

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Industrial Permit No. UT0022403

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

Jordanelle Special Service District

is hereby authorized to discharge from its water treatment facility to receiving waters named

Jordanelle Reservoir,

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

This permit shall become effective on June 1, 2018.

This permit expires at midnight on May 31, 2023.

Signed this 13th day of April, 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 Number
001

Location of Discharge Outfall
Located at latitude 40° 38' 03" and longitude 111° 26' 13". The effluent is discharged from the southeast corner of the settling pond above the high water mark of the Jordanelle Reservoir.

- 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 chronic toxicity in Outfall 001, as defined in *Part VIII*, and determined by test procedures described in *Part I. C.4* of this permit.
 2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

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Effluent Limitations *a			
Parameter	Maximum Monthly Average	Daily Minimum	Daily Maximum
TSS, mg/L	20	NA	30
Total Recoverable Copper, mg/L	NA	NA	0.056
Total Recoverable Copper lbs/day	NA	NA	5.6
Total Recoverable Mercury, mg/L	0.00017	NA	0.002
Total Recoverable Mercury, lbs/day	NA	NA	0.7
Total Recoverable Lead, mg/L	0.012	NA	0.165
Total Recoverable Lead, lbs/day	1.2	NA	NA
Total Recoverable Zinc, mg/L	NA	NA	0.5
Total Recoverable Zinc, lbs/day	NA	NA	50
Total Recoverable Aluminum, mg/L	1.37	NA	2.43
Total Recoverable Aluminum, lbs/day	137	NA	243
Oil & Grease, mg/L	NA	NA	10
pH, Standard Units	NA	6.5	9
Whole Effluent Toxicity (WET), Chronic Biomonitoring	NA	NA	IC ₂₅ > 5% effluent

NA – Not Applicable mg/L – milligrams per liter lbs/day – pounds per day

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow	Daily	Recorder	MGD
TSS	Monthly	Grab	mg/L
Total Recoverable Copper	Quarterly	Composite	mg/L
Total Recoverable Mercury	Yearly	Composite/Grab	mg/L
Total Recoverable Lead	Quarterly	Composite	mg/L
Total Recoverable Zinc	Monthly	Composite	mg/L
Total Recoverable Aluminum *b	Quarterly	Composite	mg/L
Oil & Grease *c	Weekly	Visual/Grab	mg/L
WET, Chronic Biomonitoring	Quarterly	Composite	Pass/Fail
pH	Daily	Grab	Standard Units
Total Recoverable Arsenic	Quarterly	Grab	mg/L
Total Recoverable Boron	Quarterly	Grab	mg/L
Total Recoverable Cadmium	Quarterly	Grab	mg/L
Total Recoverable Chromium	Quarterly	Grab	mg/L
Total Recoverable Nickel	Quarterly	Grab	mg/L
Total Recoverable Selenium	Quarterly	Grab	mg/L
Total Recoverable Silver	Quarterly	Grab	mg/L

MGD – million gallons per day mg/L – milligrams per liter

*a See Definitions, *Part VI*, for definition of terms.

*b Sample required only if alum or aluminum additives are added in the treatment process.

*c Oil & Grease shall be sampled when sheen is present or visible. If no sheen is present or visible, report NA.

3. Chronic Whole Effluent Toxicity (WET) Testing.

- a. *Whole Effluent Testing – Chronic Toxicity.* Starting on the effective date of this permit, the permittee shall quarterly conduct chronic short-term toxicity tests on a composite sample of the final effluent. The sample shall be collected at outfall 001 before mixing with the receiving water.

Three samples are required and samples shall be collected on Monday, Wednesday and Friday of each sampling period or collected on a two day progression for each sampling period. This may be changed with Director approval.

The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition*, October 2002, EPA—821-R-02-013 as per 40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS . Test species shall consist of *Ceriodaphnia dubia*.

A multi dilution test consisting of at least five concentrations and a control is required at two dilutions below and two above the RWC, if possible. If test acceptability criteria are not met for control survival, growth, or reproduction, the test shall be considered invalid. A valid replacement test is required within the specified sampling period to remain in compliance with this permit. 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 5% effluent concentration (equivalent to the RWC). If a sample is found to be chronically toxic during a routine test, the monitoring frequency shall become biweekly (see Part 3.b. Accelerated Testing). If possible, dilution water should be obtained from the receiving stream.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) information submitted via NetDMR for the end of the required reporting period (e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28). The format for the report shall be consistent with Appendix C of “Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity, Utah Division of Water Quality, January, 2017.

If the results for ten consecutive tests indicate no chronic toxicity, the permittee may submit a request to the Director to allow a reduction in chronic toxicity testing by alternating species, or using only the most sensitive species. The permit issuing authority may approve or deny the request based on the results and other available information without public notice. If the request is approved, the test procedures are to be the same as specified above for the test species. Under no circumstances shall monitoring for WET at major facilities be reduced less than quarterly. Minor facilities may be less than quarterly at the discretion of the Director.

- b. *Accelerated Testing.* When whole effluent toxicity is indicated during routine WET testing as specified in this permit, the permittee shall notify the Director in writing

within 5 days after becoming aware of the test result. The permittee shall perform an accelerated schedule of WET testing to establish whether a pattern of toxicity exists unless the permittee notifies the Director and commences a PTI, TIE, or a TRE. Accelerated testing or the PTI, TIE, or TRE will begin within fourteen days after the permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under Part I. Pattern of Toxicity. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.

- c. *Pattern of Toxicity.* A pattern of toxicity is defined by the results of a series of up to five biomonitoring tests pursuant to the accelerated testing requirements using a full set of dilutions for acute (five plus the control) and five effluent dilutions for chronic (five plus the control), on the species found to be more sensitive, once every week for up to five consecutive weeks for acute and once every two weeks up to ten consecutive weeks for chronic.

If two (2) consecutive tests (not including the scheduled test which triggered the search for a pattern of toxicity) do not result in an exceedance of the acute or chronic toxicity criteria, no further accelerated testing will be required and no pattern of toxicity will be found to exist. The permittee will provide written verification to the Director within 5 days of determining no pattern of toxicity exists, and resume routine monitoring.

A pattern of toxicity may or may not be established based on the following:

WET tests should be run at least weekly (acute) or every two weeks (chronic) (note that only one test should be run at a time), for up to 5 tests, until either:

- 1) 2 consecutive tests fail, or 3 out of 5 tests fail, at which point a pattern of toxicity will have been identified, or
- 2) 2 consecutive tests pass, or 3 out of 5 tests pass, in which case no pattern of toxicity is identified.

- d. *Preliminary Toxicity Investigation.*

- (1) When a pattern of toxicity is detected the permittee will notify the Director in writing within 5 days and begin an evaluation of the possible causes of the toxicity. The permittee will have 15 working days from demonstration of the pattern of toxicity to complete an optional Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Director. The PTI may include, but is not limited to: additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if any spill may have occurred.
- (2) If the PTI identifies a probable toxicant and/or a probable source of toxicity, the permittee shall submit, as part of its final results, written notification of that effect to the Director. Within thirty days of completing the PTI the permittee shall submit to the Director for approval a control program to control effluent toxicity and shall proceed to implement such plan in accordance with the Director's approval. The control program, as submitted to or revised by the Director, will be incorporated into the permit. After final implementation, the permittee must demonstrate successful removal of toxicity by passing a two

species WET test as outlined in this permit. With adequate justification, the Director may extend these deadlines.

- (3) If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Director as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (see Part 3.e. Toxicity Reduction Evaluation
 - (4) If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Director, with supporting testing evidence.
- e. *Toxicity Reduction Evaluation (TRE)*. If a pattern of toxicity is detected the permittee shall initiate a TIE/TRE within 7 days unless the Director has accepted the decision to complete a PTI. With adequate justification, the Director may extend the 7-day deadline. The purpose of the TIE portion of a TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and the TRE will control or provide treatment for the toxicity.

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

- (1) Phase I – Toxicity Characterization
- (2) Phase II – Toxicity Identification Procedures
- (3) Phase III – Toxicity Control Procedures
- (4) Any other appropriate procedures for toxicity source elimination and control.

If the TRE establishes that the toxicity cannot be immediately eliminated, the permittee shall submit a proposed compliance plan to the Director. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the Director, this permit may be reopened and modified.

If toxicity spontaneously disappears during the TIE/TRE, the permittee shall submit written notification to that effect to the Director.

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

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

This permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the Director, and/or modified WET testing requirements without public notice.

Failure to conduct an adequate TIE/TRE plan or program as described above, or the submittal of a plan or program judged inadequate by the Director, shall be considered a violation of this permit. After implementation of TIE/TRE plan, the permittee must demonstrate successful removal of toxicity by passing a two species WET test as outlined in this permit.

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 via NetDMR and entered into NetDMR no later than the 28th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part 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

II. STORM WATER REQUIREMENTS

The JSSD does not meet the criteria for Industrial Storm Water permit coverage; therefore this permit does not include storm water provisions. The permit does however include a storm water re-opener provision in *Part V.R.*

III. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

- A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.
- B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.
- C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.
- E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10 and 40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.
- F. Records Contents. Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
 2. The individual(s) who performed the sampling or measurements;
 3. The date(s) and time(s) analyses were performed;
 4. The individual(s) who performed the analyses;
 5. The analytical techniques or methods used; and,
 6. The results of such analyses.
- G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location
- H. Twenty-four Hour Notice of Noncompliance Reporting.
1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.

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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.

IV. COMPLIANCE RESPONSIBILITIES

- A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under UCA 19-5-115(2) a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at Part 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.
 - a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

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- (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.
 - 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

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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.

V. GENERAL REQUIREMENTS

- A. Planned Changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.
- B. Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.
- E. Duty to Provide Information. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
- F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.
- G. Signatory Requirements. All applications, reports or information submitted to the Director shall be signed and certified.
1. All permit applications shall be signed by either a principal executive officer or ranking elected official.
 2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to the Director, and,
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized

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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:
 1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;

PART V
DISCHARGE PERMIT NO. UT0022403

2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
 3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.
- O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:
1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
 2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
 3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and 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, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur:
1. Toxicity is detected, as per *Part I.C.3.a* of this permit, during the duration of this permit.

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2. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits, and the Director agrees that numerical controls are the most appropriate course of action.
 3. Following the implementation of numerical control(s) of toxicant(s), the Director agrees that a modified biomonitoring protocol is necessary to compensate for those toxicants that are controlled numerically.
 4. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.
- 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".

VI. DEFINITIONS

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. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
5. "Chronic toxicity" occurs when the $IC_{25} < 5\%$ effluent. The 5% effluent is the concentration of the effluent in the receiving water, at the end of the mixing zone expressed as per cent effluent.
6. " IC_{25} " is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.
7. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
 - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
 - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
 - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,
 - d. Continuous sample volume, with sample collection rate proportional to flow rate.

PART VI
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8. "CWA," means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
9. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
10. "EPA," means the United States Environmental Protection Agency.
11. "Director," means Director of the Division of Water Quality.
12. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.
13. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
14. "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.
15. "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.

**FACT SHEET AND STATEMENT OF BASIS
JORDANELLE SPECIAL SERVICE DISTRICT
KEETLEY WATER TREATMENT PLANT
RENEWAL PERMIT: DISCHARGE
UPDES PERMIT NUMBER: UT0022403
MAJOR INDUSTRIAL**

FACILITY CONTACTS

Persons Name:	Wade Webster	Ron Phillips
Position:	Treatment Manager	District Manager
Phone Number:	435-333-0475	

Facility Name: Jordanelle Special Service District
Keetley Water Treatment Plant

Mailing and Facility Address: P.O. Box 519
10500 North 1420 West
Heber City, Utah 84032

DESCRIPTION OF FACILITY

Jordanelle Special Service District (JSSD) maintains a non-operational silver, lead and zinc mine near Park City, Utah. The mine has been inactive since 1982. The SIC code for this inactive mine is 1031, the NAICS code is 21223 for lead and zinc ores, while the SIC code is 1044 and the NAICS code is 21222 for silver ores. Currently JSSD treats the mine water flowing out of the mine to provide drinking water to the community. This process has an SIC code 4941 and an NAICS code 22131 for water supply. The discharge point from the facility to the Jordanelle Reservoir is Outfall 001, which is located at latitude 40°38'03" and longitude 111°26'13".

The mine water treatment consists of two Ondeo-Degremont Densedeg high-rate solids contact clarifiers. Raw mine water flows from the drain tunnel to a splitter box. It then flows into the two rapid mixers where lime addition occurs to raise the pH. The water is then drawn into the solid contact reactors through an axial flow turbine. Polymer is injected into the water on the downstream side of the axial flow turbine. Flocculent particles are sheared as they are drawn through the turbine. As the particles reach a specific density, they are drawn through an up-flow chamber and then cascade into the thickener. It is in the thickener that settling occurs. Sludge is drawn from the thickener and recycled into the solids contact reactor to facilitate coagulation. Water is then discharged from the thickener into troughs where it flows to a conditioning chamber. If needed the pH is adjusted downward using carbon dioxide prior to being discharged from the facility to the settling pond and then to the Jordanelle Reservoir via Outfall 001. On average JSSD discharges 6-7 million gallons per day (MGD) from Outfall 001.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

The only significant change with this permit renewal from the previous permit is the addition of effluent monitoring requirements for seven metals as part of the reasonable potential analysis which is described in more detail herein.

DESCRIPTION OF DISCHARGE

JSSD has been consistently reporting self-monitoring results on Discharge Monitoring Reports via NetDMR on a monthly basis as required. There have been no significant permit violations during the past five year permit term.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Located at latitude 40°38'03" and longitude 111°26'13". The effluent is discharged from the southeast corner of the settling pond above the high water mark of the Jordanelle Reservoir.

RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge flows into Jordanelle Reservoir. The Jordanelle Reservoir is classified as 1C, 2A, 3A, and 4 according to the Utah Administrative Code (UAC) R317-2-13;

Class 1C	Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
Class 2A	Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.
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.

BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS) and the daily maximum for total recoverable mercury are based on the Federal regulations under 40CFR440.102(a). The more stringent limitations for copper, zinc, lead, aluminum, and the maximum monthly average for mercury are based on water quality standards and the waste-load analysis (WLA). Mass based limits for the metals are also derived from the WLA. The limits for pH are based on current Utah Secondary Treatment Standards (UAC R317-1-3.2). The oil and grease is based on best professional judgment (BPJ). The permittee is expected to continue complying with all effluent limitations.

Reasonable Potential Analysis

Since January 1, 2016, the Utah Division of Water Quality (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.

Since JSSD is already monitoring for five metals parameters, including copper, mercury, lead, zinc and aluminum, with existing permit effluent limits derived from water quality standards and the WLA, a quantitative RP analysis can be performed on these metals to determine if there is a reasonable potential for the discharge to exceed the applicable water quality standards. Based available effluent data for the RP analysis, none of the five metals parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard. The result of the RP analysis was *Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit.* Therefore, the permit will maintain the same effluent monitoring limitations for the following metals; copper, mercury, zinc, lead and aluminum.

In addition, as part of the RP analysis and regarding the remaining seven metals parameters, including arsenic, boron, cadmium, chromium, nickel, selenium, and silver, a qualitative RP analysis was conducted and determined that there was not sufficient effluent data for these seven metals parameters to conduct a quantitative RP analysis. The result of this RP analysis was *Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit.* Therefore, the permit will include quarterly monitoring for these seven metals. If any of the metals concentrations exceed values related to water quality standards, the permit may be reopened and modified to include effluent limits for those metals as appropriate.

The permit limitations are as follows:

Parameter	Maximum Monthly Average	Daily Minimum	Daily Maximum
TSS, mg/L	20	NA	30
Total Recoverable Copper, mg/L	NA	NA	0.056
Total Recoverable Copper lbs/day	NA	NA	5.6
Total Recoverable Mercury, mg/L	0.00017	NA	0.002
Total Recoverable Mercury, lbs/day	NA	NA	0.7
Total Recoverable Lead, mg/L	0.012	NA	0.165
Total Recoverable Lead, lbs/day	1.2	NA	NA
Total Recoverable Zinc, mg/L	NA	NA	0.5
Total Recoverable Zinc, lbs/day	NA	NA	50
Total Recoverable Aluminum, mg/L	1.37	NA	2.43
Total Recoverable Aluminum, lbs/day	137	NA	243
Oil & Grease, mg/L	NA	NA	10
pH, Standard Units	NA	6.5	9
Whole Effluent Toxicity (WET), Chronic Biomonitoring	NA	NA	IC ₂₅ > 5% effluent

NA – Not Applicable; MGD – million gallons per day; mg/L – milligrams per liter

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are shown in the table below. The permit will require reports to be submitted monthly and quarterly, as applicable, via NetDMR and entered into NetDMR no later than the 28th day of the month following the completed reporting period. If no discharge occurs during

the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part IV.G)*, and submitted by NetDMR, or otherwise to the Division of Water Quality.

Self-Monitoring and Reporting Requirements			
Parameter	Frequency	Sample Type	Units
Total Flow	Daily	Recorder	MGD
TSS	Monthly	Grab	mg/L
Total Recoverable Copper	Quarterly	Composite	mg/L
Total Recoverable Mercury	Yearly	Composite/Grab	mg/L
Total Recoverable Lead	Quarterly	Composite	mg/L
Total Recoverable Zinc	Monthly	Composite	mg/L
Total Recoverable Aluminum a/	Quarterly	Composite	mg/L
Oil & Grease b/	Weekly	Visual/Grab	mg/L
WET, Chronic Biomonitoring	Quarterly	Composite	Pass/Fail
pH	Daily	Grab	Standard Units
Total Recoverable Arsenic	Quarterly	Grab	mg/L
Total Recoverable Boron	Quarterly	Grab	mg/L
Total Recoverable Cadmium	Quarterly	Grab	mg/L
Total Recoverable Chromium	Quarterly	Grab	mg/L
Total Recoverable Nickel	Quarterly	Grab	mg/L
Total Recoverable Selenium	Quarterly	Grab	mg/L
Total Recoverable Silver	Quarterly	Grab	mg/L

a/ Sample required only if alum or aluminum additives are added in the treatment process.

b/ Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.

WASTE LOAD ANALYSIS AND ANTIDegradation REVIEW

Effluent limitations are also derived using a waste load analysis (WLA), which is appended to this statement of basis as an ADDENDUM. The WLA incorporates Secondary Treatment Standards, Water Quality Standards, Antidegradation Reviews (ADR), as appropriate and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During the UPDES permit development, a WLA and ADR were completed. An ADR Level I review was performed and the conclusion was that an ADR level II review was required, because the receiving water or downstream water is a 1C drinking water source. A copy of the WLA and ADR Level II is appended to this document.

STORM WATER

According to *Utah Administrative Code (UAC) R317-8-3.9* this facility will not be required to maintain coverage under the UPDES multi-sector general permit for discharges associated with industrial activity, permit number UTR000000, Sector G (Mineral Industry, SIC Major Group 10). This is because storm water will not likely come in contact with or be contaminated by an overburden, raw material, intermediate product, finished product, by product, or waste product located on the site of the operation. At any time in the future, if DWQ determines that this is not the case, then JSSD will be required to apply for Industrial Storm Water Permit coverage as appropriate.

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.

Since Jordanelle SSD is classified as a major industrial discharger, the renewal permit will again require whole effluent toxicity (WET) testing. This testing will once again consist of quarterly chronic toxicity testing using one species, *Ceriodaphnia dubia*, as detailed in the permit. WET testing of *Pimephales promelas* (fathead minnow) may be required by the Director if the permittee significantly changes its treatment system. The permit will contain the standard requirements for accelerated testing upon failure of a WET test, and a Preliminary Toxicity Investigation (PTI) and Toxicity Reduction Evaluation (TRE) as necessary.

PERMIT DURATION

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

Drafted by Jeff Studenka
Environmental Scientist
Utah Division of Water Quality
February 14, 2018

DWQ Draft Permit Reviews
Storm Water Review by Michael George
Biomonitoring by Lonnie Shull
Reasonable Potential Analysis by Nate Nichols
Wasteload Analysis by Dave Wham

PUBLIC NOTICE INFORMATION (Updated April 10, 2018)

Began: March 7, 2018
Ended: April 6, 2018

Public Noticed in: The Wasatch Wave

The draft Fact Sheet Statement of Basis, Addendums, and draft UPDES permit were public noticed in The Wasatch Wave and also under "Public Participation" on the Division of Water Quality web site at www.waterquality.utah.gov, from March 7, 2018 through April 6, 2018 for public comment as appropriate. No comments were received. Staff recommends issuance of the permit as drafted.

ADDENDUM TO FSSOB

ATTACHMENTS

I. Waste-Load Analysis

DWQ-2018-004095

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ATTACHMENT 1

Waste-Load Analysis

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

Date: November 27, 2017

Prepared by: Dave Wham 
Standards and Technical Services

Facility: Jordanelle Special Service District, Keetley Water Treatment Plant
UPDES No. UT0022403

Receiving water: Jordanelle Reservoir (1C, 2A, 3A, 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

Discharge 001, 12.0 MGD design flow

Receiving Water

The receiving water for Outfall 001 is Jordanelle Reservoir.

Per UAC R317-2-13.12(y), the designated beneficial uses of Jordanelle Reservoir are 1C, 2A, 3A, 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *Class 2A - Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.*
- *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.*

Utah Division of Water Quality
Wasteload Analysis
Jordanelle Special Service District, Keetley Water Treatment Plant
UPDES No. UT0022403

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

Ambient water quality for the receiving water for discharge was characterized using data from DWQ Monitoring Station # 5914030, JORDANELLE RES NORTH ARM 03 from the period 2006-2016.

TMDL

According to the Utah's 2016 303(d) Water Quality Assessment, the assessment unit for Jordanelle Reservoir (UT-L-16020203-003_00) was listed as impaired for pH (Class 3A use). As a result, effluent limits for pH revert to end of pipe criteria (6.5-9).

Mixing Zone

As per R317-2-5, the size of the chronic mixing zone in lakes and reservoirs shall not exceed 200 feet and the size of an acute mixing zone shall not exceed 35 feet. Mixing zone calculations were performed using the Utah Lake Mixing Zone Model.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were TSS, copper, mercury, lead, zinc, aluminum and pH, as determined in consultation with the UPDES Permit Writer.

WET Limits

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

IC25 WET limits for Outfalls 001 should be based on 5% effluent.

Wasteload Allocation Methods

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

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

Models and supporting documentation are available for review upon request.

**Utah Division of Water Quality
Wasteload Analysis
Jordanelle Special Service District, Keetley Water Treatment Plant
UPDES No. UT0022403**

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 required for this facility as it discharges to a Class 1C Drinking Water Source. 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 existing permit is being requested.

Documents:

WLA Document: *JSSD_DWPlant_WLADoc_11-27-17.docx*

Wasteload Analysis and Addendums: *JSSD_DWPlant_WLA_11-27-17.xlsm*

References:

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

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

Discharging Facility: JSSD Water Treatment Plant
 UPDES No: 0022403
 Current Flow: 12.00 MGD Design Flow
 Design Flow 12.00 MGD

Receiving Water: Jordanelle Reservoir
 Lake Classification: 1C, 2A, 3A, 4

TDS (mg/l)	117.00	Average
Hardness (mg/l)	300.00	Average
pH	8.00	Average
Temp (C)	9.93	Average

Selected Effluent Limit Summary:		WQ Standard:
Flow, MGD:	12.00 MGD	Design Flow
BOD, mg/l:	25.0 All Season	5 Indicator
Dissolved Oxygen, mg/l:	5.00 All Season	6.50 30 Day Average
TNH3, Chronic, mg/l:	57.33 All Season	Varies Function of pH and Temperature
TDS, mg/l:	3681.27 All Season	1200
Zinc, ug/l	500.07 All Season	Varies Function of Hardness
Copper, ug/l	56.28 All Season	Varies Function of Hardness

Modeling Parameters:

Acute Dilution Ratio 3.29 to 1
 Chronic Dilution Ratio: 18.81 to 1

Level 1 Antidegradation Level Completed: Level II Review required - Class 1C drinking water source.

Date: 11/27/2017

Wasteload Analysis - Total Maximum Daily Load (Lake TMDL)

1/31/2018 16:27

Facility: JSSD Water Treatment Plant
 Discharging to: Jordanelle Reservoir

UPDES No: UT- 0022403

I. Introduction

Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on lake water quality. The wasteload analysis does not take into account downstream designated uses [R317-2-8, UAC]. Projected concentrations are compared to numeric water quality standards to determine acceptability. The anti-degradation policy and 100 100 may include metals (as a function of hardness), total dissolved solids (TDS), total residual chlorine (TRC), unionized ammonia (as a function of pH and temperature, measured and evaluated in terms of total ammonia), and dissolved oxygen.

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

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

II. Receiving Water and Lake / Reservoir Classification

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

III. Numeric Water Quality Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Function of Temperature and pH	pH	Temp
	3.04 mg/l as N (4 Day Average)	7.79	11.2
	7.60 mg/l as N (1 Hour Average)	7.84	10.9
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average)		
	0.019 mg/l (1 Hour Average)		
Chronic Dissolved Oxygen (DO)	6.50 mg/l (30 Day Average)		
	5.00 mg/l (7Day Average)		
	4.00 mg/l (1 Day Average)		
Maximum Total Dissolved Solids [Class 4 Ag]	1200 mg/l		
Maximum Boron [Class 4 Ag]	750 mg/l		

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration	1 Hour Average (Acute) Standard Concentration	
Aluminum	87.000 ug/l	750	ug/l
Antimony	ug/l		ug/l
Arsenic	190.000 ug/l	360.00	ug/l

Utah Division of Water Quality

Asbestos	ug/l		ug/l
Barium	ug/l	1000.00	ug/l
Beryllium	ug/l		ug/l
Cadmium	0.273 ug/l	3.30	ug/l
Chromium III	87.002 ug/l	1820.25	ug/l
Chromium VI	11.000 ug/l	16.00	ug/l
Copper	9.422 ug/l	14.15	ug/l
Cyanide	ug/l		ug/l
Iron	ug/l	1000.00	ug/l
Lead	3.229 ug/l	82.86	ug/l
Mercury	0.012 ug/l	2.40	ug/l
Nickel	89.10 ug/l	473.80	ug/l
Selenium	5.000 ug/l	20.00	ug/l
Silver	ug/l	3.86	ug/l
Thallium			
Zinc	120.999 ug/l	121.00	ug/l

Based upon a Hardness of 101.17 mg/l as CaCO3

Based upon 153.81 mg/l as CaCO3

Organics [Pesticides]

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

IV. Numeric Water Quality Standards for Protection of Agriculture

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

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

Metals	1 Hour Average (Acute) Standard
	Concentration
Arsenic	10 ug/l
Barium	1000 ug/l

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Cadmium	10	ug/l
Chromium	50	ug/l
Lead	50	ug/l
Mercury	2	ug/l
Selenium	50	ug/l
Silver	50	ug/l
Fluoride (3)	1.4	ug/l
to	2.4	ug/l
Nitrates as N	10	ug/l
Chlorophenoxy Herbicides		
2,4-D	100	ug/l
2,4,5-TP	10	ug/l
Methoxychlor	100	ug/l

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

	Maximum Conc., ug/l - Acute Standards	
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.	Class 3A, 3B, 3C, 3D [6.5 g for 70 Kg Person over 70 Yr.]
Antimony	5.6 ug/l	640 ug/l
Arsenic	A	A
Beryllium	C	C
Cadmium	C	C
Chromium III	C	C
Chromium VI	C	C
Copper	1,300 ug/l	
Lead	C	C
Mercury	A	A
Nickel	100 ug/l	4,600 ug/l
Selenium	A	4,200 ug/l
Silver		
Thallium	0.24 ug/l	6.3 ug/l
Zinc	7400 ug/l	26,000 ug/l
Cyanide	140 ug/l	220,000 ug/l
Asbestos	7.00E+06 Fibers/L	
2,3,7,8-TCDD Dioxin	5.0 E-9 ug/l	5.1 E-9 ug/l
Acrolein	190 ug/l	290 ug/l
Acrylonitrile	0.051 ug/l	0.25 ug/l
Alachlor	2 ug/l	
Benzene	2.2 ug/l	51 B ug/l
Bromoform	4.3 ug/l	140.00 ug/l
Carbofuran	40	
Carbon Tetrachloride	0.23 ug/l	1.60 ug/l
Chlorobenzene	100 ug/l	21,000 ug/l
Chlorodibromomethane	0.4 ug/l	13.00 ug/l
Chloroethane		
2-Chloroethylvinyl Ether		
Chloroform	5.7 ug/l	470.00 ug/l
Dalapon	200 ug/l	
Di(2ethylhexyl)adipate	400 ug/l	
Dichlorobromopropane	0.2	

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

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4-Bromophenyl Phenyl Ether	ug/l		
Butylbenzyl Phthalate	1500 ug/l		1,900 ug/l
2-Chloronaphthalene	1000 ug/l		1,600 ug/l
4-Chlorophenyl Phenyl Ether	ug/l		
Chrysene	0.0038 ug/l		0.02 ug/l
Dibenzo(a,h)Anthracene	0.0038 ug/l		0.02 ug/l
1,2-Dichlorobenzene	420 ug/l		17,000 ug/l
1,3-Dichlorobenzene	320 ug/l		960 ug/l
1,4-Dichlorobenzene	63 ug/l		2,600 ug/l
3,3-Dichlorobenzidine	0.021 ug/l		0.03 ug/l
Diethyl Phthalate	17000 ug/l		44,000 ug/l
Dimethyl Phthalate	270000 ug/l		1,100,000 ug/l
Di-n-Butyl Phthalate	2000 ug/l		4,500 ug/l
2,4-Dinitrotoluene	0.11 ug/l		3.40 ug/l
2,6-Dinitrotoluene	ug/l		
Di-n-Octyl Phthalate	ug/l		
1,2-Diphenylhydrazine	0.036 ug/l		0.20 ug/l
Fluoranthene	130 ug/l		140.00 ug/l
Fluorene	1100 ug/l		5,300 ug/l
Hexachlorobenzene	0.00028 ug/l		0.00029 B ug/l
Hexachlorobutenedine	0.44 ug/l		18.00 ug/l
Hexachloroethane	1.4 ug/l		3.30 ug/l
Hexachlorocyclopentadiene	40 ug/l		17,000 ug/l
Ideno 1,2,3-cdPyrene	0.0038 ug/l		0.02 ug/l
Isophorone	35 ug/l	B	960.00 ug/l
Naphthalene			
Nitrobenzene	17 ug/l		690 ug/l
N-Nitrosodimethylamine	0.00069 ug/l		3.00 ug/l
N-Nitrosodi-n-Propylamine	0.005 ug/l		0.51 ug/l
N-Nitrosodiphenylamine	3.3 ug/l		6.00 ug/l
Phenanthrene			
Pyrene	830 ug/l		4,000 ug/l
1,2,4-Trichlorobenzene	260 ug/l		940 ug/l
Aldrin	0.000049 ug/l		0.000050 ug/l
alpha-BHC	0.0026 ug/l		0.00 ug/l
beta-BHC	0.0091 ug/l		0.02 ug/l
gamma-BHC (Lindane)	0.2 ug/l		0.06 ug/l
delta-BHC			
Chlordane	0.0008 ug/l		0.00 ug/l
4,4-DDT	0.00022 ug/l		0.00 ug/l
4,4-DDE	0.00022 ug/l		0.00 ug/l
4,4-DDD	0.00031 ug/l		0.00 ug/l
Dieldrin	0.000052 ug/l	B	0.000054 ug/l
alpha-Endosulfan	62 ug/l		89 ug/l
beta-Endosulfan	62 ug/l		89 ug/l
Endosulfan Sulfate	62 ug/l		89 ug/l
Endrin	0.059 ug/l		0.81 ug/l
Endrin Aldehyde	0.29 ug/l		0.30 ug/l
Heptachlor	0.000079 ug/l	B	0.000079 ug/l
Heptachlor Epoxide	0.000039 ug/l	B	0.000039 ug/l
Polychlorinated Biphenyls	0.000064 ug/l	B,D	0.000064 ug/l
Toxaphene	0.00028 ug/l		0.00028 ug/l

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

VII. Mathematical Modeling of Water Quality Quality

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

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

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

QUAL2E (EPA, Athens, GA).

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

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

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

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

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

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

The dilution ratios for this wasteload analysis are as follows:

Acute Dilution Ratio:	3.3 to 1
Chronic Dilution Ration:	18.8 to 1

VIII. Modeling Information

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

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

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D.O. mg/l

Other Conditions

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

Model Inputs

Lake Information	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD mg/l	DO mg/l	TRC mg/l	TDS mg/l	Metals ug/l
	11.3	7.8	0.00	N/A	N/A	0.00	117.0	0.0
Discharge Information	Season All Seasons		Flow, 12.0	Temp. 9.9				

IX. Effluent Limitations based upon Water Quality Standards

Effluent Limitation for Flow

All Seasons		
Not to Exceed:	12.00 MGD	Daily Average
	18.56 cfs	Daily Average
WET Requirements	As determined by Permits & Compliance Branch	

Effluent Limitation for Biological Oxygen Demand (BOD)

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

Effluent Limitation for Dissolved Oxygen (DO)

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

Effluent Limitation for Total Ammonia

	4 Day Average [Chronic]	
	Concentration	Load

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All Seasons	57.33 mg/l as N	5736.3 lbs/day
	1 Hour Average [Acute] Concentration	Load
	25.0 mg/l as N	2504.6 lbs/day

Effluent Limitation for Total Residual Chlorine

	4 Day Average [Chronic] Concentration	Load
All Seasons	0.207 mg/l	20.7 lbs/day
	1 Hour Average [Acute] Concentration	Load
	0.063 mg/l	6.3 lbs/day

Effluent Limitations for Metals

	4 Day Average (Chronic)		1 Hour Average (Acute)	
	Concentration	Load	Concentration	Load
Aluminum	1368.34 ug/l*	136.9 lbs/day	2433.87 ug/l	243.5 lbs/day
Arsenic	2772.87 ug/l	277.5 lbs/day	1112.79 ug/l*	111.3 lbs/day
Barium			3291.11 ug/l	329.3 lbs/day
Cadmium	0.03 ug/l*	0.0 lbs/day	9.48 ug/l	0.9 lbs/day
Chromium III	1334.12 ug/l*	133.5 lbs/day	2658.53 ug/l	266.0 lbs/day
Chromium VI	133.86 ug/l	13.4 lbs/day	43.26 ug/l*	4.3 lbs/day
Copper	91.75 ug/l	9.2 lbs/day	56.28 ug/l*	5.6 lbs/day
Iron			2940.57 ug/l	294.2 lbs/day
Lead	12.17 ug/l*	1.2 lbs/day	334.40 ug/l	33.5 lbs/day
Mercury	0.17 ug/l*	0.017 lbs/day	7.89 ug/l	0.8 lbs/day
Nickel	693.89 ug/l*	69.4 lbs/day	2180.35 ug/l	218.2 lbs/day
Selenium	44.13 ug/l*	4.4 lbs/day	55.10 ug/l	5.5 lbs/day
Silver			19.47 ug/l	1.9 lbs/day
Zinc	30660.96 ug/l	3,067.9 lbs/day	500.07 ug/l*	50.0 lbs/day

* Most stringent between Chronic & Acute Effluent Limitations

Effluent Limitations for Organics [Pesticides]

Pesticide	4 Day Average		1 Hour Average	
	Concentration	Load	Concentration	Load
Aldrin			4.9367 ug/l	0.319 lbs/day
Chlordane	0.0809 ug/l*	0.005 lbs/day	3.9493 ug/l	0.255 lbs/day
DDT, DDE	0.0188 ug/l*	0.001 lbs/day	1.8101 ug/l	0.117 lbs/day
Dieldrin	0.1053 ug/l*	0.007 lbs/day	0.7899 ug/l	0.051 lbs/day
Endosulfan	1.0532 ug/l	0.068 lbs/day	0.3620 ug/l*	0.023 lbs/day
Endrin	0.6770 ug/l	0.044 lbs/day	0.2830 ug/l*	0.018 lbs/day

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Guthion			0.0000 ug/l	0.000 lbs/day
Heptachlor	0.0715 ug/l*	0.005 lbs/day	0.8557 ug/l	0.055 lbs/day
Lindane	1.5045 ug/l*	0.097 lbs/day	3.2911 ug/l	0.213 lbs/day
Methoxychlor			0.0987 ug/l	0.006 lbs/day
Mirex			0.0033 ug/l	0.000 lbs/day
Parathion			0.2172 ug/l	0.014 lbs/day
PCB's	0.2633 ug/l	0.017 lbs/day	0.0000 ug/l*	0.000 lbs/day
Pentachlorophenol	282.0948 ug/l	18.246 lbs/day	62.5310 ug/l*	4.045 lbs/day
Toxephene	0.0038 ug/l*	0.000 lbs/day	2.4025 ug/l	0.155 lbs/day

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

Metals	1 Hour Average (Acute) Standard	
	Concentration	Load
Arsenic	32.91 ug/l	2.13 lbs/day
Barium	3291.11 ug/l	212.87 lbs/day
Cadmium	32.91 ug/l	2.13 lbs/day
Chromium	164.56 ug/l	10.64 lbs/day
Lead	164.56 ug/l	10.64 lbs/day
Mercury	6.58 ug/l	0.43 lbs/day
Selenium	164.56 ug/l	10.64 lbs/day
Silver	164.56 ug/l	10.64 lbs/day
Fluoride	4.61 ug/l	0.30 lbs/day
to	7.90 ug/l	0.51 lbs/day
Nitrates as N	32.91 ug/l	2.13 lbs/day
Pesticides		
2,4-D	329.11 ug/l	21.29 lbs/day
2,4,5-TP	32.91 ug/l	2.13 lbs/day
Methoxychlor	329.11 ug/l	21.29 lbs/day

Effluent Limitations for Protection of Human Health [Toxics Rule]

Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)

Toxics Rule Parameters	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr. Period]	
Antimony	18.43 ug/l	1.19 lbs/day	18.43 ug/l	1.2 lbs/day
Arsenic				
Beryllium				
Cadmium				
Chromium III				
Chromium VI				
Copper	4278.44 ug/l	276.73 lbs/day	4278.44 ug/l	276.7 lbs/day
Lead				
Mercury		lbs/day	329.11 ug/l	21.3 lbs/day
Nickel	329.11 ug/l	21.29 lbs/day		
Selenium			24354.18 ug/l	1575.2 lbs/day
Silver			460.75 ug/l	29.8 lbs/day
Thallium	0.79 ug/l	0.05 lbs/day		
Zinc	24354.18 ug/l	1575.23 lbs/day	625.31 ug/l	40.4 lbs/day

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Cyanide	460.75 ug/l	29.80 lbs/day	0.17 ug/l	0.0 lbs/day
Asbestos	23037741.33 ug/l	1.49E+06 lbs/day	14.15 ug/l	0.9 lbs/day
0	0.00 ug/l	0.00 lbs/day		
2,3,7,8-TCDD Dioxin	0.00 ug/l	0.00 lbs/day	329.11 ug/l	21.3 lbs/day
Acrolein	625.31 ug/l	40.45 lbs/day	1.32 ug/l	0.1 lbs/day
Acrylonitrile	0.17 ug/l	0.01 lbs/day		
Benzene	7.24 ug/l	0.47 lbs/day		
Bromoform	14.15 ug/l	0.92 lbs/day	18.76 ug/l	1.2 lbs/day
Carbon Tetrachloride	0.00 ug/l	0.00 lbs/day		
Chlorobenzene	329.11 ug/l	21.29 lbs/day		
Chlorodibromomethane	1.32 ug/l	0.09 lbs/day	1.25 ug/l	0.1 lbs/day
Chloroethane	0.00 ug/l	0.00 lbs/day	23.04 ug/l	1.5 lbs/day
2-Chloroethylvinyl Ether	0.00 ug/l	0.00 lbs/day	1.65 ug/l	0.1 lbs/day
Chloroform	18.76 ug/l	1.21 lbs/day	1.12 ug/l	0.1 lbs/day
Dichlorobromomethane	1.81 ug/l	0.12 lbs/day	154.68 ug/l	10.0 lbs/day
1,1-Dichloroethane	0.00 ug/l	0.00 lbs/day		
1,2-Dichloroethane	1.25 ug/l	0.08 lbs/day	15.14 ug/l	1.0 lbs/day
1,1-Dichloroethylene	23.04 ug/l	1.49 lbs/day	0.56 ug/l	0.0 lbs/day
1,2-Dichloropropane	1.65 ug/l	0.11 lbs/day	3291.11 ug/l	212.9 lbs/day
1,3-Dichloropropene	1.12 ug/l	0.07 lbs/day	1.94 ug/l	0.1 lbs/day
Ethylbenzene	1744.29 ug/l	112.82 lbs/day	8.23 ug/l	0.5 lbs/day
Methyl Bromide	154.68 ug/l	10.00 lbs/day	0.08 ug/l	0.0 lbs/day
Methyl Chloride	0.00 ug/l	0.00 lbs/day	266.58 ug/l	17.2 lbs/day
Methylene Chloride	15.14 ug/l	0.98 lbs/day	253.42 ug/l	16.4 lbs/day
1,1,2,2-Tetrachloroethane	0.56 ug/l	0.04 lbs/day	1250.62 ug/l	80.9 lbs/day
Tetrachloroethylene	2.27 ug/l	0.15 lbs/day	42.78 ug/l	2.8 lbs/day
Toluene	3291.11 ug/l	212.87 lbs/day		
1,2 -Trans-Dichloroethylene	329.11 ug/l	21.29 lbs/day		
1,1,1-Trichloroethane	0.00 ug/l	0.00 lbs/day	0.89 ug/l	0.1 lbs/day
1,1,2-Trichloroethane	1.94 ug/l	0.13 lbs/day	69113.22 ug/l	4470.2 lbs/day
Trichloroethylene	8.23 ug/l	0.53 lbs/day	4.61 ug/l	0.3 lbs/day
Vinyl Chloride	0.08 ug/l	0.01 lbs/day	2205.04 ug/l	142.6 lbs/day
2-Chlorophenol	266.58 ug/l	17.24 lbs/day		
2,4-Dichlorophenol	253.42 ug/l	16.39 lbs/day	27316.18 ug/l	1766.8 lbs/day
2,4-Dimethylphenol	1250.62 ug/l	80.89 lbs/day		
2-Methyl-4,6-Dinitrophenol	42.78 ug/l	2.77 lbs/day	0.01 ug/l	0.0 lbs/day
2,4-Dinitrophenol	227.09 ug/l	14.69 lbs/day	0.01 ug/l	0.0 lbs/day
2-Nitrophenol	0.00 ug/l	0.00 lbs/day	0.01 ug/l	0.0 lbs/day
4-Nitrophenol	0.0000 ug/l	0.0000 lbs/day		
3-Methyl-4-Chlorophenol	0.0000 ug/l	0.0000 lbs/day	0.01 ug/l	0.001 lbs/day
Penetachlorophenol	0.8886 ug/l	0.0575 lbs/day		
Phenol	69113.2240 ug/l	4.47E+03 lbs/day	0.10 ug/l	0.006 lbs/day
2,4,6-Trichlorophenol	4.6075 ug/l	0.2980 lbs/day	4607.55 ug/l	298.016 lbs/day
Acenaphthene	2205.04 ug/l	142.62 lbs/day		
Acenaphthylene	0.00 ug/l	0.00 lbs/day	4936.66 ug/l	319.3 lbs/day
Anthracene	27316.18 ug/l	1766.81 lbs/day	3291.11 ug/l	212.9 lbs/day
Benzidine	0.00 ug/l	0.00 lbs/day		
BenzoAnthracene	0.01 ug/l	0.00 lbs/day	0.01 ug/l	0.0 lbs/day
BenzoaPyrene	0.01 ug/l	0.00 lbs/day	0.0 ug/l	0.0 lbs/day
BenzobFluoranthene	0.01 ug/l	0.00 lbs/day	1382.26 ug/l	89.4 lbs/day
BenzoghiPerylene	0.00 ug/l	0.00 lbs/day	1053.15 ug/l	68.1 lbs/day
BenzokFluoranthene				
Bis2-ChloroethoxyMethane				
Bis2-ChloroethylEther	0.0987 ug/l	0.00639 lbs/day	5.59E+04 ug/l	3.62E+03 lbs/day

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Bis2-Chloroisopropyl Ether	4607.5483 ug/l	2.98E+02 lbs/day	8.89E+05 ug/l	5.75E+04 lbs/day
Bis2-EthylhexylPhthalate	3.9493 ug/l	0.25544 lbs/day	##### ug/l	425.73746 lbs/day
4-Bromophenyl Phenyl Ether	0.0000 ug/l	0.00000 lbs/day	0.36202 ug/l	0.02342 lbs/day
Butylbenzyl Phthalate	4936.6589 ug/l	3.19E+02 lbs/day		
2-Chloronaphthalene	3291.1059 ug/l	212.86873 lbs/day		
4-Chlorophenyl Phenyl Ether	0.0000 ug/l	0.00000 lbs/day	0.11848 ug/l	0.00766 lbs/day
Chrysene	0.0125 ug/l	0.00081 lbs/day	427.84377 ug/l	27.67293 lbs/day
Dibenzo(a,h)Anthracene	0.0125 ug/l	0.00081 lbs/day	##### ug/l	234.15560 lbs/day
1,2-Dichlorobenzene	1382.2645 ug/l	89.40487 lbs/day	0.00092 ug/l	0.00006 lbs/day
1,3-Dichlorobenzene	1053.1539 ug/l	68.11799 lbs/day	1.44809 ug/l	0.09366 lbs/day
1,4-Dichlorobenzene	207.3397 ug/l	13.41073 lbs/day	4.60755 ug/l	0.29802 lbs/day
3,3-Dichlorobenzidine				
Diethyl Phthalate				
Dimethyl Phthalate				
Di-n-Butyl Phthalate	6582.21181 ug/l	425.73746 lbs/day		
2,4-Dinitrotoluene	0.36202 ug/l	0.02342 lbs/day	55.948800 ug/l	3.618768 lbs/day
2,6-Dinitrotoluene	0.00000 ug/l	0.00000 lbs/day	0.002271 ug/l	0.000147 lbs/day
Di-n-Octyl Phthalate	0.00000 ug/l	0.00000 lbs/day	0.016456 ug/l	0.001064 lbs/day
1,2-Diphenylhydrazine	0.11848 ug/l	0.00766 lbs/day	10.860649 ug/l	0.702467 lbs/day
Fluoranthene	427.84377 ug/l	27.67293 lbs/day		
Fluorene	3620.21649 ug/l	234.15560 lbs/day	2.73E+03 ug/l	1.77E+02 lbs/day
Hexachlorobenzene				
Hexachlorobutenedine				
Hexachloroethane	4.61 ug/l	0.30 lbs/day		
Hexachlorocyclopentadiene				
Ideno 1,2,3-cdPyrene				
Isophorone	115.19 ug/l	7.45 lbs/day		
Naphthalene				
Nitrobenzene				
N-Nitrosodimethylamine	0.00 ug/l	0.00 lbs/day		
N-Nitrosodi-n-Propylamine	0.02 ug/l	0.00 lbs/day	0.00 ug/l	0.0 lbs/day
N-Nitrosodiphenylamine	1.09E+01 ug/l	7.02E-01 lbs/day		
Phenanthrene	0.00 ug/l	0.00 lbs/day	204.05 ug/l	13.2 lbs/day
Pyrene	2731.62 ug/l	176.68 lbs/day		
1,2,4-Trichlorobenzene			204.05 ug/l	13.2 lbs/day
Aldrin			0.19 ug/l	0.0 lbs/day
alpha-BHC	0.00855688 ug/l	0.000553 lbs/day		
beta-BHC	0.02994906 ug/l	0.001937 lbs/day		
gamma-BHC (Lindane)	0.65822118 ug/l	0.042574 lbs/day		
delta-BHC		0.000000 lbs/day		
Chlordane	0.00263288 ug/l	0.000170 lbs/day		
4,4-DDT	0.00072404 ug/l	0.000047 lbs/day		
4,4-DDE	0.00072404 ug/l	0.000047 lbs/day		
4,4-DDD	0.00102024 ug/l	0.000066 lbs/day		
Dieldrin		0.000000 lbs/day		
alpha-Endosulfan	204.05 ug/l	13.198 lbs/day		
beta-Endosulfan	204.05 ug/l	13.198 lbs/day		
Endosulfan Sulfate	204.05 ug/l	13.198 lbs/day		
Endrin	0.19417525 ug/l	0.013 lbs/day		

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Endrin Aldehyde	0.95442071 ug/l	0.062 lbs/day		
Heptachlor		lbs/day		
Heptachlor Epoxide		lbs/day		
Polychlorinated Biphenyls		lbs/day		
0	0.00000000 ug/l	0.000000 lbs/day		
Toxaphene	0.00092151 ug/l	0.000060 lbs/day		
Specific Parameter: TDS	0 ug/l	0.000000 lbs/day	3681.27 mg/l	238.1 tons / day

Effluent Limitations for the Protection of Agriculture

	1 Hour Average (Acute) Standard	
	Concentration	Load
Arsenic	329.11 ug/l	21.29 lbs / day
Boron	2468.33 ug/l	159.65 lbs / day
Cadmium	32.91 ug/l	2.13 lbs / day
Chromium	329.11 ug/l	21.29 lbs / day
Copper	658.22 ug/l	42.57 lbs / day
Lead	329.11 ug/l	21.29 lbs / day
Selenium	164.56 ug/l	10.64 lbs / day

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

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		2433.87				2433.87	1368.34
Antimony			18.43			18.43	
Arsenic	329.11	1112.79			32.91	32.91	2772.87
Asbestos							
Barium		3291.11			3291.11	3291.11	
Cadmium	32.91	9.48			32.91	9.48	0.03
Chromium (III)		2658.5			164.56	164.56	1334.12
Chromium (VI)	329.11	43.26				43.26	133.86
Copper	658.22	56.28				56.28	91.75
Cyanide				460.75		460.75	
Iron		2940.57				2940.57	
Lead	329.11	334.40			164.56	164.56	12.17
Mercury		7.8918			6.58	6.58	0.1723
Nickel		2180.35		329.11		329.11	693.89
Selenium	164.56	55.10			164.56	55.10	44.13
Silver		19.47			164.56	19.47	
Thallium				0.79		0.79	
Zinc		500.07				500.07	30660.96

Summary Effluent Limitations for Metals [Wasteload Allocation, TMDL]

	Acute		Chronic	
	ug/l	lbs/day	ug/l	lbs/day
Aluminum	2433.87 ✓	243.5 ✓	1368.34 ✓	136.9 ✓
Antimony	18.43	1.8		
Arsenic	32.91	3.3	2772.87	277.5
Asbestos				
Cadmium	9.48	0.9	0.03	0.0
Chromium (III)	164.56	16.5	1334.12	133.5
Chromium (VI)	43.26	4.3	133.86	13.4
Copper	56.28 ✓	5.6 ✓	91.75	9.2
Cyanide	460.75	46.1		
Iron	2940.57	294.2		
Lead	164.56	16.5	12.17 ✓	1.2 ✓
Mercury	6.58	0.7	0.17 ✓	0.0
Nickel	329.11	32.9	693.89	69.4
Selenium	55.10	5.5	44.13	4.4
Silver	19.47	1.9		
Zinc	500.07 ✓	50.0	30660.96	3067.9

Handwritten notes:
 NO AVG
 40 CFR
 .002 Daily Max
 (with arrows pointing to Lead and Mercury values)

Effluent Indicators / Targets for Pollution Indicators

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

Indicator / Target	mg/l	Target	
		mg/l	lbs/day
Gross Beta (pCi/l)	50.0 pCi/L		
BOD	5.0	16.46	1668.03
Nitrates as N	4.0	13.16	1334.43
Total Phosphorus as P	0.05	0.16	16.68
Total Suspended Solids	90.0	296.20	30024.58

Other Effluent Limitations are based upon R317-1.

X. Antidegradation Considerations

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

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

XI. Colorado River Salinity Forum Considerations

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless shown that this is not attainable. Refer to the Forum's Guidelines for additional information.

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

XII. Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving 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.

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

XIII. Notice of UPDES Requirement

This Addendum to the Statement of Basis does not authorize any entity or party to discharge to the waters of the State of Utah. That authority is granted through a UPDES permit issued by the Utah Division of Water Quality. The numbers presented here may be changed as a function of other factors. Dischargers are strongly urged to contact the Permits Section for further information.

XIV. Notice of Availability of Information

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

Prepared by:
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40 CFR 440.102 - Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology (BPT).

§ 440.102 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology (BPT).

Except as provided in subpart L of this part and 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

(a) The concentration of pollutants discharged in mine drainage from mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores, or silver bearing ores, or any combination of these ores open-pit or underground operations other than placer deposits shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
TSS	30	20 ✓
Cu	.30	.15 X WCA
Zn	1.5	.75 X WCA
Pb	.6	.3 X WCA
Hg	.002	.001 X WCA
pH	(1)	(1)

¹ Within the range 6.0 to 9.0.

(b) The concentration of pollutants discharged from mills which employ the froth flotation process alone or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores, or silver ores, or any combination of these ores shall not exceed: