

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Minor Industrial Permit No. **UT0025968**

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

**BLUFFDALE COOLING WATER EFFLUENT REUSE**

is hereby authorized to discharge from its facility located at 14175 South Redwood Road, Bluffdale, Utah, with the Outfall 001 located at latitude 40°26' and longitude 111°55'. to receiving waters named

**JORDAN RIVER**

And the Outfall 002 located at latitude 40°26' and longitude 111°55' to receiving waters named

**UTAH AND SALT LAKE CANAL**

and to distribute effluent for reuse,

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

This permit shall become effective on June 1, 2018

This permit expires at midnight on November 30, 2022.

Signed this 22<sup>nd</sup> day of May, 2018.

  
Erica Brown Gaddis, PhD  
Director

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I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

- A. Description of Discharge Points. The authorization to discharge wastewater provided under this part 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*.

Outfall Numbers

Location of Discharge Outfalls

001

Located at latitude 40° 26' 35" and longitude 111° 55' 22". The discharge is through a 10 "pipe to the Jordan River.

002

Located at latitude 40° 26' 35" and longitude 111° 55' 23". The discharge is through a 10 "pipe to the Utah Salt Lake Canal.

Reuse Outfall Number

Location of Effluent Reuse Discharge Outfall

003R

Located at latitude 40° 26' 33" and longitude 111° 55' 58". The discharge is through a 16" pipe to a reservoir for the Bluffdale pressurized irrigation system for use throughout the irrigation system

- 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 through the life of this permit, there shall be no acute or chronic toxicity in Outfalls 001 or 002 as defined in *Part VIII* of this permit.
2.
  - a. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001 and Outfall 002. Such discharges shall be limited and monitored by the permittee as specified below:
    - (1) Outfall 001 (Jordan River)

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**WASTEWATER**

Parameter	Outfall 001 Effluent Limitations <sup>1, 2, 3</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Flow, MGD					
Winter (Jan-Mar)	--	--	--	--	0.34
Spring (Apr-Jun)	--	--	--	--	0 <sup>4</sup>
Summer (Jul-Sep)	--	--	--	--	0 <sup>4</sup>
Fall (Oct-Dec)	--	--	--	--	0.34
Temperature, °F					
Winter (Jan-Mar)	--	--	--	--	65
Spring (Apr-Jun)	--	--	--	--	--
Summer (Jul-Sep)	--	--	--	--	--
Fall (Oct-Dec)	--	--	--	--	65
TRC, mg/L					
Winter (Jan-Mar)	--	--	--	--	0.6
Spring (Apr-Jun)	--	--	--	--	--
Summer (Jul-Sep)	--	--	--	--	--
Fall (Oct-Dec)	--	--	--	--	0.7
TSS, mg/L	25	35	--	--	--
Dissolved Oxygen, mg/L	--	--	--	5.0	--
pH, Standard Units	--	--	--	6.5	9
TDS, mg/L	1200	--	--	--	--

(2) Outfall 002 (Utah and Salt Lake Canal)

Parameter	Outfall 002 Effluent Limitations <sup>1, 2, 3</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Flow, MGD	--	--	--	--	0.34
Temperature, °F	--	--	--	--	75
TSS, mg/L	25	35	--	--	--
pH, Standard Units	--	--	--	6.5	9
TDS, mg/L	--	--	--	--	1200

(3) Self-Monitoring and Reporting Requirements for Outfall 001 and 002

Self-Monitoring and Reporting Requirements <sup>5</sup>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>6, 7</sup>	Continuous	Recorder	MGD
Temperature	Continuous	Recorder	°F
TRC	Monthly	Grab	mg/L
DO	Monthly	Grab	mg/L

1 See Definitions, Part VIII, for definition of terms.

2 There shall be no discharge of sanitary wastes.

3 There shall be no visible sheen or floating solids or visible foam in other than trace amounts.

4 There will be no discharge through Outfall 001 during the spring and summer (April through September).

5 See Definitions, Part VIII, for definition of terms.

6 Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

7 If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

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Self-Monitoring and Reporting Requirements <sup>5</sup>			
Parameter	Frequency	Sample Type	Units
TDS	Monthly	Grab	mg/L
pH	Monthly	Grab	SU
TSS, Effluent	Monthly	Grab	mg/L
Oil & Grease	Quarterly	Grab	mg/L
Metals	Quarterly	Grab	mg/L

- b. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 003R. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Outfall 003R Effluent Limitations <sup>1, 2, 3</sup>				
	Max Monthly Average	Max Weekly Median	Max Daily Average	Minimum	Maximum
pH, Standard Units	--	--	--	6.0	9.0

Self-Monitoring and Reporting Requirements for Outfall 003R (Reuse)

Self-Monitoring and Reporting Requirements <sup>8</sup>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>9, 10</sup>	Continuous	Recorder	MGD
Temperature	Continuous	Recorder	°F
TRC	Monthly	Grab	mg/L
DO	Monthly	Grab	mg/L
TDS	Monthly	Grab	mg/L
pH	Monthly	Grab	SU
TSS, Effluent	Monthly	Grab	mg/L
Oil & Grease	Quarterly	Grab	mg/L
Metals	Quarterly	Grab	mg/L

3. Compliance Schedule

- a. There is no Compliance Schedule included in this renewal permit.

4. Acute/Chronic Whole Effluent Toxicity (WET) Testing.

As part of the nationwide effort to control toxics, biomonitoring requirements are being included in all major permits and in minor permits for facilities where effluent toxicity is an existing or potential concern. Authorization for requiring effluent biomonitoring is provided for in UAC R317-8-4.2 and R317-8-5.3. The Permit And Enforcement Guidance Document For Whole Effluent Toxicity DWQ, February 2018, outlines guidance to be used by Utah Division of Water Quality staff and by permittee's for implementation of WET control through the UPDES discharge permit program.

<sup>8</sup> See Definitions, Part VIII, for definition of terms.

<sup>9</sup> Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

<sup>10</sup> If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

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Bluffdale is a minor facility discharging approximately 340,000 gallons per day of non-contact cooling water. Comparison of the laboratory analysis performed on their effluent to the waste load analysis on the Cub River, Bluffdale's discharge is not likely to be toxic. As a result, biomonitoring of the effluent will not be required. However, the permit will contain a WET reopener provision.

**D. Reporting of Monitoring Results.**

1. 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)<sup>11</sup> or by NetDMR, post-marked or entered into NetDMR no later than the 28<sup>th</sup> day of the month following the completed reporting period. The first report is due on July 28, 2018. 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 VII.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

2. Reporting of Reuse Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Monthly Operational Report, post-marked no later than the 28th day of the month following the completed reporting period. The first report is due on July 28, 2018. If no reuse occurs during the reporting period, "no reuse" shall be reported for those applicable effluent parameters. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements* (see *Part VII.G*), and submitted 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

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<sup>11</sup> Starting January 1, 2017 monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception.

II. INDUSTRIAL PRETREATMENT PROGRAM

- A. Discharges to a POTW. Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in *40 CFR section 403*, the State Pretreatment Requirements found in *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.
  
- B. Hazardous Waste Requirements. In accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

**III. BIOSOLIDS REQUIREMENTS**

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, this facility does not receive, generate, treat or dispose of biosolids. Therefore 40 CFR 503 does not apply. Therefore 40 CFR 503 does not apply.

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**IV. STORM WATER REQUIREMENTS.**

The Utah Administrative Code (UAC) R-317-8-3.9 requires storm water permit provisions to include the development of a storm water pollution prevention plan for waste water treatment facilities if the facility meets one or both of the following criteria.

1. Waste water treatment facilities with a design flow of 1.0 MGD or greater, and/or,
2. Waste water treatment facilities with an approved pretreatment program as described in 40CFR Part 403,

Bluffdale does not meet either of the above criteria; therefore this permit does not include storm water provisions. The permit does however include a storm water re-opener provision.

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**V. 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) 231-1769, or 24-hour answering service (801) 536-4123.

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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 VI.G, Bypass of Treatment Facilities.*);
  - c. Any upset which exceeds any effluent limitation in the permit (See *Part VI.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.
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 V.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;

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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.

VI. 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 VI.G, Bypass of Treatment Facilities* and *Part VI.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.
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.

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- 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 *section VI.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 *sections VI.G.2.a (1), (2) and (3)*.

3. Notice.

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

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- c. *Unanticipated bypass.* The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part IV.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 V.H, Twenty-four Hour Notice of Noncompliance Reporting*; and,
  - d. The permittee complied with any remedial measures required under *Part VI.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.

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VII. 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:
    - 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,

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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 *paragraph VII.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 *paragraph VII.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*.

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:

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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 area wide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.
- P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.
- Q. Toxicity Limitation - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include WET testing, a WET limitation, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this permit.

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- R. 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".

VIII. DEFINITIONS

A. Wastewater.

1. The "7-day (and weekly) average", other than for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria. 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, which begins on Sunday and ends 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 Saturday.
2. The "30-day (and monthly) average," other than for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
3. "Act," means the *Utah Water Quality Act*.
4. "Acute toxicity" occurs when 50 percent or more mortality is observed for either species at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the effluent results to be considered valid..
5. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
6. "Chronic toxicity" occurs when during a chronic toxicity test, the 25% inhibition concentration (IC25) calculated on the basis of test organism survival and growth, or survival and reproduction, is less than or equal to the effluent dilution designated as the receiving water concentration (RWC)
7. "IC<sub>25</sub>" is a point estimate of the toxicant concentration that would cause a 25% reduction in a biological measurement of the test organism, such as reproduction or growth.
8. "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;

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- 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.
- 9. "CWA," means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
  - 10. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
  - 11. "EPA," means the United States Environmental Protection Agency.
  - 12. "Director," means Director of the Division of Water Quality.
  - 13. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
  - 14. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
  - 15. "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.
  - 16. "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.
- B. Storm Water.
- 1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
  - 2. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
  - 3. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of

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*Appendix II* in the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity. Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.

4. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.
5. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.
6. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
7. "Municipal separate storm sewer system" (large and/or medium) means all municipal separate storm sewers that are either:
  - a. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or
  - b. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or
  - c. Owned or operated by a municipality other than those described in paragraph *a.* or *b.* (above) and that are designated by the *Director* as part of the large or medium municipal separate storm sewer system.
8. "NOI" means "notice of intent", it is an application form that is used to obtain coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
9. "NOT" means "notice of termination", it is a form used to terminate coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
10. "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 discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
11. "Section 313 water priority chemical" means a chemical or chemical categories that:

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- a. Are listed at *40 CFR 372.65* pursuant to *Section 313* of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III of the Superfund Amendments and Reauthorization Act (SARA)* 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 Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (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 water quality criteria. See *Appendix III* of this permit. This appendix was revised based on final rulemaking EPA published in the *Federal Register* November 30, 1994.
12. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *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.
13. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40 CFR 110.10* and *CFR 117.21*) or *Section 102* of *CERCLA* (see *40 CFR 302.4*).
14. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.
15. "SWDMR" means "storm water discharge monitoring report", a report of the results of storm water monitoring required by the permit. The Division of Water Quality provides the storm water discharge monitoring report form.
16. "Storm water associated with industrial activity" (*UAC R317-8-3.8(6)(c) & (d)*) means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the *UPDES* program. For the categories of industries identified in paragraphs (a) through (j) of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined in *40 CFR Part 401*); sites used for the storage and maintenance of material handling equipment; sites used for

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residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (k) of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (a) to (k) of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5*. The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);
- b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;
- c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;
- d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D* of RCRA;

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- f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
  - g. Steam electric power generating facilities, including coal handling sites;
  - h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (I) to (k) of this subsection are associated with industrial activity;
  - i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;
  - j. Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;
  - k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))
17. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

**FACT SHEET AND STATEMENT OF BASIS  
BLUFFDALE COOLING WATER  
RENEWAL PERMIT: DISCHARGE  
UPDES PERMIT NUMBER: UT0025968  
MINOR INDUSTRIAL**

**FACILITY CONTACTS**

Person Name: Michael Fazio  
Position: City Engineer  
Phone Number: (801)858-0490

Person Name: Shane Paddock  
Position: Public Works Director  
Phone Number: (801) 254-2200 ext 450

Name: Bluffdale Cooling Water  
Mailing Address: 2222 West 14400 South  
Bluffdale, Utah 84065  
Location 16891 Camp Williams Road  
Bluffdale, Utah 84065

**DESCRIPTION OF FACILITY**

Bluffdale City is providing culinary water for use as non-contact cooling water in the climate control system at a data center located on property at Camp Williams. The culinary water is used in the system and cycled through a holding tank then out to be discharged. The primary outfall is to the Utah and Salt Lake Canal just below the Narrows Diversion Dam for canals in Salt Lake County. The secondary outfall is to the Jordan River at the same area as the primary point. A third outfall is to the pressurized irrigation system in Bluffdale.

The heat exchange process is by its nature a very clean process, and does not impact the cooling water beyond the transfer of heat from the climate control system to the water. The result is a high quality effluent. Though the process water is evaporated, and any constituent that is in the source water is concentrated. The concentration of these constituents in the cooling water is what makes them a pollutant, and requires permitting to be discharged. The high quality of the effluent does make it eligible to be used in a pressurized irrigation system as Reuse Water.

The option to discharge to a Publicly Owned Treatment Works (POTW) was evaluated and rejected based on two major concerns. The first is that it was desired that the facility be more "Green" and reduce the impact on the environment, so the option of discharging to a pressurized irrigation system was developed. While this is not a year round solution it will reduce the amount of fresh water that is diverted to this use, and reduce the impact of removing that water from the environment.

Secondly, the cooling water would be considered very clean when compared to what the POTW would normally receive and would be a dilution of the water in the POTW. This cooling water flow would also have an adverse impact on the capacity of the sanitary system between the facility and POTW. Together these would result in a major increase in the construction costs, and ongoing operation cost for the facility.

Together these reasons lead the facility to work with Bluffdale to develop a plan for reuse, utilizing the effluent for irrigation during the summer.

#### Cooling System Bio-fouling

In cooling systems there is occasionally a need to treat the system for biological growth and/or deposits in the system. To accomplish this, a facility may need to do single time dosing of the system or start continuous treatment. The permittee is liable for any adverse water quality impacts from use of treatment chemicals pursuant to the Narrative Standard. The permittee must submit a plan for treatment and obtain DWQ approval prior to use of these types of chemicals in order to comply with the Narrative Standard provisions of the permit. DWQ will evaluate the plan and product information to determine the scope and likelihood of environmental impact and if a modification to the permit should be initiated to include any new sampling/monitoring that might be needed.

#### *E. coli* Monitoring

Since the source water is culinary, and no domestic sewage will be involved in the process the permit is not requiring pathogen monitoring. If the source waters change and the likelihood of pathogen exposure in the system increases, the permit will need to be modified to include pathogen reduction and monitoring provisions prior to the changes taking place for it to remain in effect.

#### Reuse

The rules governing Reuse are in the Utah Administrative Code (UAC) R317-1-4, and a permitting program for Reuse facilities has been developed. These normal Reuse provisions for a POTW do not apply directly to this industrial cooling water system. The system is not exposed to municipal sewage removing the chance of pathogen exposure in the source water and during the heat exchange process. UAC R317-1-.5 dictates the oversight of industrial Reuse. To cover the Reuse discharge, the normal Reuse permitting program will be modified to fit an industrial application. This will result in a reduction of parameters limits and monitoring requirements.

To make the monitoring Program less complicated, the parameters and frequency will be the same for all three outfalls. Allowing for one sampling location to be used while the desired discharge Outfall can easily be switched. This will also reduce the confusion about how often and where to sample when the discharge is shifted from one outfall to the other during the year. This means that the permittee will always be sampling for the same parameters and at the same frequency year round. If they chose to have a sample point located above the control point for directing which outfall is going to be used, the sampling at this point will be considered acceptable for all discharge outfalls. In other words, they may sample out of one point and have it be representative for all outfalls, as long as the point is properly located above any diversion point.

#### Temperature

The temperature limit developed in the WLA for Outfall 001 set the limit as 100°C (212°F) for water to enter the Jordan River. This is due to the difference in flows between the two waters. The discharge is significantly less than the river (only 1.8 % of river flows) such that the calculations come up with the default maximum value of the boiling point of water. This is not considered a safe or practical value for discharge. It is also very unlikely that the discharge effluent would reach that temperature. This means that if a temperature limit is to be included it must be developed using Best Professional Judgment (BPJ). In the materials supplied in the permit application it has been put fourth that the system will operate in a rather steady state during normal operations, and the outfall temperature will be easily related to the outdoor air temperature. As the ambient air temperature increases, the outfall temperature will increase and above a certain temperature, the system will switch to a high number of cycles in the heat exchange process, and increase to another temperature range. To allow for a more consistent operation of the

outfalls, the temperature limit for Outfall 001 will be set above the expected discharge temperature, but limited to protect the health and safety of anyone or thing that might come in direct contact with the effluent. The limit will be set at 65°F (18.3°C), or the estimated process effluent temperature plus 10°F.

There is not a numeric temperature standard for canals with a 2B and 4 beneficial use classification. As a result there is no temperature limit developed in the WLA for Outfall 002. There is also no requirement that a temperature limit be included. If there was a numeric standard when the canal is in operation, due to the difference in canal flows, and the discharge flow the limit would be the same as for outfall 001, 100°C (212°F). Just as with outfall 001, this is not considered a safe value for discharge, and it is also very unlikely that the discharge effluent would reach that temperature. If a temperature limit is to be included it also must be developed using BPJ. Setting the value 10°F higher than Outfall 001 is would be protective for health and safety. Therefore the limit will be 75°F (23.9°C).

The sampling for parameters such as Metals, Oil and Grease can be reduced and/or eliminated after sufficient sampling results show a low enough reasonable potential for impairment of the receiving streams.

### **SUMMARY OF CHANGES FROM PREVIOUS PERMIT**

#### **1. Outfall Use**

Bluffdale has decided to change which outfall they primarily discharge from. They initially applied for a permit to discharge to the Jordan River (Outfall 001) during the winter, reuse (Outfall 003R) the water in the summer and discharge to the Utah and Salt Lake Canal (Outfall 002) as a backup during the portions of the year when they can't discharge to either. Bluffdale has decided to use the Canal (Outfall 002) as a primary outfall and the Jordan River (Outfall 001) as a backup. This will not change any permitting requirements, just which outfall one should expect to see water flowing from.

#### **2. Sampling**

The sampling point that was chosen prior to completion of the system and has been determined to be inadequate for the system. The flows have never reached the levels from the initial design. This has resulted in flows that are hard to detect, and small enough to prevent adequate sampling. Because of this another point will be used for sampling. This new point will be located in the blend tank near the reuse tank where the water flows out of a pipe and a sample can be obtained regardless of the flow conditions. This location is also outside the perimeter fence of Camp Williams, allowing samples to be collected regardless of the security conditions at the facility.

The blend tank consists of a three chambered 8ft by 12ft concrete basin. The first chamber is approximately 4ft by 4ft and works reduce the velocity of the flows as they come in from the pipe. This chamber is also where they will introduce culinary water to blend with the cooling water to reduce TDS Concentrations if it becomes elevated. The final chamber is also approximately 4ft by 4ft and is where the water flows out through one of two pipes. One goes to the reuse tank and the other goes down to the Canal/Jordan River outfalls. The two chambers and rest of the tank are configured to maximize travel time between them and allow for the blended flows to equalize. It is in this area that they would like to collect samples.

The blend tank is covered by metal grating. One section has been hinged to provide an access area with a ladder built into the wall. This allows for them to inspect and clean the tank as needed. This is also where Bluffdale would like to collect samples from. No treatment of the water occurs between the original monitoring point and the blend tank. There is also no treatment after the blend tank and before the outfalls. Monitoring at this location is representative of the effluent and will be more reliable than at the previous location. This change was approved by letter in February 2018 and will continue during the life

of this renewal permit.

The sampling frequency was set at weekly for the initial permit with the belief that the flows would increase to the permitted level and stay there. So far the flows have not gone over 0.1 MGD over the last five years. As a result of this the required minimum monitoring frequency will be reduced to monthly for the renewal permit with the understanding that when the combined discharge flow increases to above 0.25 MGD for six months in a row, the permittee will increase the minimum monitoring frequency back to weekly without the need to modify the permit.

3. WLA Model and TRC

A new model is used by Water Quality to develop a waste load allocation (WLA) for dischargers to Waters of the State. As a result of the new model and changing in stream conditions, some parameters may see a reduction in effluent limits. The effluent limit for total residual chlorine (TRC) is one of these parameters. The old and new TRC effluent limits are compared below.

TRC Limits, mg/L		
Season	Previous Limit	New Limit
Winter	0.7	0.6
Spring		
Summer		
Fall	0.8	0.7

4. RP

During the permit cycle, Water Quality has worked to improve our reasonable potential analysis (RP) for parameters to have limits included by using an EPA provided model. The results of the RP Analysis are included in Attachment 3 of the FSSOB.

5. TBPEL Rule

Water Quality adopted UAC R317-1-3.3, Technology-Based Phosphorus Effluent Limit (TBPEL) Rule in 2014. The TBPEL rule as it relates to "non-lagoon" wastewater treatment plants establishes new regulations for the discharge of phosphorus to surface waters and is self-implementing. The TBPEL rule includes the following requirements for non-lagoon wastewater treatment plants:

The TBPEL requires that all non-lagoon wastewater treatment works discharging wastewater to surface waters of the state shall provide treatment processes which will produce effluent less than or equal to an annual mean of 1.0 mg/L for total phosphorus. This TBPEL shall be achieved by January 1, 2020.

The TBPEL discharging treatment works are required to implement, at a minimum, monthly monitoring of the following beginning July 1, 2015:

- R317-1-3.3, D, 1 Influent for total phosphorus (as P) and total Kjeldahl nitrogen (as N) concentrations;
- R317-1-3.3, D, 2. Effluent for total phosphorus and orthophosphate (as P), ammonia, nitrate-nitrite and total Kjeldahl nitrogen (an N);

In R317-1-3.3, D, 3 the rule states that all monitoring shall be based on 24-hour composite samples by use of an automatic sampler or a minimum of four grab samples collected a minimum of two hours apart.

The Bluffdale facility and discharge is not considered a Wastewater Treatment Plant, and currently the

rule does not apply to these outfalls. If conditions change in the future the permit may be reopened and modified to include TBPEL monitoring requirements and limits.

### DISCHARGE

#### **DESCRIPTION OF DISCHARGE**

The cooling system discharges non-contact cooling. It is this water that is discharged into the Jordan River and/or Salt Lake Utah Canal unless it is utilized as irrigation water under reuse provisions. During the months when the Bluffdale secondary irrigation system is in use, the water is piped into it as reuse water. The non-contact cooling water is discharged into the canal. During the winter months the water may be discharged to the Jordan River is needed. This allows the city to have several discharge options.

Bluffdale has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. The data appear inconsistent with reported flows. This is the result of the low flow conditions which have been lower than the meter has been able to accurately record. There have been no effluent violations.

#### Outfall

#### Description of Discharge Point

- |     |  |
|-----|--|
| 001 | Located at latitude 40°26'35" and longitude 111°55'22". The discharge is through a 10" pipe to the Jordan River.             |
| 002 | Located at latitude 40°26'35" and longitude 111°55'23". The discharge is through a 10" pipe to the Utah and Salt Lake Canal. |

#### Outfall

#### Description of Reuse Water Discharge Point

- |      |   |
|------|---|
| 003R | Located at latitude 40°26'33" and longitude 111°55'58". The discharge is through a 16" pipe to the reservoir for the Bluffdale pressurized irrigation system. |
|------|---|

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

The discharge flows into the Jordan River and/or the Utah and Salt Lake Canal. The Jordan River segment is above Bluffdale Road, and below the Narrows diversion, and is classified 2B, 3A and 4 at this location according to *Utah Administrative Code (UAC) R317-2-13.5*

- |             |  |
|-------------|--|
| Class 2B -- | Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing. |
| Class 3A -- | Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.  |
| Class 4 --  | Protected for agricultural uses including irrigation of crops and stock watering.  |

The Utah and Salt Lake Canal is classified as 2B and 4 according to *Utah Administrative Code (UAC) R317-2-13.9*

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

## **BASIS FOR EFFLUENT LIMITATIONS**

### **Reasonable Potential Analysis**

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

As a result of the unpredictable and low flow levels Bluffdale has not been able to properly monitor for metals in the past. As a result there is inadequate data for use in a RP. Bluffdale "has limited to no industrial contributions" to their waste stream. Therefore it was determined that a full RP was not required, and that no metals monitoring is being added to the permit.

Included in Attachment 2 are the Wasteload Analysis' (WLA) generated for both the discharge to the Jordan River and Utah Salt Lake Canal. It has been determined that this discharge will not cause a violation of water quality standards. An Antidegradation Level II review is not required since the Level I review shows that water quality impacts are minimal. The permittee is expected to be able to comply with these limitations.

The inclusion of total suspended solids (TSS) and pH as pollutants of concern (POC) requiring effluent limits and the effluent limitations are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*.

The inclusion of temperature, total residual chlorine (TRC), dissolved oxygen (DO), and total dissolved solids (TDS) as POC requiring effluent limits is based on BPJ.

The effluent limits for TRC, DO and TDS are based on the WLA for the receiving water. The effluent limits for temperature limitations for the Jordan River and Utah Salt Lake Canal are based on the recommendations from the WLA for this discharge into the respective water.

The permit limitations for Outfall 001 (Jordan River) are:

Parameter	Outfall 001 Effluent Limitations <sup>1, 2, 3</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Flow, MGD					
Winter (Jan-Mar)	--	--	--	--	0.34
Spring (Apr-Jun)	--	--	--	--	0 <sup>4</sup>
Summer (Jul-Sep)	--	--	--	--	0 <sup>4</sup>
Fall (Oct-Dec)	--	--	--	--	0.34
Temperature, °F					
Winter (Jan-Mar)	--	--	--	--	65
Spring (Apr-Jun)	--	--	--	--	--
Summer (Jul-Sep)	--	--	--	--	--
Fall (Oct-Dec)	--	--	--	--	65
TRC, mg/L					
Winter (Jan-Mar)	--	--	--	--	0.6
Spring (Apr-Jun)	--	--	--	--	--
Summer (Jul-Sep)	--	--	--	--	--
Fall (Oct-Dec)	--	--	--	--	0.7
TSS, mg/L	25	35	--	--	--
Dissolved Oxygen, mg/L	--	--	--	5.0	--
pH, Standard Units	--	--	--	6.5	9
TDS, mg/L	1200	--	--	--	--

The permit limitations for Outfall 002 (Utah and Salt Lake Canal) are:

Parameter	Outfall 002 Effluent Limitations <sup>1, 2, 3</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Flow, MGD	--	--	--	--	0.34
Temperature, °F	--	--	--	--	75
TSS, mg/L	25	35	--	--	--
pH, Standard Units	--	--	--	6.5	9
TDS, mg/L	--	--	--	--	1200

The permit limitations for Outfall 003R (Reuse) are:

Parameter	Outfall 003R Effluent Limitations <sup>1, 2, 3</sup>				
	Max Monthly Average	Max Weekly Median	Max Daily Average	Minimum	Maximum
pH, Standard Units	--	--	--	6.0	9.0

### SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements have been changed from the previous permit. 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

<sup>1</sup> See Definitions, Part VIII, for definition of terms.

<sup>2</sup> There shall be no discharge of sanitary wastes.

<sup>3</sup> There shall be no visible sheen or floating solids or visible foam in other than trace amounts.

<sup>4</sup> There will be no discharge through Outfall 001 during the spring and summer (April through September).

results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab sheets for metals and toxic organics must be attached to the DMRs.

Self-Monitoring and Reporting Requirements <sup>5</sup>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>6, 7</sup>	Continuous	Recorder	MGD
Temperature	Continuous	Recorder	°F
TRC	Monthly	Grab	mg/L
DO	Monthly	Grab	mg/L
TDS	Monthly	Grab	mg/L
pH	Monthly	Grab	SU
TSS, Effluent	Monthly	Grab	mg/L
Oil & Grease	Quarterly	Grab	mg/L
Metals	Quarterly	Grab	mg/L

### **BIOSOLIDS**

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, this facility does not receive, generate, treat or dispose of biosolids. Therefore 40 CFR 503 does not apply.

### **STORM WATER**

#### **STORMWATER REQUIREMENTS**

The Utah Administrative Code (UAC) R-317-8-3.9 requires storm water permit provisions to include the development of a storm water pollution prevention plan for waste water treatment facilities if the facility meets one or both of the following criteria.

1. Waste water treatment facilities with a design flow of 1.0 MGD or greater, and/or,
2. Waste water treatment facilities with an approved pretreatment program as described in 40CFR Part 403,

Bluffdale does not meet either of the above criteria; therefore this permit does not include storm water provisions. The permit does however include a storm water re-opener provision.

### **PRETREATMENT REQUIREMENTS**

Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR section 403, the State Pretreatment Requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

<sup>5</sup> See Definitions, Part VIII, for definition of terms.

<sup>6</sup> Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

<sup>7</sup> If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

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

### **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.

The Permit And Enforcement Guidance Document For Whole Effluent Toxicity DWQ, February 2018, states that Whole Effluent Toxicity testing is required in UPDES permits where there is reasonable potential to discharge toxics. The Bluffdale is a minor facility discharging approximately 340,000 gallons per day of non-contact cooling water. Comparison of the laboratory analysis performed on their effluent to the waste load analysis on the Jordan River and Utah and Salt Lake Canal discharge is not likely to be toxic. As mentioned above, a reasonable potential analysis was also done for this facility and is included as Attachment 4. This analysis was incomplete because of lack of data. As a result of these analyses, biomonitoring of the effluent will not be required. However, the permit will contain a WET reopener provision.

### **TOTAL MAXIMUM DAILY LOAD REQUIREMENTS**

Bluffdale discharges cooling water into a segment of the Jordan River, which has been identified as impaired for Temperature and Total Dissolved Solids (TDS) based on the 2004, 303(d) assessment process as defined in the Clean Water Act. As required under federal regulation a total maximum daily load (TMDL) will be developed for all impaired waters. The TMDL will focus on developing limitations for those parameters of concern (POC) that were identified during the 305(b) and 303(d) assessment process. POC's are parameters that are in violation of water quality standards or that contribute to impairment of a beneficial use (a major component of the water quality standards).

Since this segment of the Jordan River is currently listed as impaired for Temperature and TDS, it is required by *UAC R317-8-2.2* that the discharge will not cause or contribute to a violation of water quality standards.

The impairment for temperature along this segment of the river is during the Spring and Summer months (April to September). During these months the discharge will not be permitted to go to the river, but will be directed to the irrigation canal and the Bluffdale pressurized irrigation system. This will prevent the thermal component of the cooling water from causing or contributing to further impairment of the river segment. The Standard for the river is 68°F (20°C). The effluent temperature for the system is not expected to exceed 55°F (12.8 °C) during the winter and fall, and has a limit set at 65°F (18.3°C). This will further prevent the discharge from degrading the river with regard to temperature.

The WLA developed TDS limits for the Bluffdale cooling water discharge to Outfall001, as developed in the WLA, is set as 1200 mg/L as a maximum value for any sample collected. This limit does not exceed the TDS standard for the river. As shown in Table 36 and 37 in Cirrus (2010) (reproduced below), in-stream TDS concentrations collected at the Narrow location (STORET 4994720) and Bluffdale Road location (STORET 4994600) from 1995 to 2008 hover near the 1200 mg/L water quality standard, with

some concentrations exceeding the standard, leading to the impaired listing. As the discharger is expected to be able to meet this limit without difficulty and therefore will not exceed the 1200 mg/L standard, DWQ does not believe that the TDS concentrations of the discharge will further degrade the in-stream water quality. This is also the TDS standard for the river. The discharger is expected to be able to meet this limit without difficulty. At or below this limit the discharge will not cause a violation of water quality standards. It should also not impair the designated use for the river.

Table 36. TDS concentrations at the Narrows (4994720) in Segment 8, ranked by concentration (1995-2008).<sup>8</sup>

Date	TDS Concentration (mg/L)
9/15/2004	1730
8/19/2004	1456
12/8/2004	1312
90 <sup>th</sup> Percentile	
1/17/1995	1854
7/5/2004	1272
2/21/1995	1170
3/9/1995	1164
1/27/2005	1164
12/10/1999	1134
1/12/2000	1132
5/3/1995	1076
11/2/2004	1070
3/23/1995	1038
6/14/1995	838
6/7/2000	834
2/29/2000	782
10/7/1999	778
5/24/2000	758
8/26/1999	742
5/18/1995	738
5/5/2000	726
7/15/1999	688
5/31/1995	670
4/5/1995	650
3/27/2000	650
4/19/1995	530

<sup>8</sup> Recreated from Cirrus (2010)

Table 37. TDS concentrations at the Bluffdale Road (4994600) between Segment 7 and Segment 6, ranked by concentration. <sup>9</sup>							
Date	TDS Conc. (mg/L)	Date	TDS Conc. (mg/L)	Date	TDS Conc. (mg/L)	Date	TDS Conc. (mg/L)
9/15/04	1528	3/3/04	1316	7/7/04	1312	8/29/96	1290
8/19/04	1396	7/1/04	1316	6/26/04	1310		
7/14/04	1396	7/5/04	1314	10/23/02	1292		
90 <sup>TH</sup> Percentile							
9/10/03	1282	11/21/96	1108	10/15/97	914	8/26/99	792
7/29/03	1272	2/13/01	1102	5/10/01	908	5/24/00	792
12/8/04	1256	1/27/05	1090	6/18/07	904	2/29/00	786
1/8/04	1256	6/3/03	1048	10/5/00	902	1/13/99	772
6/24/04	1270	11/2/04	1048	1/22/97	894	4/25/06	770
3/19/03	1228	3/9/95	1046	9/6/06	880	3/27/00	758
6/16/04	1222	12/10/99	1044	6/17/08	876	6/1/06	758
1/8/08	1208	1/12/00	1042	5/2/96	860	5/18/95	742
6/22/04	1208	8/7/11	1024	6/7/00	858	6/25/97	738
1/11/06	1202	11/14/10	1022	6/28/00	856	5/31/95	736
2/21/95	1200	9/7/95	1004	6/14/95	852	5/5/00	734
11/20/03	1200	5/22/02	994	9/9/97	852	10/14/98	726
2/12/08	1200	10/10/96	982	4/25/07	844	12/3/98	726
3/7/06	1190	10/12/95	974	4/9/96	836	8/12/98	724
1/29/08	1188	7/17/96	950	10/19/06	836	4/14/04	716
1/7/03	1180	3/18/95	944	5/20/08	822	3/16/99	712
1/23/02	1178	1/11/96	938	3/7/07	814	5/6/99	706
6/2/04	1160	2/20/96	938	3/12/97	812	4/5/95	702
6/9/04	1160	10/24/06	936	7/12/06	808	7/15/99	702
7/9/02	1156	4/16/08	936	5/1/97	802	5/3/95	688
1/17/65	1154	9/25/07	924	7/23/97	798	10/10/01	672
11/28/01	1148	3/23/95	922	12/2/97	796	6/5/98	640
2/11/03	1134	7/25/07	920	4/19/95	794	4/18/02	554
1/23/07	1134	7/25/95	914	10/5/99	794	11/9/95	118
3/5/02	1130						

Currently, a TMDL evaluation is underway for the Jordan River. If the results of the TMDL process establish effluent limits for any of the POC's that are different than the current effluent limits, then it would be required by (40 CFR Part 130) to include these effluent limits in the UPDES permits. Therefore, it is strongly recommended that the facility staff participate in the TMDL development process. The staff at the Division of Water Quality are responsible for scheduling and facilitating stakeholder involvement

<sup>9</sup> Recreated from Cirrus (2010)

in TMDL work. Please contact your UPDES permit writer for information on how to be included in notifications of scheduled TMDL meetings.

**PERMIT DURATION**

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

Drafted by  
Daniel Griffin, Discharge, Biosolids  
Jennifer Robinson, Pretreatment  
Michael George, Storm Water  
Ken Hoffman, Reasonable Potential Analysis  
Dave Wham, Wasteload Analysis  
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Began: April 3, 2018  
Ended: May 3, 2018

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 Tribune and Deseret News.

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 Comments were received regarding this permit. No changes were made.

**ATTACHMENT 1**

*Effluent Monitoring Data*

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### Effluent Monitoring Data.

Month	Flow, MGD			D.O. Min mg/L	pH		TSS, mg/L		Temp, F	TRC, mg/L	TDS Max, mg/L
	Outfall 001	Outfall 002	Outfall 003R		Min	Max	Chronic	Acute			
Dec-12		0									-
Jan-13		0		9.2	9	9	38	22	33	0.5	-
Feb-13		0		9.1	9	9	31	38	34	0.5	-
Mar-13		0		9.4	8.9	9.1	48	25	37	0.5	-
Apr-13				9.4	9		124		65		1122
May-13				8.4	8.85	9.1	41	65	65		1502
Jun-13				8.5	9	9.1	10	24	65		1190
Jul-13				7.5	8.95		10	23	65		693
Aug-13				7.1	9	9	6	18	65		1026
Sep-13				7.7	8.8	9	5	13	65		688
Oct-13				7.8	8.4	8.8	3	6	65		521
Nov-13				8.4	8.8	9	4	12	65		543
Dec-13				8	8.7	8.9			65		562
Jan-14		0									-
Feb-14		0									-
Mar-14	0.1	0.1		8	8.2	8.9	25	35	58	0.5	500
Apr-14		0									-
May-14		0									-
Jun-14		0									-
Jul-14		0	0								-
Aug-14		0									-
Sep-14		0	0								-
Oct-14		0	0								-
Nov-14		0		8.7	8	8.8	220	1140			-
Dec-14		0		8.1	8.4	8.9	564	750			-
Jan-15				8.6	8.7	8.8	ND	ND			984
Feb-15			0	-	8.7	8.9		-			984
Mar-15		0									-
Apr-15		0									-
May-15		0									-
Jun-15		0		8	8.6	8.6	8	8			825
Jul-15		0		8.1	8.8	8.8	8	8			850
Aug-15		0		7.4	8.6	8.6	7	7			930
Sep-15		0		7.4	8.7	8.7	12	12			980
Oct-15		0		7.5	8.7	8.7	20	20			900
Nov-15		0		7.6	8.7	8.7	12	12			800
Dec-15		0		7.9	8.7	8.7	10	10			685
Jan-16		0		8	8.7	8.7	6	6			750
Feb-16				7.7	8.5	8.5	1	1			850
Mar-16				7.7	8.6	8.9	6	12			984
Apr-16		0									
May-16		0		7.7	8.5	8.9	3	9			1150
Jun-16		0		7.6	8.7	8.9	3	7			1050
Jul-16		0		7.5	8.9	9	6	19			1080

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## **ATTACHMENT 2**

### *Wasteload Analysis*

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

**Date:** January 24, 2018

**Prepared by:** Dave Wham  
Standards and Technical Services



**Facility:** Bluffdale Cooling Water Discharge  
UPDES No. UT00025958

**Receiving water:** Jordan River (2B, 3A, 4) and Utah and Salt Lake Canal (2B, 3E, 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	Cooling water discharge; Jordan River	0.34 MGD
002	Cooling water discharge; Utah & Salt Lake Canal	0.34 MGD

Receiving Water

Cooling water from the Data Center may be discharged either to the Utah and Salt Lake Canal (the usual expected operation) or to the Jordan River.

Per UAC R317-2-13.5(a), the designated beneficial uses of Jordan River from confluence with Little Cottonwood Creek to Narrows Diversion are 2B, 3A, 4.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3A - Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Utah Division of Water Quality  
Wasteload Analysis  
Bluffdale Cooling Water Discharge  
UPDES No. UT00025958

As per R317-2-13.9, the designated beneficial uses of irrigation canals and ditches statewide, except as otherwise designated are 2B, 3E, 4.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3E - Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

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). Seasonal critical flow on the Jordan River was calculated using all available data from Salt Lake County's gauge at 9000 South. This site is located downstream of the discharge but was the first data-rich station below the discharge. Calculations used data prior to commencement of the discharge. The discharge is located immediately below multiple diversions at the Jordan Narrows, precluding use of upstream flow data. Ambient water quality for both the Jordan River and the Utah and Salt Lake Canal was characterized using data from DWQ monitoring station #4994790, JORDAN R AT UTAH L OUTLET U121 XING. Flow values for the Utah and Salt Lake Canal were not available. An estimated low flow of 50 cfs during the irrigation season was determined in consultation with the irrigation company. No flow was assumed in the canal during the non-irrigation season.

The critical low flow conditions for Discharge 001 are:

**Table 1. Critical low flow conditions (cfs)**

	Summer	Fall	Winter	Spring
Jordan River	44	39	33	49
Utah & Salt Lake Canal	50	0	0	50

TMDL

According to the Utah's 2016 303(d) Water Quality Assessment Report, the receiving water for the discharge, Jordan River from Bluffdale at 14600 South to Narrows (AU UT16020204-007) is listed as impaired for O/E bioassessment and temperature. Additional impairments are present in downstream stream segments as outlined in Table 2.

**Table 2. Jordan River Segments and Impairments Downstream of Discharge.**

Segment (moving downstream)	Assessment Unit	Impairment Cause
Jordan River from 7800 South to Bluffdale at 14600 South	AU UT16020204-006	TDS, Temp., O/E, Selenium

Utah Division of Water Quality  
 Wasteload Analysis  
 Bluffdale Cooling Water Discharge  
 UPDES No. UT00025958

Jordan River from the confluence with Little Cottonwood Creek to 7800 South	AU UT16020204-005	TDS, Temperature, E. coli
Jordan River from 2100 South to the confluence with Little Cottonwood Creek	AU UT16020204-004	TDS, E. coli, O/E
Jordan River from North Temple to 2100 South	AU UT16020204-003	E. coli, O/E, Phosphorous
Jordan River from Davis County line upstream to North Temple Street	AU UT16020204-002	TDS, E. coli, O/E
Jordan River from Farmington Bay upstream contiguous with the Davis County line	AU UT16020204-001	TDS, E. coli, O/E, Copper

For Outfall 002, these constituents should be evaluated in the effluent against the end of pipe Water Quality Standards to determine whether or not they have reasonable potential to cause or contribute to the existing impairments.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone. For discharges to the Jordan River, the mixing zone model showed complete mixing within 2,500 feet for chronic conditions. For discharge to the Utah and Salt Lake Canal, complete mixing was assumed for the chronic condition. Acute limits were calculated using 50% of the seasonal critical low flow for both discharge points.

Parameters of Concern

The potential parameters of concern identified for the discharge were TDS, temperature, selenium, E. coli, and copper as determined by the impairment status of the receiving water.

WET Limits

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

IC<sub>25</sub> WET limits for Outfall 001 should be based on 1.1% effluent in the spring and summer and 100% in the fall and winter.

IC<sub>25</sub> WET limits for Outfall 002 should be based on 1.2% effluent.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a simple mass balance

**Utah Division of Water Quality  
Wasteload Analysis  
Bluffdale Cooling Water Discharge  
UPDES No. UT00025958**

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.

**Documents:**

WLA Document: *BluffdaleCooling\_WLADoc\_12-25-17.docx*  
Wasteload Analysis and Addendums: *BluffdaleCooling\_WLA\_Canal\_12-25-17.xlsm; BluffdaleCooling\_WLA\_12-25-17.xlsm*

**References:**

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

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

**Discharging Facility:** Bluffdale Cooling Water  
UPDES No: UT-0025958  
Current Flow: 0.34 MGD Design Flow  
Design Flow 0.34 MGD

**Receiving Water:** Utah Salt Lake Canal  
Stream Classification: 2B, 3E, 4  
Stream Flows [cfs]:  
50.0 Summer (July-Sept) Estimate  
0.0 Fall (Oct-Dec) Estimate  
0.0 Winter (Jan-Mar) Estimate  
50.0 Spring (Apr-June) Estimate  
75.0 Average  
Stream TDS Values:  
1098.0 Summer (July-Sept) Average  
1226.0 Fall (Oct-Dec) Average  
1284.0 Winter (Jan-Mar) Average  
938.0 Spring (Apr-June) Average

<b>Effluent Limits:</b>		<b>WQ Standard:</b>	
Flow, MGD:	0.34 MGD	Design Flow	
BOD, mg/l:	25.0 Summer	5.0 Indicator	
Dissolved Oxygen, mg/l NA	Summer	5.0 30 Day Average	
TNH3, Chronic, mg/l: NA	Summer	Varies Function of pH and Temperature	
TDS, mg/l:	1200.0 Summer	1200.0	

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

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

Date: 1/25/2018

Utah Division of Water Quality  
Salt Lake City, Utah

25-Jan-18
4:00 PM

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

**Facilities:** Bluffdale Cooling Water  
**Discharging to:** Utah Salt Lake Canal

**UPDES No:** UT-0025958

**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**

Utah Salt Lake Canal:	2B, 3E, 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	1200.0 mg/l

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**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.249 lbs/day	750.00	ug/l	2.145 lbs/day
Arsenic	190.00 ug/l	0.543 lbs/day	340.00	ug/l	0.972 lbs/day
Cadmium	0.83 ug/l	0.002 lbs/day	10.01	ug/l	0.029 lbs/day
Chromium III	299.41 ug/l	0.856 lbs/day	6264.33	ug/l	17.916 lbs/day
ChromiumVI	11.00 ug/l	0.031 lbs/day	16.00	ug/l	0.046 lbs/day
Copper	34.21 ug/l	0.098 lbs/day	58.66	ug/l	0.168 lbs/day
Iron			1000.00	ug/l	2.860 lbs/day
Lead	22.05 ug/l	0.063 lbs/day	565.75	ug/l	1.618 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.007 lbs/day
Nickel	188.83 ug/l	0.540 lbs/day	1698.37	ug/l	4.857 lbs/day
Selenium	4.60 ug/l	0.013 lbs/day	20.00	ug/l	0.057 lbs/day
Silver	N/A ug/l	N/A lbs/day	51.75	ug/l	0.148 lbs/day
Zinc	434.58 ug/l	1.243 lbs/day	434.58	ug/l	1.243 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 457.51 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	0.004 lbs/day
Chlordane	0.004 ug/l	1.171 lbs/day	1.200	ug/l	0.003 lbs/day
DDT, DDE	0.001 ug/l	0.272 lbs/day	0.550	ug/l	0.002 lbs/day
Dieldrin	0.002 ug/l	0.517 lbs/day	1.250	ug/l	0.004 lbs/day
Endosulfan	0.056 ug/l	15.252 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.626 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	1.035 lbs/day	0.260	ug/l	0.001 lbs/day
Lindane	0.080 ug/l	21.789 lbs/day	1.000	ug/l	0.003 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	3.813 lbs/day	2.000	ug/l	0.006 lbs/day
Pentachlorophenol	13.00 ug/l	3540.681 lbs/day	20.000	ug/l	0.057 lbs/day
Toxephene	0.0002 ug/l	0.054 lbs/day	0.7300	ug/l	0.002 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.01 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	1.72 tons/day

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

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

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	735.37 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	212.44 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.18 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	19.34 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	1.20 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	5719.56 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	26.96 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	2.42 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	11.44 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	3.00 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.38 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	1171.15 lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	1.77 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	128.01 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	108.94 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	4630.12 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	708.14 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	708.14 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.02 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.87 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	215.16 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	10.62 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	463.01 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	626.43 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	2.48 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	0.15 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	7898.44 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	100.77 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0 ug/l	46301.21 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	435.78 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	98.05 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	5.99 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	9.26 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	13.62 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0 ug/l	4630.12 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	163.42 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	517.48 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	3813.04 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	208.36 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	2.21 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	4.36 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4 ug/l	0.38 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	2.23 lbs/day

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Phenol	ug/l	lbs/day	4.6E+06 ug/l	1.25E+06 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	1.61 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	1416.27 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	3268.32 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	32683.21 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	7.90E+05 lbs/day
Benzo(a)anthracene (P/	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.01 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	0.01 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.01 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	2995.96 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	2.42 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	54472.01 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	22.06 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	142.99 lbs/day
				lbs/day
				lbs/day
<b>Pesticides</b>				
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.54 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.54 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.54 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.22 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.22 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 122	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 101	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		

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**Metals**

Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	1171.15 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	59919.21 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.04 lbs/day
Nickel			4600.00 ug/l	1252.86 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	1.72 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

**VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

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

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>			
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>TRC</b>	<b>TDS</b>	
							<b>mg/l</b>	<b>mg/l</b>	
Summer (Irrig. Season)	50.0	21.6	8.2	0.42	1.00	6.83	0.00	1098.0	
Fall	0.0	8.8	8.0	0.29	1.00	---	0.00	1226.0	
Winter	0.0	5.0	7.9	0.27	1.00	---	0.00	1284.0	
Spring	50.0	15.4	8.2	0.19	1.00	---	0.00	938.0	
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	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	0.53*	1.65	0.1*	0.053*	10.0			* 1/2 MDL

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.34300	NA	1200.00	1.71603
Fall	0.34300	NA		
Winter	0.34300	NA		
Spring	0.34300	NA		

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	0.343 MGD	0.531 cfs
Fall	0.343 MGD	0.531 cfs
Winter	0.343 MGD	0.531 cfs
Spring	0.343 MGD	0.531 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.343 MGD. If the discharger is allowed to have a flow greater than 0.343 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 >	3.5% Effluent	[Acute]
	IC25 >	1.1% Effluent	[Chronic]

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**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

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

Season	Concentration	
Summer	25.0 mg/l as BOD5	71.5 lbs/day
Fall	25.0 mg/l as BOD5	71.5 lbs/day
Winter	25.0 mg/l as BOD5	71.5 lbs/day
Spring	25.0 mg/l as BOD5	71.5 lbs/day

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

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

Season	Concentration
Summer	NA
Fall	NA
Winter	NA
Spring	NA

**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	NA mg/l as N	NA lbs/day
	1 Hour Avg. - Acute	NA mg/l as N	NA lbs/day
Fall	4 Day Avg. - Chronic	NA mg/l as N	NA lbs/day
	1 Hour Avg. - Acute	NA mg/l as N	NA lbs/day
Winter	4 Day Avg. - Chronic	NA mg/l as N	NA lbs/day
	1 Hour Avg. - Acute	NA mg/l as N	NA lbs/day
Spring	4 Day Avg. - Chronic	NA mg/l as N	NA lbs/day
	1 Hour Avg. - Acute	NA mg/l as N	NA lbs/day

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

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

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

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

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

Season		Concentration		Load	
Summer	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Fall	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Winter	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Spring	Maximum, Acute	1200.0	mg/l	1.72	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 457.51 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	35,973.6	ug/l	102.9 lbs/day
Arsenic	18,018.64 ug/l	33.3 lbs/day	16,321.5	ug/l	46.7 lbs/day
Cadmium	72.02 ug/l	0.1 lbs/day	477.8	ug/l	1.4 lbs/day
Chromium III	28,438.10 ug/l	52.6 lbs/day	301,368.4	ug/l	861.9 lbs/day
Chromium VI	672.96 ug/l	1.2 lbs/day	582.6	ug/l	1.7 lbs/day
Copper	3,182.81 ug/l	5.9 lbs/day	2,784.9	ug/l	8.0 lbs/day
Iron	N/A	N/A	48,055.7	ug/l	137.4 lbs/day
Lead	2,024.54 ug/l	3.7 lbs/day	27,183.1	ug/l	77.7 lbs/day
Mercury	1.14 ug/l	0.0 lbs/day	115.5	ug/l	0.3 lbs/day
Nickel	17,906.84 ug/l	33.1 lbs/day	81,679.0	ug/l	233.6 lbs/day
Selenium	282.58 ug/l	0.5 lbs/day	884.6	ug/l	2.5 lbs/day
Silver	N/A ug/l	N/A lbs/day	2,489.8	ug/l	7.1 lbs/day

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Zinc	41,377.60 ug/l	76.5 lbs/day	20,906.1	ug/l	59.8 lbs/day
Cyanide	495.19 ug/l	0.9 lbs/day	1,058.5	ug/l	3.0 lbs/day

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

Summer NA	Deg. C.	NA	Deg. F
Fall NA	Deg. C.	NA	Deg. F
Winter NA	Deg. C.	NA	Deg. F
Spring NA	Deg. C.	NA	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	6.64E-03 lbs/day
Chlordane	4.30E-03 ug/l	1.23E-02 lbs/day	1.2E+00	ug/l	5.31E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	2.86E-03 lbs/day	5.5E-01	ug/l	2.43E-03 lbs/day
Dieldrin	1.90E-03 ug/l	5.43E-03 lbs/day	1.3E+00	ug/l	5.53E-03 lbs/day
Endosulfan	5.60E-02 ug/l	1.60E-01 lbs/day	1.1E-01	ug/l	4.87E-04 lbs/day
Endrin	2.30E-03 ug/l	6.58E-03 lbs/day	9.0E-02	ug/l	3.98E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	4.42E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.09E-02 lbs/day	2.6E-01	ug/l	1.15E-03 lbs/day
Lindane	8.00E-02 ug/l	2.29E-01 lbs/day	1.0E+00	ug/l	4.42E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	1.33E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	4.42E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.77E-04 lbs/day
PCB's	1.40E-02 ug/l	4.00E-02 lbs/day	2.0E+00	ug/l	8.85E-03 lbs/day
Pentachlorophenol	1.30E+01 ug/l	3.72E+01 lbs/day	2.0E+01	ug/l	8.85E-02 lbs/day
Toxephene	2.00E-04 ug/l	5.72E-04 lbs/day	7.3E-01	ug/l	3.23E-03 lbs/day

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**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	14.3 lbs/day
Nitrates as N	4.0 mg/l	11.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.1 lbs/day
Total Suspended Solids	90.0 mg/l	257.4 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
<b>Toxic Organics</b>		
Acenaphthene	2.57E+05 ug/l	7.35E+02 lbs/day
Acrolein	7.43E+04 ug/l	2.12E+02 lbs/day
Acrylonitrile	6.29E+01 ug/l	1.80E-01 lbs/day
Benzene	6.76E+03 ug/l	1.93E+01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	4.19E+02 ug/l	1.20E+00 lbs/day
Chlorobenzene	2.00E+06 ug/l	5.72E+03 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	7.33E-02 ug/l	2.10E-04 lbs/day
1,2-Dichloroethane	9.43E+03 ug/l	2.70E+01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	8.48E+02 ug/l	2.42E+00 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	4.00E+03 ug/l	1.14E+01 lbs/day
1,1,2,2-Tetrachloroethane	1.05E+03 ug/l	3.00E+00 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	1.33E+02 ug/l	3.81E-01 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	4.09E+05 ug/l	1.17E+03 lbs/day
2,4,6-Trichlorophenol	6.19E+02 ug/l	1.77E+00 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.48E+04 ug/l	1.28E+02 lbs/day
2-Chlorophenol	3.81E+04 ug/l	1.09E+02 lbs/day
1,2-Dichlorobenzene	1.62E+06 ug/l	4.63E+03 lbs/day
1,3-Dichlorobenzene	2.48E+05 ug/l	7.08E+02 lbs/day

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1,4-Dichlorobenzene	2.48E+05 ug/l	7.08E+02 lbs/day
3,3'-Dichlorobenzidine	7.33E+00 ug/l	2.10E-02 lbs/day
1,1-Dichloroethylene	3.05E+02 ug/l	8.72E-01 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	7.52E+04 ug/l	2.15E+02 lbs/day
1,2-Dichloropropane	3.71E+03 ug/l	1.06E+01 lbs/day
1,3-Dichloropropylene	1.62E+05 ug/l	4.63E+02 lbs/day
2,4-Dimethylphenol	2.19E+05 ug/l	6.26E+02 lbs/day
2,4-Dinitrotoluene	8.67E+02 ug/l	2.48E+00 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	5.14E+01 ug/l	1.47E-01 lbs/day
Ethylbenzene	2.76E+06 ug/l	7.90E+03 lbs/day
Fluoranthene	3.52E+04 ug/l	1.01E+02 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.62E+07 ug/l	4.63E+04 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	1.52E+05 ug/l	4.36E+02 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.43E+04 ug/l	9.80E+01 lbs/day
Dichlorobromomethane(HM)	2.10E+03 ug/l	5.99E+00 lbs/day
Chlorodibromomethane (HM)	3.24E+03 ug/l	9.26E+00 lbs/day
Hexachlorocyclopentadiene	1.62E+06 ug/l	4.63E+03 lbs/day
Isophorone	5.71E+04 ug/l	1.63E+02 lbs/day
Naphthalene		
Nitrobenzene	1.81E+05 ug/l	5.17E+02 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	1.33E+06 ug/l	3.81E+03 lbs/day
4,6-Dinitro-o-cresol	7.29E+04 ug/l	2.08E+02 lbs/day
N-Nitrosodimethylamine	7.71E+02 ug/l	2.21E+00 lbs/day
N-Nitrosodiphenylamine	1.52E+03 ug/l	4.36E+00 lbs/day
N-Nitrosodi-n-propylamine	1.33E+02 ug/l	3.81E-01 lbs/day
Pentachlorophenol	7.81E+02 ug/l	2.23E+00 lbs/day
Phenol	4.38E+08 ug/l	1.25E+06 lbs/day
Bis(2-ethylhexyl)phthalate	5.62E+02 ug/l	1.61E+00 lbs/day
Butyl benzyl phthalate	4.95E+05 ug/l	1.42E+03 lbs/day
Di-n-butyl phthalate	1.14E+06 ug/l	3.27E+03 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.14E+07 ug/l	3.27E+04 lbs/day
Dimethyl phthlate	2.76E+08 ug/l	7.90E+05 lbs/day
Benzo(a)anthracene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Benzo(a)pyrene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Benzo(b)fluoranthene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Benzo(k)fluoranthene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Chrysene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	2.95E+00 ug/l	8.44E-03 lbs/day

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Pyrene (PAH)	1.05E+06 ug/l	3.00E+03 lbs/day
Tetrachloroethylene	8.48E+02 ug/l	2.42E+00 lbs/day
Toluene	1.90E+07 ug/l	5.45E+04 lbs/day
Trichloroethylene	7.71E+03 ug/l	2.21E+01 lbs/day
Vinyl chloride	5.00E+04 ug/l	1.43E+02 lbs/day

**Pesticides**

Aldrin	1.33E-02 ug/l	3.81E-05 lbs/day
Dieldrin	1.33E-02 ug/l	3.81E-05 lbs/day
Chlordane	5.62E-02 ug/l	1.61E-04 lbs/day
4,4'-DDT	5.62E-02 ug/l	1.61E-04 lbs/day
4,4'-DDE	5.62E-02 ug/l	1.61E-04 lbs/day
4,4'-DDD	8.00E-02 ug/l	2.29E-04 lbs/day
alpha-Endosulfan	1.90E+02 ug/l	5.45E-01 lbs/day
beta-Endosulfan	1.90E+02 ug/l	5.45E-01 lbs/day
Endosulfan sulfate	1.90E+02 ug/l	5.45E-01 lbs/day
Endrin	7.71E+01 ug/l	2.21E-01 lbs/day
Endrin aldehyde	7.71E+01 ug/l	2.21E-01 lbs/day
Heptachlor	2.00E-02 ug/l	5.72E-05 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1254 (Arochlor 1254)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1221 (Arochlor 1221)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1232 (Arochlor 1232)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1248 (Arochlor 1248)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1260 (Arochlor 1260)	4.29E-03 ug/l	1.23E-05 lbs/day
PCB-1016 (Arochlor 1016)	4.29E-03 ug/l	1.23E-05 lbs/day

**Pesticide**

Toxaphene	7.14E-02 ug/l	2.04E-04 lbs/day
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**Metals**

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

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**Dioxin**  
Dioxin (2,3,7,8-TCDD)                      1.33E-06 ug/l                      3.81E-09 lbs/day

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum						0.0	N/A
Antimony				409485.6		409485.6	
Arsenic	9522.9				0.0	9522.9	
Barium						0.0	
Beryllium						0.0	
Cadmium	944.8				0.0	944.8	
Chromium (III)					0.0	0.0	
Chromium (VI)	9448.0				0.0	9448.01	
Copper	18970.9					18970.9	
Cyanide		1058.5	#####			#####	495.2
Iron						0.0	
Lead	9448.0				0.0	9448.0	
Mercury				14.28	0.0	14.28	
Nickel				438054.4		438054.4	
Selenium	4606.0				0.0	4606.0	
Silver					0.0	0.0	
Thallium				599.9		599.9	
Zinc						0.0	
Boron	71421.9					71421.9	

**Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]**  
[If Acute is more stringent than Chronic, then the Chronic takes on the Acute value.]

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>
Aluminum	0.0	N/A
Antimony	409485.62	
Arsenic	9522.9	
Asbestos	0.00E+00	
Barium		
Beryllium		
Cadmium	944.8	
Chromium (III)	0.0	
Chromium (VI)	9448.0	
Copper	18970.9	

Acute Controls  
Acute Controls  
Acute Controls  
Acute Controls

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Cyanide	#####	495.2	
Iron	0.0		
Lead	9448.0		Acute Controls
Mercury	14.284		Acute Controls
Nickel	438054.4		Acute Controls
Selenium	4606.0		Acute Controls
Silver	0.0	N/A	
Thallium	599.9		
Zinc	0.0		Acute Controls
Boron	71421.91		

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 required.

**XI. Colorado River Salinity Forum Considerations**

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

**XII. Summary Comments**

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

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**XIII. Notice of UPDES Requirement**

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

**0.0**

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801-538-6052  
File Name: BluffdaleCooling \_WLA\_Canal\_1-24-18.xls

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**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 0.830	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.894	REAER. Coeff. (Ka)20 (Ka)/day 3.225	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 3.351	NBOD Coeff. (Kn)20 1/day 0.600	NBOD Coeff. (Kn)T 1/day 0.679
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.307	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 35.147
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.107						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

Utah Division of Water Quality  
Salt Lake City, Utah

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

**Discharging Facility:** Bluffdale Cooling Water  
UPDES No: UT-0025958  
Current Flow: 0.34 MGD Design Flow  
Design Flow 0.34 MGD

**Receiving Water:** Jordan River  
Stream Classification: 2B, 3A, 4  
Stream Flows [cfs]:  
44.0 Summer (July-Sept) 20th Percentile  
39.0 Fall (Oct-Dec) 20th Percentile  
33.0 Winter (Jan-Mar) 20th Percentile  
49.0 Spring (Apr-June) 20th Percentile  
245.0 Average  
Stream TDS Values:  
1098.0 Summer (July-Sept) Average  
1226.0 Fall (Oct-Dec) Average  
1284.0 Winter (Jan-Mar) Average  
938.0 Spring (Apr-June) Average

<b>Effluent Limits:</b>		<b>WQ Standard:</b>
Flow, MGD:	0.34 MGD Design Flow	
BOD, mg/l:	25.0 Summer	5.0 Indicator
Dissolved Oxygen, mg/l	5.0 Summer	5.5 30 Day Average
TNH3, Chronic, mg/l:	64.4 Summer	Varies Function of pH and Temperature
TDS, mg/l:	1200.0 Summer	1200.0

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

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

Date: 1/25/2018

Utah Division of Water Quality  
Salt Lake City, Utah

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

25-Jan-18

4:00 PM

**Facilities:** Bluffdale Cooling Water  
**Discharging to:** Jordan River

UPDES No: UT-0025958

**THIS IS A DRAFT DOCUMENT**

**I. Introduction**

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and procedures are also considered. The primary in-stream parameters of concern may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), un-ionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

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

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

**II. Receiving Water and Stream Classification**

Jordan River: 2B, 3A, 4  
Antidegradation Review: Level I review completed. Level II review not required.

**III. Numeric Stream Standards for Protection of Aquatic Wildlife**

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average) 4.00 mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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**Acute and Chronic Heavy Metals (Dissolved)**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aluminum	87.00 ug/l**	0.249 lbs/day	750.00	ug/l	2.145 lbs/day
Arsenic	190.00 ug/l	0.543 lbs/day	340.00	ug/l	0.972 lbs/day
Cadmium	0.84 ug/l	0.002 lbs/day	10.01	ug/l	0.029 lbs/day
Chromium III	299.52 ug/l	0.857 lbs/day	6266.62	ug/l	17.923 lbs/day
ChromiumVI	11.00 ug/l	0.031 lbs/day	16.00	ug/l	0.046 lbs/day
Copper	34.22 ug/l	0.098 lbs/day	58.68	ug/l	0.168 lbs/day
Iron			1000.00	ug/l	2.860 lbs/day
Lead	22.06 ug/l	0.063 lbs/day	566.07	ug/l	1.619 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.007 lbs/day
Nickel	188.90 ug/l	0.540 lbs/day	1699.01	ug/l	4.859 lbs/day
Selenium	4.60 ug/l	0.013 lbs/day	20.00	ug/l	0.057 lbs/day
Silver	N/A ug/l	N/A lbs/day	51.79	ug/l	0.148 lbs/day
Zinc	434.75 ug/l	1.243 lbs/day	434.75	ug/l	1.243 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 457.72 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	0.004 lbs/day
Chlordane	0.004 ug/l	1.032 lbs/day	1.200	ug/l	0.003 lbs/day
DDT, DDE	0.001 ug/l	0.240 lbs/day	0.550	ug/l	0.002 lbs/day
Dieldrin	0.002 ug/l	0.456 lbs/day	1.250	ug/l	0.004 lbs/day
Endosulfan	0.056 ug/l	13.441 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.552 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.912 lbs/day	0.260	ug/l	0.001 lbs/day
Lindane	0.080 ug/l	19.202 lbs/day	1.000	ug/l	0.003 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	3.360 lbs/day	2.000	ug/l	0.006 lbs/day
Pentachlorophenol	13.00 ug/l	3120.261 lbs/day	20.000	ug/l	0.057 lbs/day
Toxephene	0.0002 ug/l	0.048 lbs/day	0.7300	ug/l	0.002 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	1.07 lbs/day
Cadmium			10.0 ug/l	0.01 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	1.72 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			50.0 ug/l	12.001 lbs/day
Barium			1000.0 ug/l	240.020 lbs/day
Cadmium			10.0 ug/l	2.400 lbs/day
Chromium			50.0 ug/l	12.001 lbs/day
Lead			50.0 ug/l	12.001 lbs/day
Mercury			2.0 ug/l	0.480 lbs/day
Selenium			10.0 ug/l	2.400 lbs/day
Silver			50.0 ug/l	12.001 lbs/day
Fluoride (3)			1.4 ug/l	0.336 lbs/day
to			2.4 ug/l	0.576 lbs/day
Nitrates as N			10.0 ug/l	2.400 lbs/day

**Chlorophenoxy Herbicides**

2,4-D	100.0 ug/l	24.002 lbs/day
2,4,5-TP	10.0 ug/l	2.400 lbs/day
Endrin	0.2 ug/l	0.048 lbs/day
ocyclohexane (Lindane)	4.0 ug/l	0.960 lbs/day
Methoxychlor	100.0 ug/l	24.002 lbs/day
Toxaphene	5.0 ug/l	1.200 lbs/day

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	1200.00 ug/l	288.02 lbs/day	2700.0 ug/l	648.05 lbs/day
Acrolein	320.00 ug/l	76.81 lbs/day	780.0 ug/l	187.22 lbs/day
Acrylonitrile	0.06 ug/l	0.01 lbs/day	0.7 ug/l	0.16 lbs/day
Benzene	1.20 ug/l	0.29 lbs/day	71.0 ug/l	17.04 lbs/day
Benzidine	0.00012 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	0.25 ug/l	0.06 lbs/day	4.4 ug/l	1.06 lbs/day
Chlorobenzene	680.00 ug/l	163.21 lbs/day	21000.0 ug/l	5040.42 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	0.00075 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	0.38 ug/l	0.09 lbs/day	99.0 ug/l	23.76 lbs/day

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1,1,1-Trichloroethane				
Hexachloroethane	1.90 ug/l	0.46 lbs/day	8.9 ug/l	2.14 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	0.61 ug/l	0.15 lbs/day	42.0 ug/l	10.08 lbs/day
1,1,2,2-Tetrachloroethane	0.17 ug/l	0.04 lbs/day	11.0 ug/l	2.64 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	0.03 ug/l	0.01 lbs/day	1.4 ug/l	0.34 lbs/day
2-Chloroethyl vinyl ether	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	1700.00 ug/l	408.03 lbs/day	4300.0 ug/l	1032.09 lbs/day
2,4,6-Trichlorophenol	2.10 ug/l	0.50 lbs/day	6.5 ug/l	1.56 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	5.70 ug/l	1.37 lbs/day	470.0 ug/l	112.81 lbs/day
2-Chlorophenol	120.00 ug/l	28.80 lbs/day	400.0 ug/l	96.01 lbs/day
1,2-Dichlorobenzene	2700.00 ug/l	648.05 lbs/day	17000.0 ug/l	4080.34 lbs/day
1,3-Dichlorobenzene	400.00 ug/l	96.01 lbs/day	2600.0 ug/l	624.05 lbs/day
1,4-Dichlorobenzene	400.00 ug/l	96.01 lbs/day	2600.0 ug/l	624.05 lbs/day
3,3'-Dichlorobenzidine	0.04 ug/l	0.01 lbs/day	0.1 ug/l	0.02 lbs/day
1,1-Dichloroethylene	0.06 ug/l	0.01 lbs/day	3.2 ug/l	0.77 lbs/day
1,2-trans-Dichloroethylene	700.00 ug/l	168.01 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	93.00 ug/l	22.32 lbs/day	790.0 ug/l	189.62 lbs/day
1,2-Dichloropropane	0.52 ug/l	0.12 lbs/day	39.0 ug/l	9.36 lbs/day
1,3-Dichloropropylene	10.00 ug/l	2.40 lbs/day	1700.0 ug/l	408.03 lbs/day
2,4-Dimethylphenol	540.00 ug/l	129.61 lbs/day	2300.0 ug/l	552.05 lbs/day
2,4-Dinitrotoluene	0.11 ug/l	0.03 lbs/day	9.1 ug/l	2.18 lbs/day
2,6-Dinitrotoluene	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	0.04 ug/l	0.01 lbs/day	0.5 ug/l	0.13 lbs/day
Ethylbenzene	3100.00 ug/l	744.06 lbs/day	29000.0 ug/l	6960.58 lbs/day
Fluoranthene	300.00 ug/l	72.01 lbs/day	370.0 ug/l	88.81 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	1400.00 ug/l	336.03 lbs/day	170000.0 ug/l	40803.41 lbs/day
Bis(2-chloroethoxy) met	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	4.70 ug/l	1.13 lbs/day	1600.0 ug/l	384.03 lbs/day
Methyl chloride (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	4.30 ug/l	1.03 lbs/day	360.0 ug/l	86.41 lbs/day
Dichlorobromomethane	0.27 ug/l	0.06 lbs/day	22.0 ug/l	5.28 lbs/day
Chlorodibromomethane	0.41 ug/l	0.10 lbs/day	34.0 ug/l	8.16 lbs/day
Hexachlorobutadiene(c)	0.44 ug/l	0.11 lbs/day	50.0 ug/l	12.00 lbs/day
Hexachlorocyclopentadi	240.00 ug/l	57.60 lbs/day	17000.0 ug/l	4080.34 lbs/day
Isophorone	8.40 ug/l	2.02 lbs/day	600.0 ug/l	144.01 lbs/day
Naphthalene				
Nitrobenzene	17.00 ug/l	4.08 lbs/day	1900.0 ug/l	456.04 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	70.00 ug/l	16.80 lbs/day	14000.0 ug/l	3360.28 lbs/day
4,6-Dinitro-o-cresol	13.00 ug/l	3.12 lbs/day	765.0 ug/l	183.62 lbs/day
N-Nitrosodimethylamine	0.00069 ug/l	0.00 lbs/day	8.1 ug/l	1.94 lbs/day
N-Nitrosodiphenylamine	5.00 ug/l	1.20 lbs/day	16.0 ug/l	3.84 lbs/day
N-Nitrosodi-n-propylami	0.01 ug/l	0.00 lbs/day	1.4 ug/l	0.34 lbs/day
Pentachlorophenol	0.28 ug/l	0.07 lbs/day	8.2 ug/l	1.97 lbs/day

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Phenol	2.10E+04 ug/l	5.04E+03 lbs/day	4.6E+06 ug/l	1.10E+06 lbs/day
Bis(2-ethylhexyl)phthala	1.80 ug/l	0.43 lbs/day	5.9 ug/l	1.42 lbs/day
Butyl benzyl phthalate	3000.00 ug/l	720.06 lbs/day	5200.0 ug/l	1248.10 lbs/day
Di-n-butyl phthalate	2700.00 ug/l	648.05 lbs/day	12000.0 ug/l	2880.24 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	23000.00 ug/l	5520.46 lbs/day	120000.0 ug/l	28802.41 lbs/day
Dimethyl phthlate	3.13E+05 ug/l	7.51E+04 lbs/day	2.9E+06 ug/l	6.96E+05 lbs/day
Benzo(a)anthracene (P/	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(a)pyrene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(b)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Benzo(k)fluoranthene (F	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Chrysene (PAH)	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	9600.00 ug/l	2304.19 lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Indeno(1,2,3-cd)pyrene	0.0028 ug/l	0.00 lbs/day	0.0 ug/l	0.01 lbs/day
Pyrene (PAH)	960.00 ug/l	230.42 lbs/day	11000.0 ug/l	2640.22 lbs/day
Tetrachloroethylene	0.80 ug/l	0.19 lbs/day	8.9 ug/l	2.14 lbs/day
Toluene	6800.00 ug/l	1632.14 lbs/day	200000 ug/l	48004.01 lbs/day
Trichloroethylene	2.70 ug/l	0.65 lbs/day	81.0 ug/l	19.44 lbs/day
Vinyl chloride	2.00 ug/l	0.48 lbs/day	525.0 ug/l	126.01 lbs/day
			0.0	0.00 lbs/day
<b>Pesticides</b>			0.0	0.00 lbs/day
Aldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	0.0001 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	0.0006 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	0.0008 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	0.9300 ug/l	0.22 lbs/day	2.0 ug/l	0.48 lbs/day
beta-Endosulfan	0.9300 ug/l	0.22 lbs/day	2.0 ug/l	0.48 lbs/day
Endosulfan sulfate	0.9300 ug/l	0.22 lbs/day	2.0 ug/l	0.48 lbs/day
Endrin	0.7600 ug/l	0.18 lbs/day	0.8 ug/l	0.19 lbs/day
Endrin aldehyde	0.7600 ug/l	0.18 lbs/day	0.8 ug/l	0.19 lbs/day
Heptachlor	0.0002 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 122	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 123	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 124	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 126	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 10	0.000044 ug/l	0.00 lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	0.000750 ug/l	0.00	0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	1.30E-08 ug/l	0.00 lbs/day	1.40E-08	0.00

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**Metals**

Antimony	14.0 ug/l	3.36 lbs/day		
Arsenic	50.0 ug/l	12.00 lbs/day	4300.00 ug/l	1032.09 lbs/day
Asbestos	7.00E+06 ug/l	1.68E+06 lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	1.30E+03 ug/l	312.03 lbs/day	2.2E+05 ug/l	52804.41 lbs/day
Lead	700.0 ug/l	168.01 lbs/day		
Mercury			0.15 ug/l	0.04 lbs/day
Nickel			4600.00 ug/l	1104.09 lbs/day
Selenium	0.1 ug/l	0.03 lbs/day		
Silver	610.0 ug/l	146.41 lbs/day		
Thallium			6.30 ug/l	1.51 lbs/day
Zinc				

**There are additional standards that apply to this receiving water, but were not considered in this modeling/waste load allocation analysis.**

**VII. Mathematical Modeling of Stream Quality**

Model configuration was accomplished utilizing standard modeling procedures. Data points were plotted and coefficients adjusted as required to match observed data as closely as possible.

The modeling approach used in this analysis included one or a combination of the following models.

(1) The Utah River Model, Utah Division of Water Quality, 1992. Based upon STREAMDO IV (Region VIII) and Supplemental Ammonia Toxicity Models; EPA Region VIII, Sept. 1990 and QUAL2E (EPA, Athens, GA).

(2) Utah Ammonia/Chlorine Model, Utah Division of Water Quality, 1992.

(3) AMMTOX Model, University of Colorado, Center of Limnology, and EPA Region 8

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

Coefficients used in the model were based, in part, upon the following references:

(1) Rates, Constants, and Kinetics Formulations in Surface Water Quality Modeling. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Athens Georgia. EPA/600/3-85/040 June 1985.

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	Stream							
	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)	44.0	21.6	8.2	0.42	1.00	6.83	0.00	1098.0
Fall	39.0	8.8	8.0	0.29	1.00	---	0.00	1226.0
Winter	33.0	5.0	7.9	0.27	1.00	---	0.00	1284.0
Spring	49.0	15.4	8.2	0.19	1.00	---	0.00	938.0
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	1.59*	0.53*	0.053*	0.53*	2.65*	0.53*	0.83*	0.53*
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron		
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		
All Seasons	0.0000	0.53*	1.65	0.1*	0.053*	10.0		* 1/2 MDL

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**Projected Discharge Information**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	0.34300	NA	1200.00	1.71603
Fall	0.34300	NA		
Winter	0.34300	NA		
Spring	0.34300	NA		

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	0.343 MGD	0.531 cfs
Fall	0.343 MGD	0.531 cfs
Winter	0.343 MGD	0.531 cfs
Spring	0.343 MGD	0.531 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.343 MGD. If the discharger is allowed to have a flow greater than 0.343 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 >	8.0% Effluent	[Acute]
	IC25 >	1.2% Effluent	[Chronic]

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**Effluent Limitation for Biological Oxygen Demand (BOD) based upon Water Quality Standards or Regulations**

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

Season	Concentration	
Summer	25.0 mg/l as BOD5	71.5 lbs/day
Fall	25.0 mg/l as BOD5	71.5 lbs/day
Winter	25.0 mg/l as BOD5	71.5 lbs/day
Spring	25.0 mg/l as BOD5	71.5 lbs/day

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

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

Season	Concentration
Summer	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	64.4 mg/l as N	184.3 lbs/day
	1 Hour Avg. - Acute	157.0 mg/l as N	449.2 lbs/day
Fall	4 Day Avg. - Chronic	191.0 mg/l as N	546.2 lbs/day
	1 Hour Avg. - Acute	223.2 mg/l as N	638.2 lbs/day
Winter	4 Day Avg. - Chronic	421.5 mg/l as N	1,205.5 lbs/day
	1 Hour Avg. - Acute	1273.4 mg/l as N	3,642.1 lbs/day
Spring	4 Day Avg. - Chronic	153.2 mg/l as N	0.0 lbs/day
	1 Hour Avg. - Acute	179.9 mg/l as N	0.0 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.0%.

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

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

Season		Concentration		Load	
Summer	4 Day Avg. - Chronic	0.915	mg/l	2.62	lbs/day
	1 Hour Avg. - Acute	0.803	mg/l	2.30	lbs/day
Fall	4 Day Avg. - Chronic	0.812	mg/l	2.32	lbs/day
	1 Hour Avg. - Acute	0.714	mg/l	2.04	lbs/day
Winter	4 Day Avg. - Chronic	0.689	mg/l	1.97	lbs/day
	1 Hour Avg. - Acute	0.607	mg/l	1.74	lbs/day
Spring	4 Day Avg. - Chronic	1.018	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.892	mg/l	0.00	lbs/day

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

Season		Concentration		Load	
Summer	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Fall	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Winter	Maximum, Acute	1200.0	mg/l	1.72	tons/day
Spring	Maximum, Acute	1200.0	mg/l	1.72	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 457.72 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	31,746.8	ug/l	90.8 lbs/day
Arsenic	15,879.20 ug/l	29.4 lbs/day	14,403.7	ug/l	41.2 lbs/day
Cadmium	63.50 ug/l	0.1 lbs/day	421.9	ug/l	1.2 lbs/day
Chromium III	25,070.62 ug/l	46.3 lbs/day	266,052.9	ug/l	760.9 lbs/day
Chromium VI	593.53 ug/l	1.1 lbs/day	514.6	ug/l	1.5 lbs/day
Copper	2,806.07 ug/l	5.2 lbs/day	2,458.8	ug/l	7.0 lbs/day
Iron	N/A	N/A	42,409.0	ug/l	121.3 lbs/day
Lead	1,785.29 ug/l	3.3 lbs/day	24,002.7	ug/l	68.6 lbs/day
Mercury	1.01 ug/l	0.0 lbs/day	101.9	ug/l	0.3 lbs/day
Nickel	15,786.65 ug/l	29.2 lbs/day	72,108.5	ug/l	206.2 lbs/day
Selenium	249.22 ug/l	0.5 lbs/day	780.8	ug/l	2.2 lbs/day
Silver	N/A ug/l	N/A lbs/day	2,198.9	ug/l	6.3 lbs/day

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Zinc	36,478.20 ug/l	67.4 lbs/day	18,456.5	ug/l	52.8 lbs/day
Cyanide	436.39 ug/l	0.8 lbs/day	934.1	ug/l	2.7 lbs/day

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

Summer	100.0 Deg. C.	212.0 Deg. F
Fall	100.0 Deg. C.	212.0 Deg. F
Winter	100.0 Deg. C.	212.0 Deg. F
Spring	100.0 Deg. C.	212.0 Deg. F

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

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

	4 Day Average		1 Hour Average		
	Concentration	Load	Concentration		Load
Aldrin			1.5E+00	ug/l	6.64E-03 lbs/day
Chlordane	4.30E-03 ug/l	1.23E-02 lbs/day	1.2E+00	ug/l	5.31E-03 lbs/day
DDT, DDE	1.00E-03 ug/l	2.86E-03 lbs/day	5.5E-01	ug/l	2.43E-03 lbs/day
Dieldrin	1.90E-03 ug/l	5.43E-03 lbs/day	1.3E+00	ug/l	5.53E-03 lbs/day
Endosulfan	5.60E-02 ug/l	1.60E-01 lbs/day	1.1E-01	ug/l	4.87E-04 lbs/day
Endrin	2.30E-03 ug/l	6.58E-03 lbs/day	9.0E-02	ug/l	3.98E-04 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	4.42E-05 lbs/day
Heptachlor	3.80E-03 ug/l	1.09E-02 lbs/day	2.6E-01	ug/l	1.15E-03 lbs/day
Lindane	8.00E-02 ug/l	2.29E-01 lbs/day	1.0E+00	ug/l	4.42E-03 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	1.33E-04 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	4.42E-05 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.77E-04 lbs/day
PCB's	1.40E-02 ug/l	4.00E-02 lbs/day	2.0E+00	ug/l	8.85E-03 lbs/day
Pentachlorophenol	1.30E+01 ug/l	3.72E+01 lbs/day	2.0E+01	ug/l	8.85E-02 lbs/day
Toxephene	2.00E-04 ug/l	5.72E-04 lbs/day	7.3E-01	ug/l	3.23E-03 lbs/day

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**Effluent Targets for Pollution Indicators  
Based upon Water Quality Standards**

In-stream criteria of downstream segments for Pollution Indicators will be met with an effluent limit as follows:

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	14.3 lbs/day
Nitrates as N	4.0 mg/l	11.4 lbs/day
Total Phosphorus as P	0.05 mg/l	0.1 lbs/day
Total Suspended Solids	90.0 mg/l	257.4 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
<b>Toxic Organics</b>		
Acenaphthene	1.01E+05 ug/l	2.88E+02 lbs/day
Acrolein	2.69E+04 ug/l	7.68E+01 lbs/day
Acrylonitrile	4.95E+00 ug/l	1.42E-02 lbs/day
Benzene	1.01E+02 ug/l	2.88E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	2.10E+01 ug/l	6.00E-02 lbs/day
Chlorobenzene	5.71E+04 ug/l	1.63E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	6.29E-02 ug/l	1.80E-04 lbs/day
1,2-Dichloroethane	3.19E+01 ug/l	9.12E-02 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	1.59E+02 ug/l	4.56E-01 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	5.12E+01 ug/l	1.46E-01 lbs/day
1,1,2,2-Tetrachloroethane	1.43E+01 ug/l	4.08E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	2.60E+00 ug/l	7.44E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	1.43E+05 ug/l	4.08E+02 lbs/day
2,4,6-Trichlorophenol	1.76E+02 ug/l	5.04E-01 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	4.78E+02 ug/l	1.37E+00 lbs/day
2-Chlorophenol	1.01E+04 ug/l	2.88E+01 lbs/day
1,2-Dichlorobenzene	2.27E+05 ug/l	6.48E+02 lbs/day
1,3-Dichlorobenzene	3.36E+04 ug/l	9.60E+01 lbs/day

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1,4-Dichlorobenzene	3.36E+04 ug/l	9.60E+01 lbs/day
3,3'-Dichlorobenzidine	3.36E+00 ug/l	9.60E-03 lbs/day
1,1-Dichloroethylene	4.78E+00 ug/l	1.37E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	7.80E+03 ug/l	2.23E+01 lbs/day
1,2-Dichloropropane	4.36E+01 ug/l	1.25E-01 lbs/day
1,3-Dichloropropylene	8.39E+02 ug/l	2.40E+00 lbs/day
2,4-Dimethylphenol	4.53E+04 ug/l	1.30E+02 lbs/day
2,4-Dinitrotoluene	9.23E+00 ug/l	2.64E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	3.36E+00 ug/l	9.60E-03 lbs/day
Ethylbenzene	2.60E+05 ug/l	7.44E+02 lbs/day
Fluoranthene	2.52E+04 ug/l	7.20E+01 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	1.17E+05 ug/l	3.36E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	3.94E+02 ug/l	1.13E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	3.61E+02 ug/l	1.03E+00 lbs/day
Dichlorobromomethane(HM)	2.27E+01 ug/l	6.48E-02 lbs/day
Chlorodibromomethane (HM)	3.44E+01 ug/l	9.84E-02 lbs/day
Hexachlorocyclopentadiene	2.01E+04 ug/l	5.76E+01 lbs/day
Isophorone	7.05E+02 ug/l	2.02E+00 lbs/day
Naphthalene		
Nitrobenzene	1.43E+03 ug/l	4.08E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	5.87E+03 ug/l	1.68E+01 lbs/day
4,6-Dinitro-o-cresol	1.09E+03 ug/l	3.12E+00 lbs/day
N-Nitrosodimethylamine	5.79E-02 ug/l	1.66E-04 lbs/day
N-Nitrosodiphenylamine	4.20E+02 ug/l	1.20E+00 lbs/day
N-Nitrosodi-n-propylamine	4.20E-01 ug/l	1.20E-03 lbs/day
Pentachlorophenol	2.35E+01 ug/l	6.72E-02 lbs/day
Phenol	1.76E+06 ug/l	5.04E+03 lbs/day
Bis(2-ethylhexyl)phthalate	1.51E+02 ug/l	4.32E-01 lbs/day
Butyl benzyl phthalate	2.52E+05 ug/l	7.20E+02 lbs/day
Di-n-butyl phthalate	2.27E+05 ug/l	6.48E+02 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	1.93E+06 ug/l	5.52E+03 lbs/day
Dimethyl phthlate	2.63E+07 ug/l	7.51E+04 lbs/day
Benzo(a)anthracene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Benzo(a)pyrene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Benzo(b)fluoranthene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Benzo(k)fluoranthene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Chrysene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	2.35E-01 ug/l	6.72E-04 lbs/day

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Pyrene (PAH)	8.06E+04 ug/l	2.30E+02 lbs/day
Tetrachloroethylene	6.71E+01 ug/l	1.92E-01 lbs/day
Toluene	5.71E+05 ug/l	1.63E+03 lbs/day
Trichloroethylene	2.27E+02 ug/l	6.48E-01 lbs/day
Vinyl chloride	1.68E+02 ug/l	4.80E-01 lbs/day
<b>Pesticides</b>		
Aldrin	1.09E-02 ug/l	3.12E-05 lbs/day
Dieldrin	1.17E-02 ug/l	3.36E-05 lbs/day
Chlordane	4.78E-02 ug/l	1.37E-04 lbs/day
4,4'-DDT	4.95E-02 ug/l	1.42E-04 lbs/day
4,4'-DDE	4.95E-02 ug/l	1.42E-04 lbs/day
4,4'-DDD	6.97E-02 ug/l	1.99E-04 lbs/day
alpha-Endosulfan	7.80E+01 ug/l	2.23E-01 lbs/day
beta-Endosulfan	7.80E+01 ug/l	2.23E-01 lbs/day
Endosulfan sulfate	7.80E+01 ug/l	2.23E-01 lbs/day
Endrin	6.38E+01 ug/l	1.82E-01 lbs/day
Endrin aldehyde	6.38E+01 ug/l	1.82E-01 lbs/day
Heptachlor	1.76E-02 ug/l	5.04E-05 lbs/day
Heptachlor epoxide		
<b>PCB's</b>		
PCB 1242 (Arochlor 1242)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1254 (Arochlor 1254)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1221 (Arochlor 1221)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1232 (Arochlor 1232)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1248 (Arochlor 1248)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1260 (Arochlor 1260)	3.69E-03 ug/l	1.06E-05 lbs/day
PCB-1016 (Arochlor 1016)	3.69E-03 ug/l	1.06E-05 lbs/day
<b>Pesticide</b>		
Toxaphene	6.13E-02 ug/l	1.75E-04 lbs/day
<b>Metals</b>		
Antimony	1174.90 ug/l	3.36 lbs/day
Arsenic	4130.16 ug/l	11.81 lbs/day
Asbestos	5.87E+08 ug/l	1.68E+06 lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	109098.22 ug/l	312.03 lbs/day
Cyanide	58745.20 ug/l	168.01 lbs/day
Lead	0.00	0.00
Mercury	11.75 ug/l	0.03 lbs/day
Nickel	51192.24 ug/l	146.41 lbs/day
Selenium	0.000	0.00
Silver	0.00	0.00
Thallium	142.67 ug/l	0.41 lbs/day
Zinc		



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Cyanide	934.1	436.4	
Iron	42409.0		
Lead	8326.2	1785.3	
Mercury	11.749	1.007	
Nickel	51192.2	15787	
Selenium	780.8	249.2	
Silver	2198.9	N/A	
Thallium	142.7		
Zinc	18456.5	36478.2	Acute Controls
Boron	62941.28		

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. 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 required.

**XI. Colorado River Salinity Forum Considerations**

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

**XII. Summary Comments**

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

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**XIII. Notice of UPDES Requirement**

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

**THIS IS A DRAFT DOCUMENT**

Utah Division of Water Quality  
801-538-6052  
File Name: Bluffdale\_Cooling \_WLA\_1-25-18

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**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 2.153	REAER. Coeff. (Ka)20 (Ka)/day 16.860	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 17.516	NBOD Coeff. (Kn)20 1/day 0.600	NBOD Coeff. (Kn)T 1/day 0.679
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.307	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 35.147
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.107						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

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## **ATTACHMENT 3**

### *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 Analysis<sup>10</sup>. 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.

**(REASONABLE POTENTIAL LANGUAGE )**

As a result of the ratio of in stream low flow and maximum discharge flow (62:1) the WLA indicated limits are relatively high. The nature of the wastewater being treated (noncontact cooling water) has been an indicator of a low likely hood of metals being present in the effluent. The flows at the discharge have also been lower and unpredictable. As a result of this Bluffdale has not been able to properly monitor metals in the past which has leaves us with insufficient data to complete a proper RP. Metals monitoring will remain the same in the renewal permit.

Outfall 001 Proposed WLA Indicated Metals Limits				
	ug/l		mg/l	
	Acute	Chronic	Acute	Chronic
Aluminum	31,747		31.7	
Antimony	1,175		1.2	
Arsenic	4,130	15,879	4.1	15.9
Cadmium	422	64	0.4	0.1
Chromium (III)	266,053	2,507	266.1	2.5
Chromium (VI)	515	594	0.5	0.6
Copper	245,838	2,806	245.8	2.8
Cyanide	934	436	0.9	0.4
Iron	42,409		42.4	
Lead	8,326	1785.3	8.3	1.8
Mercury	12	1	0.0	0.0
Nickel	51,192	14,787	51.2	14.8
Selenium	781	249	0.8	0.2
Silver	2,199		2.2	
Zinc	18,457	36,478	18.5	36.5

<sup>10</sup> See Reasonable Potential Analysis Guidance for definitions of terms

Outfall 001 Proposed WLA Indicated Limits				
	Concentration, mg/l		Load, lds/day	
Season	Chronic	Acute	Chronic	Acute
Ammonia				
Summer	64	157	3	8
Fall	191	223	10	12
Winter	422	1,273	22	68
Spring	153	180	8	10
TRC				
Summer	0.915	0.803	0.0488	0.0429
Fall	0.812	0.714	0.0433	0.0381
Winter	0.689	0.607	0.0368	0.0324
Spring	1.018	0.892	0.0543	0.0476

Proposed WLA Indicated Limits				
	Concentration, mg/l		Load, lds/day	
Season	Chronic	Acute	Chronic	Acute
Ammonia				
Summer	102,478	72,337	5,469	3,860
Fall	224,733	128,599	11,993	6,863
Winter	143,149	7,639	7,639	5,695
Spring	224,728	128,599	1,193	6,863
TRC				
All	629	764	34	41