted monthly and annually, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab sheets for biomonitoring must be attached to the biomonitoring DMR. Lab sheets for metals and toxic organics must be attached to the DMRs.

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow *b	Twice monthly	Recorder	MGD
TSS	Twice monthly	Grab	mg/L
pH	Twice monthly	Grab	SU
WET – Biomonitoring *c *e Ceriodaphnia - Chronic Fathead Minnows – Chronic	Quarterly, Alternating Species each quarter when mine is discharging.	Composite Composite Composite Composite	Pass/Fail Pass/Fail Pass/Fail Pass/Fail
Oil & Grease *d	When Sheen Observed	Grab	mg/L
TDS, mg/L	Monthly	Grab	mg/L
Sulfate, mg/L	Monthly	Grab	mg/L
Sanitary Waste	Monthly	Visual	
Metals*f	Monthly	Grab	mg/L

- *a See Definitions, *Part VIII*, for definition of terms.
- *b Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- *c Chronic WET monitoring is required on outfalls 001, 003 and 004 only. Each chronic WET test shall alternate between Ceriodaphnia and the fathead minnows.
- *d Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.
- *e Monitoring frequency will be annual while mine is idle and quarterly at commencement of mining activities.
- *f 10 sampling events for metals shall occur during the first 10 months that Bronco Emery Mine is discharging. These months are not required to be consecutive. Reasonable potential will then be conducted on this data set. RP analysis for arsenic, cadmium, chromium, copper, mercury, nickel, selenium, lead, silver, zinc and cyanide will be conducted.
- *g Sulfate and TDS sampling events shall occur concurrently.

STORM WATER

STORMWATER REQUIREMENTS

The storm water requirements are based on the UPDES Multi-Sector General Permit for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000 (MSGP). This permit authorizes storm water discharges through the designated outfalls listed above. Storm water from haul roads, access roads, railroad spurs, sidings and internal haulage lines, conveyor belts, chutes, aerial tramway haulage areas, equipment storage and maintenance yards, coal handling buildings and structures, and inactive coal mines and related areas are permitted under the storm water provision of the permit. The permit includes requirements to address storm water, other than for active mining areas, in a storm water pollution prevention plan. Emery Underground Mine must continue to maintain storm water BMP's and update and maintain their current storm water pollution prevention plan.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the mine. Elements of this plan are required to include:

1. The development of a pollution prevention team.
2. Development of drainage maps and materials stockpiles.
3. An inventory of exposed materials.
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.

Emery Underground Mine is currently covered under the UPDES Multi Sector General Permit for Industrial Activities.

BIOMONITORING REQUIREMENTS

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring). Authority to require effluent biomonitoring is provided in Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3 and Water Quality Standards, UAC R317-2-5 and R317 -2-7.2.

Emery Underground Mine is a major industrial facility that discharges intercepted groundwater. Acute Whole Effluent Toxicity (WET) testing was completed in 2014 using effluent from Outfall 003. No acute toxicity was found. Emery Underground Mine's discharge makes up over 25% of the receiving stream flows, and therefore, in this permit Emery Underground Mine shall be required to monitor WET quarterly for only chronic conditions. Biomonitoring is required at outfalls 001,003, and 004 which contain mine water. These outfalls have similar discharge rates, therefore the IC25 of 48.9% effluent will be applicable to all three. The permit will contain a toxicity limitation re-opener provision that allows for modification of the permit should additional information indicate the presence of toxicity in the effluent during this permit cycle.

PERMIT DURATION

It is recommended that this permit be effective for a duration of five (5) years.

Drafted by:
Nate Nichols, Discharge
Matthew Garn, Colorado River Salinity
Michael George, Storm Water
Dave Wham, Wasteload Analysis
Mike Herkimer, Biomonitoring
Utah Division of Water Quality, (801) 536-4300

PUBLIC NOTICE

Began: October 30, 2017
Ended: December 01, 2017

Comments will be received at: 195 North 1950 West
PO Box 144870
Salt Lake City, UT 84114-4870

The Public Noticed of the draft permit was published in the Emery County Progress.

During the public comment period provided under R317-8-6.5, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments will be considered in making the final decision and shall be answered as provided in R317-8-6.12.

ADDENDUM TO FSSOB

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. Due to the nature of these changes they were not considered Major and the permit is not required to be re Public Noticed.

Responsiveness Summary

No public comments were received during the above public comment period.

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ATTACHMENT 1

Effluent Monitoring Data

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Effluent Monitoring Data

Outfall 003:

Month	Flow	Sulfate	pH		O & G	Iron	TDS	TSS	
	Ave	Max Monthly Ave	Min	Max	Max	Daily Max	Max Monthly Ave	Max Monthly Ave	Daily Max
8/31/2013	.07	1482	7	7.1	0	2.29	2790	10	22
9/30/2013	.14	1457	7	7.1	0	1.34	2706	10	18
10/31/2013	.19	1474	7	7	0	.8	2777	5	5
11/30/2013	.01	586	7	7.1	0	.28	1110	5	5
12/31/2013	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
1/31/2014	.12	214	7	7	0	1.02	386	5	5
2/28/2014	.11	1386	7	7	0	1.57	2653	7	9
3/31/2014	.16	1433	7	7.1	0	.77	2689	12	20
4/30/2014	.21	1441	7	7.1	0	.66	2801	5	6
5/31/2014	.2	1394	7	7.1	0	.97	2836	5	5
6/30/2014	.18	1446	7	7.1	0	.98	2848	14	31
7/31/2014	.19	1457	7	7	0	.65	2820	5	5
8/31/2014	.14	1131	7	7	0	1.52	2240	5	5
9/30/2014	.18	1561	7	7.1	0	.76	2799	6	7
10/31/2014	.23	1481	7	7	0	.94	2784	5	7
11/30/2014	.22	1430	7	7	0	1.02	2818	7	10
12/31/2014	.2	1391	7	7	0	1.06	2841	5	7
1/31/2015	.15	1344	7	7.1	0	1.46	2866	7	9
2/28/2015	.19	1396	7	7.1	0	1.12	2870	6	8
3/31/2015	.21	1439	7	7.1	0	1.21	2847	5	5
4/30/2015	.14	1477	7	7.1	0	1.23	2867	6	7
5/31/2015	.16	1437	6.8	7.1	0	1.12	2834	1	20
6/30/2015	.14	1485	6.9	7.1	0	.57	2873	14	31
7/31/2015	.16	1473	6.9	7	0	.89	2859	8	19
8/31/2015	.15	1462	6.9	7	0	1.11	2843	5	6
9/30/2015	.14	1487	6.9	7	0	.72	2884	9	26
10/31/2015	.13	1443	6.9	7	0	.84	2879	5	5
11/30/2015	.16	1502	6.9	7	0	1.07	2911	6	7
12/31/2015	.08	858	6.9	6.9	0	1.72	1775	4	9
1/31/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
2/29/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
3/31/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
4/30/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
5/31/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
6/30/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI
7/31/2016	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI	NODI

NODI = No discharge

All other Discharge Points at Bronco Emery Mine did not discharge during the previous permit cycle.

WET Results 003

Month	WET Test	Pass / Fail
Jun-14	48Hr Acute Ceriodaphnia	Pass
Jun-14	96Hr Acute Pimephales Promelas	Pass

ATTACHMENT 3

Wasteload Analysis

Utah Division of Water Quality

Statement of Basis

ADDENDUM

Wasteload Analysis and Antidegradation Level I Review

Date: February 24, 2017

Prepared by: Dave Wham 
Standards and Technical Services

Facility: Bronco Utah Operations; Emery Deep Mine
UPDES No. UT0022616

Receiving water: Quitchupah Creek (2B, 3C, 4)

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge

001	Mine water discharge, Pond 1	0.6 cfs
002	Sedimentation Pond 2	0.07 cfs
003	Mine water discharge, Pond 6	0.6 cfs
004	Mine water discharge, Farmers Pond	0.7 cfs
005	Sedimentation Pond 3	0.07 cfs
006	Sedimentation Pond 8	0.07 cfs
007	Sedimentation Pond 5	0.07 cfs
008	Sedimentation Pond (slurry pond)	0.07 cfs
009	Sedimentation Pond	0.07 cfs
		2.32 cfs (1.5 MGD)

Receiving Water

The receiving water for Outfalls 001-008 are Quitchupah Creek.

The receiving water for Outfall 009 is Christiansen Wash, a tributary to Quitchupah Creek.

Per UAC R317-2-13.1, the designated beneficial uses of Quitchupah Creek and Christiansen Wash (tributaries of Muddy Creek) are: Muddy Creek and tributaries, from confluence with Fremont River to Highway U-10 crossing, (with exceptions) are 2B, 3C, 4.

Utah Division of Water Quality
Wasteload Analysis
Bronco Utah Operations; Emery Deep Mine
UPDES No. UT0022616

- *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 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

As per R317-2, Table 2.14.1, footnote (4), the segment of the Quitchupah Creek from the confluence with Ivie Creek to U-10 has a site specific TDS standard of 3,800 mg/l provided that total sulfate not exceed 2,000 mg/l to protect the livestock watering agricultural existing use.

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records, the 20th percentile of available flow measurements was calculated for the period of record to approximate the 7Q10 low flow condition. The source of flow data was Division of Oil, Gas and Mining (DOG M) sampling station #1A; (QUITCHUPAH CK AT ST RD #10 BRIDGE) for Discharge 001-008 and DOGM Station #2 (CHRISTIANSSEN WASH UPSTREAM OF MINE FACILITY) for Discharge 009. Ambient water quality for the receiving water for each discharge was characterized using data from these same two stations from the period 2006-2016. For the purposes of the wasteload calculations, discharge points 001-008 were aggregated.

The critical low flow condition for Discharges 001-008 is 2.35 cfs.
The critical low flow condition for Discharge 009 is 0.105 cfs.

TMDL

According to the Utah's 2014 303(d) Water Quality Assessment, the assessment unit for this section of Quitchupah Creek (Quitchipah Creek and tributaries from confluence with Ivie Creek to U-10 crossing; UT14070002-007) was listed as impaired for O/E Bioassessment (Class 3C use), and total dissolved solids (Class 4 use). Total dissolved solids (TDS) values in this area are naturally elevated due to the presence of shale layers. Several site-specific TDS standards have been developed in the watershed (Quitchupah, Ivie and Muddy Creeks). Quitchupah Creek's listing for total dissolved solids (TDS) was based solely on samples obtained from Christiansen Wash, a tributary to Quitchupah Creek, where values were compared to the state standard of 1200 mg/l, instead of Quitchupah Creek's site specific standard of 3,800 mg/l. While it shares the same characteristics as Quitchupah, Christiansen Wash was inadvertently not included in the site specific language for Quitchupah Creek and should share the same 3,800 mg/l standard. The standard will be modified in the upcoming triannual review.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

Utah Division of Water Quality
Wasteload Analysis
Bronco Utah Operations; Emery Deep Mine
UPDES No. UT0022616

Since the receiving water low flow is equal to or less than twice the flow of a point source discharge, the combined flows are considered to be totally mixed. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were TDS, sulfate and iron, as determined in consultation with the UPDES Permit Writer.

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC₅₀ (lethal concentration, 50%) percent effluent for acute toxicity and the IC₂₅ (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC₅₀ is typically 100% effluent and does not need to be determined by the WLA.

IC₂₅ WET limits for Outfalls 001-008 should be based on 48.9% effluent.

IC₂₅ WET limits for Outfall 009 should be based on 39.9% effluent.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in the Wasteload Addendums.

The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH. The AMMTOX Model developed by University of Colorado and adapted by Utah DWQ and EPA Region VIII was used to determine ammonia effluent limits (Lewis et al. 2002). The analysis is summarized in the Wasteload Addendum.

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is not required for this facility. The proposed permit is a simple renewal of an existing UPDES permit. No increase in flow or concentration of pollutants over those authorized in the the existing permit is being requested.

**Utah Division of Water Quality
Wasteload Analysis
Bronco Utah Operations; Emery Deep Mine
UPDES No. UT0022616**

Documents:

WLA Document: *Bronco_Emery WLADoc_2-23-27.docx*

Wasteload Analysis and Addendums: *Bronco_Emery_001-008_WLA_2-23-17.xlsm, Bronco_Emery_009_WLA_2-23-17.xlsm*

References:

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

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility: Emery Deep to Quitchupah Creek
UPDES No: UT-0022616
Current Flow: 1.46 MGD Design Flow
Design Flow 1.46 MGD

Receiving Water: Quitchupah Creek
Stream Classification: 2B, 3C, 4
Stream Flows [cfs]:
2.35 Summer (July-Sept) 20th Percentile
2.35 Fall (Oct-Dec) 20th Percentile
2.35 Winter (Jan-Mar) 20th Percentile
2.35 Spring (Apr-June) 20th Percentile
23.0 Average
Stream TDS Values:
939.7 Summer (July-Sept) Average
868.5 Fall (Oct-Dec) Average
852.7 Winter (Jan-Mar) Average
786.1 Spring (Apr-June) Average

Effluent Limits:		WQ Standard:
Flow, MGD:	1.46 MGD Design Flow	
BOD, mg/l:	25.0 Summer	5.0 Indicator
Dissolved Oxygen, mg/l	5.0 Summer	5.0 30 Day Average
TNH3, Chronic, mg/l:	8.3 Summer	Varies Function of pH and Temperature
TDS, mg/l:	6786.2 Summer	3800.0 Site Specific

Modeling Parameters:
Acute River Width: 50.0%
Chronic River Width: 100.0%

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

Date: 10/2/2017

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

2-Oct-17
4:00 PM

Facilities: Emery Deep to Quitchupah Creek
Discharging to: Quitchupah Creek

UPDES No: UT-0022616

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, 3C, 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)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)	
Maximum Total Dissolved Solids	3800.0 mg/l	Background

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

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**	1.058 lbs/day	750.00	ug/l	9.117 lbs/day
Arsenic	190.00 ug/l	2.310 lbs/day	340.00	ug/l	4.133 lbs/day
Cadmium	0.82 ug/l	0.010 lbs/day	9.84	ug/l	0.120 lbs/day
Chromium III	295.41 ug/l	3.591 lbs/day	6180.59	ug/l	75.130 lbs/day
ChromiumVI	11.00 ug/l	0.134 lbs/day	16.00	ug/l	0.194 lbs/day
Copper	33.73 ug/l	0.410 lbs/day	57.76	ug/l	0.702 lbs/day
Iron			1000.00	ug/l	12.156 lbs/day
Lead	21.59 ug/l	0.262 lbs/day	554.03	ug/l	6.735 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.029 lbs/day
Nickel	186.22 ug/l	2.264 lbs/day	1674.92	ug/l	20.360 lbs/day
Selenium	4.60 ug/l	0.056 lbs/day	20.00	ug/l	0.243 lbs/day
Silver	N/A ug/l	N/A lbs/day	50.31	ug/l	0.612 lbs/day
Zinc	428.58 ug/l	5.210 lbs/day	428.58	ug/l	5.210 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 450.06 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	0.018 lbs/day
Chlordane	0.004 ug/l	0.107 lbs/day	1.200	ug/l	0.015 lbs/day
DDT, DDE	0.001 ug/l	0.025 lbs/day	0.550	ug/l	0.007 lbs/day
Dieldrin	0.002 ug/l	0.047 lbs/day	1.250	ug/l	0.015 lbs/day
Endosulfan	0.056 ug/l	1.389 lbs/day	0.110	ug/l	0.001 lbs/day
Endrin	0.002 ug/l	0.057 lbs/day	0.090	ug/l	0.001 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.094 lbs/day	0.260	ug/l	0.003 lbs/day
Lindane	0.080 ug/l	1.984 lbs/day	1.000	ug/l	0.012 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	0.347 lbs/day	2.000	ug/l	0.024 lbs/day
Pentachlorophenol	13.00 ug/l	322.384 lbs/day	20.000	ug/l	0.243 lbs/day
Toxephene	0.0002 ug/l	0.005 lbs/day	0.7300	ug/l	0.009 lbs/day

Utah Division of Water Quality
Salt Lake City, Utah

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	0.06 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			3800.0 mg/l	23.10 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

Chlorophenoxy Herbicides

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		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	66.96 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	19.34 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.02 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	1.76 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	0.11 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	520.77 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	2.46 lbs/day

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

1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.22 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	1.04 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.27 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.03 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	106.63 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.16 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	11.66 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	9.92 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	421.58 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	64.48 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	64.48 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	0.08 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	19.59 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.97 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	42.16 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	57.04 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.23 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	0.01 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	719.16 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	9.18 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	4215.79 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	39.68 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	8.93 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.55 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.84 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	1.24 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	421.58 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	14.88 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	47.12 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	347.18 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	18.97 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.20 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.40 lbs/day
N-Nitrosodi-n-propylamine	ug/l	lbs/day	1.4 ug/l	0.03 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.20 lbs/day

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

Phenol	ug/l	lbs/day	4.6E+06 ug/l	1.14E+05 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.15 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	128.95 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	297.59 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	2975.85 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	7.19E+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	272.79 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.22 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	4959.75 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	2.01 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	13.02 lbs/day
				lbs/day
				lbs/day
Pesticides				
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	0.05 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.05 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.05 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.02 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.02 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
PCB's				
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 101	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pesticide				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
Dioxin				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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

Metals

Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	106.63 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	5455.73 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	114.07 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.16 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.

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

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al.
Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

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

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

Other Conditions

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

Model Inputs

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

Current Upstream Information

		Stream									
		Critical Low									
		Flow	Temp.	pH	T-NH3	BOD5	DO	TRC	TDS		
		cfs	Deg. C	mg/l as N		mg/l	mg/l	mg/l	mg/l		
Summer (Irrig. Season)		2.35	15.1	7.6	0.01	0.05	7.23	0.00	939.7		
	Fall	2.35	4.4	7.5	0.01	0.05	---	0.00	868.5		
	Winter	2.35	4.5	7.5	0.01	0.05	---	0.00	852.7		
	Spring	2.35	15.2	7.6	0.01	0.05	---	0.00	786.1		
Dissolved	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb			
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	2.385*	0.795*	0.0795*	0.795*	3.975*	0.8*	15.0	0.795*			
Dissolved	Hg	Ni	Se	Ag	Zn	Boron					
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l					
All Seasons	0.0000	0.795*	1.59*	0.15*	0.0795*	1.59*	* ~80% MDL				

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

Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	1.45500	18.8	3085.00	18.71403
Fall	1.45500	11.7		
Winter	1.45500	8.9		
Spring	1.45500	14.0		

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

IX. Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

Effluent Limitation for Flow based upon Water Quality Standards

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

Season	Daily Average	
Summer	1.455 MGD	2.251 cfs
Fall	1.455 MGD	2.251 cfs
Winter	1.455 MGD	2.251 cfs
Spring	1.455 MGD	2.251 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 1.455 MGD. If the discharger is allowed to have a flow greater than 1.455 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 >	48.9% Effluent	[Chronic]

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

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	303.3 lbs/day
Fall	25.0 mg/l as BOD5	303.3 lbs/day
Winter	25.0 mg/l as BOD5	303.3 lbs/day
Spring	25.0 mg/l as BOD5	303.3 lbs/day

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

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

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

Effluent Limitation for Total Ammonia based upon Water Quality Standards

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	8.3 mg/l as N	100.7 lbs/day
	1 Hour Avg. - Acute	34.9 mg/l as N	423.6 lbs/day
Fall	4 Day Avg. - Chronic	9.9 mg/l as N	119.7 lbs/day
	1 Hour Avg. - Acute	24.7 mg/l as N	299.5 lbs/day
Winter	4 Day Avg. - Chronic	9.3 mg/l as N	113.0 lbs/day
	1 Hour Avg. - Acute	21.8 mg/l as N	264.0 lbs/day
Spring	4 Day Avg. - Chronic	9.8 mg/l as N	118.5 lbs/day
	1 Hour Avg. - Acute	24.7 mg/l as N	299.5 lbs/day

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

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

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	0.26 lbs/day
	1 Hour Avg. - Acute	0.038 mg/l	0.46 lbs/day
Fall	4 Day Avg. - Chronic	0.021 mg/l	0.26 lbs/day
	1 Hour Avg. - Acute	0.038 mg/l	0.46 lbs/day
Winter	4 Day Avg. - Chronic	0.021 mg/l	0.26 lbs/day
	1 Hour Avg. - Acute	0.038 mg/l	0.46 lbs/day
Spring	4 Day Avg. - Chronic	0.021 mg/l	0.00 lbs/day
	1 Hour Avg. - Acute	0.038 mg/l	0.00 lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration	Load
Summer	Maximum, Acute	6786.2 mg/l	41.17 tons/day
Fall	Maximum, Acute	6860.6 mg/l	41.62 tons/day
Winter	Maximum, Acute	6877.1 mg/l	41.72 tons/day
Spring	4 Day Avg. - Chronic	6946.6 mg/l	42.14 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 450.06 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum*	N/A	N/A	1,140.3 ug/l		13.9 lbs/day
Arsenic*	387.54 ug/l	3.0 lbs/day	517.1 ug/l		6.3 lbs/day
Cadmium	1.60 ug/l	0.0 lbs/day	14.9 ug/l		0.2 lbs/day
Chromium III	603.00 ug/l	4.7 lbs/day	9,406.5 ug/l		114.3 lbs/day
Chromium VI*	18.33 ug/l	0.1 lbs/day	22.3 ug/l		0.3 lbs/day
Copper	68.12 ug/l	0.5 lbs/day	87.5 ug/l		1.1 lbs/day
Iron*	N/A	N/A	1,514.2 ug/l		18.4 lbs/day
Lead	43.30 ug/l	0.3 lbs/day	842.8 ug/l		10.2 lbs/day
Mercury*	0.02 ug/l	0.0 lbs/day	3.7 ug/l		0.0 lbs/day
Nickel	379.81 ug/l	3.0 lbs/day	2,548.8 ug/l		31.0 lbs/day
Selenium*	7.74 ug/l	0.1 lbs/day	29.6 ug/l		0.4 lbs/day
Silver	N/A ug/l	N/A lbs/day	76.6 ug/l		0.9 lbs/day

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

Zinc	875.94 ug/l	6.9 lbs/day	652.3	ug/l	7.9 lbs/day
Cyanide*	10.63 ug/l	0.1 lbs/day	33.5	ug/l	0.4 lbs/day

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

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

Summer	23.3 Deg. C.	73.9 Deg. F
Fall	12.6 Deg. C.	54.6 Deg. F
Winter	12.7 Deg. C.	54.8 Deg. F
Spring	23.4 Deg. C.	74.1 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 Concentration	Load	1 Hour Average Concentration		Load
Aldrin			1.5E+00	ug/l	2.82E-02 lbs/day
Chlordane	4.30E-03 ug/l	5.22E-02 lbs/day	1.2E+00	ug/l	2.26E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	1.21E-02 lbs/day	5.5E-01	ug/l	1.03E-02 lbs/day
Dieldrin	1.90E-03 ug/l	2.31E-02 lbs/day	1.3E+00	ug/l	2.35E-02 lbs/day
Endosulfan	5.60E-02 ug/l	6.79E-01 lbs/day	1.1E-01	ug/l	2.07E-03 lbs/day
Endrin	2.30E-03 ug/l	2.79E-02 lbs/day	9.0E-02	ug/l	1.69E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.88E-04 lbs/day
Heptachlor	3.80E-03 ug/l	4.61E-02 lbs/day	2.6E-01	ug/l	4.89E-03 lbs/day
Lindane	8.00E-02 ug/l	9.71E-01 lbs/day	1.0E+00	ug/l	1.88E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	5.64E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	1.88E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	7.52E-04 lbs/day
PCB's	1.40E-02 ug/l	1.70E-01 lbs/day	2.0E+00	ug/l	3.76E-02 lbs/day
Pentachlorophenol	1.30E+01 ug/l	1.58E+02 lbs/day	2.0E+01	ug/l	3.76E-01 lbs/day
Toxephene	2.00E-04 ug/l	2.43E-03 lbs/day	7.3E-01	ug/l	1.37E-02 lbs/day

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

**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	60.8 lbs/day
Nitrates as N	4.0 mg/l	48.6 lbs/day
Total Phosphorus as P	0.05 mg/l	0.6 lbs/day
Total Suspended Solids	90.0 mg/l	1094.0 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:

	Maximum Concentration	
	Concentration	Load
Toxic Organics		
Acenaphthene	5.52E+03 ug/l	6.70E+01 lbs/day
Acrolein	1.59E+03 ug/l	1.93E+01 lbs/day
Acrylonitrile	1.35E+00 ug/l	1.64E-02 lbs/day
Benzene	1.45E+02 ug/l	1.76E+00 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	8.99E+00 ug/l	1.09E-01 lbs/day
Chlorobenzene	4.29E+04 ug/l	5.21E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	1.57E-03 ug/l	1.91E-05 lbs/day
1,2-Dichloroethane	2.02E+02 ug/l	2.46E+00 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.82E+01 ug/l	2.21E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	8.58E+01 ug/l	1.04E+00 lbs/day
1,1,2,2-Tetrachloroethane	2.25E+01 ug/l	2.73E-01 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	2.86E+00 ug/l	3.47E-02 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	8.79E+03 ug/l	1.07E+02 lbs/day
2,4,6-Trichlorophenol	1.33E+01 ug/l	1.61E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	9.61E+02 ug/l	1.17E+01 lbs/day
2-Chlorophenol	8.18E+02 ug/l	9.92E+00 lbs/day
1,2-Dichlorobenzene	3.47E+04 ug/l	4.22E+02 lbs/day
1,3-Dichlorobenzene	5.31E+03 ug/l	6.45E+01 lbs/day

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

1,4-Dichlorobenzene	5.31E+03 ug/l	6.45E+01 lbs/day
3,3'-Dichlorobenzidine	1.57E-01 ug/l	1.91E-03 lbs/day
1,1-Dichloroethylene	6.54E+00 ug/l	7.94E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.61E+03 ug/l	1.96E+01 lbs/day
1,2-Dichloropropane	7.97E+01 ug/l	9.67E-01 lbs/day
1,3-Dichloropropylene	3.47E+03 ug/l	4.22E+01 lbs/day
2,4-Dimethylphenol	4.70E+03 ug/l	5.70E+01 lbs/day
2,4-Dinitrotoluene	1.86E+01 ug/l	2.26E-01 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	1.10E+00 ug/l	1.34E-02 lbs/day
Ethylbenzene	5.93E+04 ug/l	7.19E+02 lbs/day
Fluoranthene	7.56E+02 ug/l	9.18E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	3.47E+05 ug/l	4.22E+03 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	3.27E+03 ug/l	3.97E+01 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	7.36E+02 ug/l	8.93E+00 lbs/day
Dichlorobromomethane(HM)	4.50E+01 ug/l	5.46E-01 lbs/day
Chlorodibromomethane (HM)	6.95E+01 ug/l	8.43E-01 lbs/day
Hexachlorocyclopentadiene	3.47E+04 ug/l	4.22E+02 lbs/day
Isophorone	1.23E+03 ug/l	1.49E+01 lbs/day
Naphthalene		
Nitrobenzene	3.88E+03 ug/l	4.71E+01 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	2.86E+04 ug/l	3.47E+02 lbs/day
4,6-Dinitro-o-cresol	1.56E+03 ug/l	1.90E+01 lbs/day
N-Nitrosodimethylamine	1.66E+01 ug/l	2.01E-01 lbs/day
N-Nitrosodiphenylamine	3.27E+01 ug/l	3.97E-01 lbs/day
N-Nitrosodi-n-propylamine	2.86E+00 ug/l	3.47E-02 lbs/day
Pentachlorophenol	1.68E+01 ug/l	2.03E-01 lbs/day
Phenol	9.40E+06 ug/l	1.14E+05 lbs/day
Bis(2-ethylhexyl)phthalate	1.21E+01 ug/l	1.46E-01 lbs/day
Butyl benzyl phthalate	1.06E+04 ug/l	1.29E+02 lbs/day
Di-n-butyl phthalate	2.45E+04 ug/l	2.98E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	2.45E+05 ug/l	2.98E+03 lbs/day
Dimethyl phthlate	5.93E+06 ug/l	7.19E+04 lbs/day
Benzo(a)anthracene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Benzo(a)pyrene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Benzo(b)fluoranthene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Benzo(k)fluoranthene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Chrysene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	6.34E-02 ug/l	7.69E-04 lbs/day

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

Pyrene (PAH)	2.25E+04 ug/l	2.73E+02 lbs/day
Tetrachloroethylene	1.82E+01 ug/l	2.21E-01 lbs/day
Toluene	4.09E+05 ug/l	4.96E+03 lbs/day
Trichloroethylene	1.66E+02 ug/l	2.01E+00 lbs/day
Vinyl chloride	1.07E+03 ug/l	1.30E+01 lbs/day

Pesticides

Aldrin	2.86E-04 ug/l	3.47E-06 lbs/day
Dieldrin	2.86E-04 ug/l	3.47E-06 lbs/day
Chlordane	1.21E-03 ug/l	1.46E-05 lbs/day
4,4'-DDT	1.21E-03 ug/l	1.46E-05 lbs/day
4,4'-DDE	1.21E-03 ug/l	1.46E-05 lbs/day
4,4'-DDD	1.72E-03 ug/l	2.08E-05 lbs/day
alpha-Endosulfan	4.09E+00 ug/l	4.96E-02 lbs/day
beta-Endosulfan	4.09E+00 ug/l	4.96E-02 lbs/day
Endosulfan sulfate	4.09E+00 ug/l	4.96E-02 lbs/day
Endrin	1.66E+00 ug/l	2.01E-02 lbs/day
Endrin aldehyde	1.66E+00 ug/l	2.01E-02 lbs/day
Heptachlor	4.29E-04 ug/l	5.21E-06 lbs/day
Heptachlor epoxide		

PCB's

PCB 1242 (Arochlor 1242)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1254 (Arochlor 1254)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1221 (Arochlor 1221)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1232 (Arochlor 1232)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1248 (Arochlor 1248)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1260 (Arochlor 1260)	9.20E-05 ug/l	1.12E-06 lbs/day
PCB-1016 (Arochlor 1016)	9.20E-05 ug/l	1.12E-06 lbs/day

Pesticide

Toxaphene	1.53E-03 ug/l	1.86E-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		

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

Cyanide	33.5	10.6	
Iron	1514.2		
Lead	203.6	43.3	
Mercury	0.307	0.025	
Nickel	2548.8	380	
Selenium	29.6	7.7	
Silver	76.6	N/A	
Thallium	12.9		
Zinc	652.3	875.9	Acute Controls
Boron	1533.03		
Sulfate	3718.5		

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.

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

XIII. Notice of UPDES Requirement

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

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.

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis
SUMMARY

Discharging Facility: Emery Deep to Christiansen Wash
UPDES No: UT-0022616
Current Flow: 0.05 MGD Design Flow
Design Flow 0.05 MGD

Receiving Water: Christiansen Wash
Stream Classification: 2B, 3C, 4
Stream Flows [cfs]:
0.11 Summer (July-Sept) 20th Percentile
0.11 Fall (Oct-Dec) 20th Percentile
0.11 Winter (Jan-Mar) 20th Percentile
0.11 Spring (Apr-June) 20th Percentile
2.3 Average
Stream TDS Values:
5281.0 Summer (July-Sept) Average
1470.0 Fall (Oct-Dec) Average
1415.0 Winter (Jan-Mar) Average
1767.0 Spring (Apr-June) Average

Effluent Limits:			WQ Standard:
Flow, MGD:	0.05 MGD	Design Flow	
BOD, mg/l:	25.0 Summer	5.0	Indicator
Dissolved Oxygen, mg/l	5.0 Summer	5.0	30 Day Average
TNH3, Chronic, mg/l:	10.3 Summer	Varies	Function of pH and Temperature
TDS, mg/l:	1566.2 Summer	3800.0	Site Specific

Modeling Parameters:
Acute River Width: 50.0%
Chronic River Width: 100.0%

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

Date: 10/2/2017

Utah Division of Water Quality
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]
Addendum: Statement of Basis

2-Oct-17
4:00 PM

Facilities: Emery Deep to Christiansen Wash
Discharging to: Christiansen Wash

UPDES No: UT-0022616

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

Christiansen Wash:	2B, 3C, 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)	5.00 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)	
Maximum Total Dissolved Solids	3800.0 mg/l	3ackground

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

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**	0.033 lbs/day	750.00	ug/l	0.282 lbs/day
Arsenic	190.00 ug/l	0.071 lbs/day	340.00	ug/l	0.128 lbs/day
Cadmium	0.84 ug/l	0.000 lbs/day	10.04	ug/l	0.004 lbs/day
Chromium III	300.17 ug/l	0.113 lbs/day	6280.22	ug/l	2.361 lbs/day
ChromiumVI	11.00 ug/l	0.004 lbs/day	16.00	ug/l	0.006 lbs/day
Copper	34.30 ug/l	0.013 lbs/day	58.83	ug/l	0.022 lbs/day
Iron			1000.00	ug/l	0.376 lbs/day
Lead	22.13 ug/l	0.008 lbs/day	567.98	ug/l	0.214 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.001 lbs/day
Nickel	189.32 ug/l	0.071 lbs/day	1702.82	ug/l	0.640 lbs/day
Selenium	4.60 ug/l	0.002 lbs/day	20.00	ug/l	0.008 lbs/day
Silver	N/A ug/l	N/A lbs/day	52.02	ug/l	0.020 lbs/day
Zinc	435.72 ug/l	0.164 lbs/day	435.72	ug/l	0.164 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 458.93 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	0.001 lbs/day
Chlordane	0.004 ug/l	0.004 lbs/day	1.200	ug/l	0.000 lbs/day
DDT, DDE	0.001 ug/l	0.001 lbs/day	0.550	ug/l	0.000 lbs/day
Dieldrin	0.002 ug/l	0.002 lbs/day	1.250	ug/l	0.000 lbs/day
Endosulfan	0.056 ug/l	0.053 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.002 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.004 lbs/day	0.260	ug/l	0.000 lbs/day
Lindane	0.080 ug/l	0.075 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	0.013 lbs/day	2.000	ug/l	0.001 lbs/day
Pentachlorophenol	13.00 ug/l	12.235 lbs/day	20.000	ug/l	0.008 lbs/day
Toxephene	0.0002 ug/l	0.000 lbs/day	0.7300	ug/l	0.000 lbs/day

Utah Division of Water Quality
Salt Lake City, Utah

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			3800.0 mg/l	0.71 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*
Metals				
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) to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day
Chlorophenoxy Herbicides				
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		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	2.54 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	0.73 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.00 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	0.07 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	19.76 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	0.09 lbs/day

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

1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.01 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	0.04 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.01 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	4.05 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.01 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	0.44 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	0.38 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	16.00 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	2.45 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	2.45 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	0.74 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.04 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	1.60 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	2.16 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.01 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	27.29 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	0.35 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	ug/l	lbs/day	170000.0 ug/l	160.00 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	1.51 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	0.34 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.02 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.03 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	0.05 lbs/day
Hexachlorocyclopentadiene	ug/l	lbs/day	17000.0 ug/l	16.00 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	0.56 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	1.79 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	13.18 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	0.72 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.01 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.02 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	0.01 lbs/day

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

Phenol	ug/l	lbs/day	4.6E+06 ug/l	4.33E+03 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.01 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	4.89 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	11.29 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	112.94 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	2.73E+03 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	10.35 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.01 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	188.23 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	0.08 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	0.49 lbs/day
				lbs/day
Pesticides				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	0.00 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				
PCB's				
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 101	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pesticide				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
Dioxin				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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

Metals

Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	4.05 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	207.06 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	4.33 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.01 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.

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

(2) Principles of Surface Water Quality Modeling and Control. Robert V. Thomann, et.al.
Harper Collins Publisher, Inc. 1987, pp. 644.

VIII. Modeling Information

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

Flow, Q, (cfs or MGD)	D.O. mg/l
Temperature, Deg. C.	Total Residual Chlorine (TRC), mg/l
pH	Total NH3-N, mg/l
BOD5, mg/l	Total Dissolved Solids (TDS), mg/l
Metals, ug/l	Toxic Organics of Concern, ug/l

Other Conditions

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

Model Inputs

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

Current Upstream Information

	Stream									
	Critical Low									
	Flow	Temp.	pH	T-NH3	BOD5	DO	TRC	TDS		
	cfs	Deg. C		mg/l as N	mg/l	mg/l	mg/l	mg/l		
Summer (Irrig. Season)	0.11	14.9	7.7	0.01	0.05	7.26	0.00	5281.0		
Fall	0.11	6.0	7.5	0.01	0.05	---	0.00	1470.0		
Winter	0.11	4.6	7.7	0.01	0.05	---	0.00	1415.0		
Spring	0.11	16.7	7.8	0.01	0.05	---	0.00	1767.0		
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*	50.0	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		

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

Projected Discharge Information

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.04500	18.8	3085.00	0.57878
Fall	0.04500	11.7		
Winter	0.04500	8.9		
Spring	0.04500	14.0		

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

IX. Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort coincide with the environmental conditions expected at low stream flows.

Effluent Limitation for Flow based upon Water Quality Standards

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

Season	Daily Average	
Summer	0.045 MGD	0.070 cfs
Fall	0.045 MGD	0.070 cfs
Winter	0.045 MGD	0.070 cfs
Spring	0.045 MGD	0.070 cfs

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.045 MGD. If the discharger is allowed to have a flow greater than 0.045 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 >	39.9% Effluent	[Chronic]

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

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	9.4 lbs/day
Fall	25.0 mg/l as BOD5	9.4 lbs/day
Winter	25.0 mg/l as BOD5	9.4 lbs/day
Spring	25.0 mg/l as BOD5	9.4 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	5.00
Fall	5.00
Winter	5.00
Spring	5.00

Effluent Limitation for Total Ammonia based upon Water Quality Standards

In-stream criteria of downstream segments for Total Ammonia will be met with an effluent limitation (expressed as Total Ammonia as N) as follows:

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	10.3 mg/l as N	3.9 lbs/day
	1 Hour Avg. - Acute	46.9 mg/l as N	17.6 lbs/day
Fall	4 Day Avg. - Chronic	12.9 mg/l as N	4.9 lbs/day
	1 Hour Avg. - Acute	48.7 mg/l as N	18.3 lbs/day
Winter	4 Day Avg. - Chronic	10.9 mg/l as N	4.1 lbs/day
	1 Hour Avg. - Acute	39.5 mg/l as N	14.8 lbs/day
Spring	4 Day Avg. - Chronic	12.5 mg/l as N	4.7 lbs/day
	1 Hour Avg. - Acute	48.7 mg/l as N	18.3 lbs/day

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

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

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	0.026	mg/l	0.01	lbs/day
	1 Hour Avg. - Acute	0.046	mg/l	0.02	lbs/day
Fall	4 Day Avg. - Chronic	0.026	mg/l	0.01	lbs/day
	1 Hour Avg. - Acute	0.046	mg/l	0.02	lbs/day
Winter	4 Day Avg. - Chronic	0.026	mg/l	0.01	lbs/day
	1 Hour Avg. - Acute	0.046	mg/l	0.02	lbs/day
Spring	4 Day Avg. - Chronic	0.026	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.046	mg/l	0.00	lbs/day

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	1566.2	mg/l	0.29	tons/day
Fall	Maximum, Acute	7314.3	mg/l	1.37	tons/day
Winter	Maximum, Acute	7397.3	mg/l	1.39	tons/day
Spring	4 Day Avg. - Chronic	6866.4	mg/l	1.29	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 458.93 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum*	N/A	N/A	1,877.6	ug/l	0.7 lbs/day
Arsenic*	475.38 ug/l	0.1 lbs/day	851.6	ug/l	0.3 lbs/day
Cadmium	1.98 ug/l	0.0 lbs/day	25.1	ug/l	0.0 lbs/day
Chromium III	751.73 ug/l	0.2 lbs/day	15,751.5	ug/l	5.9 lbs/day
Chromium VI*	21.60 ug/l	0.0 lbs/day	34.1	ug/l	0.0 lbs/day
Copper	84.83 ug/l	0.0 lbs/day	146.4	ug/l	0.1 lbs/day
Iron*	N/A	N/A	2,432.9	ug/l	0.9 lbs/day
Lead	54.32 ug/l	0.0 lbs/day	1,423.5	ug/l	0.5 lbs/day
Mercury*	0.03 ug/l	0.0 lbs/day	6.0	ug/l	0.0 lbs/day
Nickel	473.67 ug/l	0.1 lbs/day	4,270.0	ug/l	1.6 lbs/day
Selenium*	9.14 ug/l	0.0 lbs/day	47.8	ug/l	0.0 lbs/day
Silver	N/A ug/l	N/A lbs/day	130.5	ug/l	0.0 lbs/day

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

Zinc	1,092.81 ug/l	0.3 lbs/day	1,092.8	ug/l	0.4 lbs/day
Cyanide*	13.04 ug/l	0.0 lbs/day	55.2	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	24.9 Deg. C.	76.9 Deg. F
Fall	16.0 Deg. C.	60.9 Deg. F
Winter	14.6 Deg. C.	58.3 Deg. F
Spring	26.7 Deg. C.	80.1 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 8.72E-04 lbs/day
Chlordane	4.30E-03 ug/l	1.61E-03 lbs/day	1.2E+00	ug/l 6.98E-04 lbs/day
DDT, DDE	1.00E-03 ug/l	3.75E-04 lbs/day	5.5E-01	ug/l 3.20E-04 lbs/day
Dieldrin	1.90E-03 ug/l	7.13E-04 lbs/day	1.3E+00	ug/l 7.27E-04 lbs/day
Endosulfan	5.60E-02 ug/l	2.10E-02 lbs/day	1.1E-01	ug/l 6.40E-05 lbs/day
Endrin	2.30E-03 ug/l	8.63E-04 lbs/day	9.0E-02	ug/l 5.23E-05 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l 5.82E-06 lbs/day
Heptachlor	3.80E-03 ug/l	1.43E-03 lbs/day	2.6E-01	ug/l 1.51E-04 lbs/day
Lindane	8.00E-02 ug/l	3.00E-02 lbs/day	1.0E+00	ug/l 5.82E-04 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l 1.74E-05 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l 5.82E-06 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l 2.33E-05 lbs/day
PCB's	1.40E-02 ug/l	5.25E-03 lbs/day	2.0E+00	ug/l 1.16E-03 lbs/day
Pentachlorophenol	1.30E+01 ug/l	4.88E+00 lbs/day	2.0E+01	ug/l 1.16E-02 lbs/day
Toxephene	2.00E-04 ug/l	7.50E-05 lbs/day	7.3E-01	ug/l 4.25E-04 lbs/day

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

**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	1.9 lbs/day
Nitrates as N	4.0 mg/l	1.5 lbs/day
Total Phosphorus as P	0.05 mg/l	0.0 lbs/day
Total Suspended Solids	90.0 mg/l	33.8 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:

	Maximum Concentration	
	Concentration	Load
Toxic Organics		
Acenaphthene	6.77E+03 ug/l	2.54E+00 lbs/day
Acrolein	1.96E+03 ug/l	7.34E-01 lbs/day
Acrylonitrile	1.66E+00 ug/l	6.21E-04 lbs/day
Benzene	1.78E+02 ug/l	6.68E-02 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	1.10E+01 ug/l	4.14E-03 lbs/day
Chlorobenzene	5.27E+04 ug/l	1.98E+01 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	1.93E-03 ug/l	7.25E-07 lbs/day
1,2-Dichloroethane	2.48E+02 ug/l	9.32E-02 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	2.23E+01 ug/l	8.38E-03 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	1.05E+02 ug/l	3.95E-02 lbs/day
1,1,2,2-Tetrachloroethane	2.76E+01 ug/l	1.04E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	3.51E+00 ug/l	1.32E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	1.08E+04 ug/l	4.05E+00 lbs/day
2,4,6-Trichlorophenol	1.63E+01 ug/l	6.12E-03 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	1.18E+03 ug/l	4.42E-01 lbs/day
2-Chlorophenol	1.00E+03 ug/l	3.76E-01 lbs/day
1,2-Dichlorobenzene	4.26E+04 ug/l	1.60E+01 lbs/day
1,3-Dichlorobenzene	6.52E+03 ug/l	2.45E+00 lbs/day

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

1,4-Dichlorobenzene	6.52E+03 ug/l	2.45E+00 lbs/day
3,3'-Dichlorobenzidine	1.93E-01 ug/l	7.25E-05 lbs/day
1,1-Dichloroethylene	8.03E+00 ug/l	3.01E-03 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	1.98E+03 ug/l	7.44E-01 lbs/day
1,2-Dichloropropane	9.78E+01 ug/l	3.67E-02 lbs/day
1,3-Dichloropropylene	4.26E+03 ug/l	1.60E+00 lbs/day
2,4-Dimethylphenol	5.77E+03 ug/l	2.16E+00 lbs/day
2,4-Dinitrotoluene	2.28E+01 ug/l	8.56E-03 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	1.35E+00 ug/l	5.08E-04 lbs/day
Ethylbenzene	7.27E+04 ug/l	2.73E+01 lbs/day
Fluoranthene	9.28E+02 ug/l	3.48E-01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	4.26E+05 ug/l	1.60E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	4.01E+03 ug/l	1.51E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	9.03E+02 ug/l	3.39E-01 lbs/day
Dichlorobromomethane(HM)	5.52E+01 ug/l	2.07E-02 lbs/day
Chlorodibromomethane (HM)	8.53E+01 ug/l	3.20E-02 lbs/day
Hexachlorocyclopentadiene	4.26E+04 ug/l	1.60E+01 lbs/day
Isophorone	1.50E+03 ug/l	5.65E-01 lbs/day
Naphthalene		
Nitrobenzene	4.77E+03 ug/l	1.79E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	3.51E+04 ug/l	1.32E+01 lbs/day
4,6-Dinitro-o-cresol	1.92E+03 ug/l	7.20E-01 lbs/day
N-Nitrosodimethylamine	2.03E+01 ug/l	7.62E-03 lbs/day
N-Nitrosodiphenylamine	4.01E+01 ug/l	1.51E-02 lbs/day
N-Nitrosodi-n-propylamine	3.51E+00 ug/l	1.32E-03 lbs/day
Pentachlorophenol	2.06E+01 ug/l	7.72E-03 lbs/day
Phenol	1.15E+07 ug/l	4.33E+03 lbs/day
Bis(2-ethylhexyl)phthalate	1.48E+01 ug/l	5.55E-03 lbs/day
Butyl benzyl phthalate	1.30E+04 ug/l	4.89E+00 lbs/day
Di-n-butyl phthalate	3.01E+04 ug/l	1.13E+01 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	3.01E+05 ug/l	1.13E+02 lbs/day
Dimethyl phthlate	7.27E+06 ug/l	2.73E+03 lbs/day
Benzo(a)anthracene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Benzo(a)pyrene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Benzo(b)fluoranthene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Benzo(k)fluoranthene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Chrysene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	7.78E-02 ug/l	2.92E-05 lbs/day

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

Pyrene (PAH)	2.76E+04 ug/l	1.04E+01 lbs/day
Tetrachloroethylene	2.23E+01 ug/l	8.38E-03 lbs/day
Toluene	5.02E+05 ug/l	1.88E+02 lbs/day
Trichloroethylene	2.03E+02 ug/l	7.62E-02 lbs/day
Vinyl chloride	1.32E+03 ug/l	4.94E-01 lbs/day

Pesticides

Aldrin	3.51E-04 ug/l	1.32E-07 lbs/day
Dieldrin	3.51E-04 ug/l	1.32E-07 lbs/day
Chlordane	1.48E-03 ug/l	5.55E-07 lbs/day
4,4'-DDT	1.48E-03 ug/l	5.55E-07 lbs/day
4,4'-DDE	1.48E-03 ug/l	5.55E-07 lbs/day
4,4'-DDD	2.11E-03 ug/l	7.91E-07 lbs/day
alpha-Endosulfan	5.02E+00 ug/l	1.88E-03 lbs/day
beta-Endosulfan	5.02E+00 ug/l	1.88E-03 lbs/day
Endosulfan sulfate	5.02E+00 ug/l	1.88E-03 lbs/day
Endrin	2.03E+00 ug/l	7.62E-04 lbs/day
Endrin aldehyde	2.03E+00 ug/l	7.62E-04 lbs/day
Heptachlor	5.27E-04 ug/l	1.98E-07 lbs/day
Heptachlor epoxide		

PCB's

PCB 1242 (Arochlor 1242)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1254 (Arochlor 1254)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1221 (Arochlor 1221)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1232 (Arochlor 1232)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1248 (Arochlor 1248)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1260 (Arochlor 1260)	1.13E-04 ug/l	4.24E-08 lbs/day
PCB-1016 (Arochlor 1016)	1.13E-04 ug/l	4.24E-08 lbs/day

Pesticide

Toxaphene	1.88E-03 ug/l	7.06E-07 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		

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

Cyanide	55.2	13.0
Iron	2432.9	
Lead	249.6	54.3
Mercury	0.376	0.030
Nickel	4270.0	474
Selenium	47.8	9.1
Silver	130.5	N/A
Thallium	15.8	
Zinc	1092.8	1092.8
Boron	1881.22	
Sulfate	2772.2	

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.

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

XIII. Notice of UPDES Requirement

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

Utah Division of Water Quality
Salt Lake City, Utah

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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ATTACHMENT 4

Reasonable Potential Analysis

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REASONABLE POTENTIAL ANALYSIS

Water Quality has worked to improve our reasonable potential analysis (RP) for the inclusion of limits for parameters in the permit by using an EPA provided model. As a result of the model, more parameters may be included in the renewal permit. A Copy of the Reasonable Potential Analysis Guidance (RP Guide) is available at water Quality. There are four outcomes for the RP Analysis¹. They are;

- Outcome A: A new effluent limitation will be placed in the permit.
- Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit,
- Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit,
- Outcome D: No limitation or routine monitoring requirements are in the permit.

Due to the lack of substantial metals data, RP analysis will be conducted on data collected after 10 data sets of metals data are produced by Bronco Emery Deep Mine.

¹ See Reasonable Potential Analysis Guidance for definitions of terms