

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Municipal Permit No. **UT0024384**  
Biosolids Permit No. **UTL024384**

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

**South Valley Water Reclamation**

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

**Jordan River,**

to dispose of biosolids,

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

**This permit shall become effective on June 1, 2022.**

**This permit expires at midnight on December 31, 2026.**

**Signed this 4<sup>th</sup> day of May, 2022.**



---

John K. Mackey, P.E.  
Interim Director

DWQ-2021-020404

## Table of Contents

Outline	Page Number
I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS.....	5
A. Description of Discharge Points .....	5
B. Narrative Standard .....	5
C. Specific Limitations and Self-Monitoring Requirements .....	5
D. Reporting of Monitoring Results .....	11
II. INDUSTRIAL PRETREATMENT PROGRAM.....	12
A. Pretreatment Program Delegation.....	12
B. Program Updates.....	13
C. Annual Report.....	13
D. General and Specific Prohibitions .....	13
E. Categorical Standards.....	14
F. Self-Monitoring and Reporting Requirements .....	14
G. Enforcement Notice .....	15
H. Formal Action.....	15
III. BIOSOLIDS REQUIREMENTS.....	16
A. Biosolids Treatment and Disposal .....	16
B. Specific Limitations and Monitoring Requirements .....	16
C. Management Practices of Biosolids.....	19
D. Special Conditions on Biosolids Storage.....	22
E. Representative Sampling.....	22
F. Reporting of Monitoring Results.....	22
G. Additional Record Keeping Requirements Specific to Biosolids.....	22
IV. STORM WATER REQUIREMENTS.....	24
V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS.....	25
A. Representative Sampling .....	25
B. Monitoring Procedures.....	25
C. Penalties for Tampering.....	25
D. Compliance Schedules.....	25
E. Additional Monitoring by the Permittee .....	25
F. Records Contents.....	25
G. Retention of Records .....	25
H. Twenty-four Hour Notice of Noncompliance Reporting.....	25
I. Other Noncompliance Reporting.....	26
J. Inspection and Entry .....	26
VI. COMPLIANCE RESPONSIBILITIES .....	28
A. Duty to Comply .....	28
B. Penalties for Violations of Permit Conditions .....	28
C. Need to Halt or Reduce Activity not a Defense.....	28
D. Duty to Mitigate.....	28
E. Proper Operation and Maintenance.....	28
F. Removed Substances.....	28
G. Bypass of Treatment Facilities .....	28
H. Upset Conditions .....	30
VII. GENERAL REQUIREMENTS.....	31
A. Planned Changes.....	31
B. Anticipated Noncompliance.....	31
C. Permit Actions .....	31
D. Duty to Reapply.....	31
E. Duty to Provide Information .....	31

**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

F. Other Information..... 31  
G. Signatory Requirements..... 31  
H. Penalties for Falsification of Reports..... 32  
I. Availability of Reports ..... 32  
J. Oil and Hazardous Substance Liability..... 32  
K. Property Rights ..... 32  
L. Severability ..... 32  
M. Transfers..... 33  
N. State or Federal Laws ..... 33  
O. Water Quality - Reopener Provision..... 33  
P. Biosolids – Reopener Provision ..... 33  
Q. Toxicity Limitation - Reopener Provision ..... 33  
VIII. DEFINITIONS ..... 35  
    A. Wastewater ..... 35  
    B. Biosolids ..... 36

**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*.

<u>Outfall Number</u>	<u>Location of Discharge Outfall</u>
001	Located at latitude 40°36'41" and longitude 111°55'34". The discharge is through a 60-inch pipe runs from the northeast side of the plant to the Jordan River.

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

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfall 001 as defined in *Part VIII*, and determined by test procedures described in *Part I. C.4.a* of this permit.
2.
  - a. 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:

Parameter	Effluent Limitations *a				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow *b, *c	50	-	-	-	-
BOD <sub>5</sub> , mg/L	15	21	-	-	-
BOD <sub>5</sub> Min. % Removal	85	-	-	-	-
TSS, mg/L	25	35	-	-	-
TSS Min. % Removal	85	-	-	-	-
Dissolved Oxygen, mg/L	-	-	-	5.0	-
Total Ammonia (as N), mg/L					
Summer (Jun-Aug)	1.5	-	-	-	6.0
Fall (Sep - Nov)	3.0	-	-	-	9.0
Winter (Dec - Feb)	4.0	-	-	-	9.4
Spring (Mar -May)	3.0	-	-	-	7.4

**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

Parameter	Effluent Limitations *a				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
TRC, mg/L *d					
Summer (Jun-Aug)	-	-	-	-	0.028
Fall (Sep - Nov)	-	-	-	-	0.022
Winter (Dec - Feb)	-	-	-	-	0.028
Spring (Mar -May)	-	-	-	-	0.023
<i>E. coli</i> , No./100mL	126	157	-	-	-
WET, Chronic Biomonitoring	-	-	-	-	IC <sub>25</sub> > 62.2% effluent
Oil & Grease, mg/L	-	-	-	-	10.0
pH, Standard Units	-	-	-	6.5	9
Total Phosphorous, mg/L	-	-	1.0	-	-
*a. See Definitions, <i>Part VIII</i> , for definition of terms.					
*b. Flow is not a pollutant; it is included in the permit to help determine loading levels. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.					
*c. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.					
*d. Analytical results less than 0.06 mg/l will not be considered out of compliance with the permit. For purposes of calculating averages and reporting on the Discharge Monitoring Report form, the following will apply: 1) analytical values less than 0.02 mg/L shall be considered zero; and 2) analytical values less than 0.06 mg/L and equal to or greater than 0.02 mg/L will be recorded as measured.					

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow *b, *c	Continuous	Recorder	MGD
BOD <sub>5</sub> , Influent *g	4 x Weekly	Composite	mg/L
Effluent	4 x Weekly	Composite	mg/L
TSS, Influent *g	4 x Weekly	Composite	mg/L
Effluent	4 x Weekly	Composite	mg/L
<i>E. coli</i>	4 x Weekly	Grab	No./100mL
pH	4 x Weekly	Grab	SU
Total Ammonia (as N)	4 x Weekly	Composite	mg/L
DO	4 x Weekly	Grab	mg/L
WET – Biomonitoring *h			
Ceriodaphnia - Chronic	Monthly with alternating species	Composite	Pass/Fail
Fathead Minnows - Chronic		Composite	Pass/Fail
TRC, mg/L, *d	6 x Weekly *i	Grab	mg/L
Oil & Grease *j	When Sheen Observed	Grab	mg/L
Orthophosphate (as P), *k			
Effluent	Monthly	Composite	mg/L
Total Phosphorus (as P), *k			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L

**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Kjeldahl Nitrogen TKN (as N), *k			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrate, NO3 *k	Monthly	Composite	mg/L
Nitrite, NO2 *k	Monthly	Composite	mg/L
TDS, mg/L *l	Monthly	Composite	mg/L
Temperature, *l	Monthly	Grab	mg/L
Total Copper	Monthly	Composite	mg/L
Total Selenium	Monthly	Composite	mg/L
Total Cyanide	Monthly	Grab	mg/L
Free Cyanide	Monthly	Grab	mg/L
Total Mercury, *m	Monthly	Grab	mg/L
Metals, Influent	Quarterly	Composite/Grab	mg/L
Effluent	Quarterly	Composite/Grab	mg/L
Organic Toxics, Influent	Yearly	Grab	mg/L
Effluent	Yearly	Grab	mg/L
*a. See Definitions, <i>Part VIII</i> , for definition of terms.			
*b. Flow is not a pollutant; it is included in the permit to help determine loading levels. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.			
*c. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.			
*g. In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.			
*h. Chronic WET test on Ceriodaphnia and fathead minnows will be tested monthly, alternating between the two species.			
*d. Analytical results less than 0.06 mg/l will not be considered out of compliance with the permit. For purposes of calculating averages and reporting on the Discharge Monitoring Report form, the following will apply: 1) analytical values less than 0.02 mg/L shall be considered zero; and 2) analytical values less than 0.06 mg/L and equal to or greater than 0.02 mg/L will be recorded as measured.			
*i. Total residual chlorine monitoring frequency is 6 times a week. The chlorine disinfection is a backup system to the ultra violet system and therefore should not be needed unless the ultra violet system has a failure and is by passed. The TRC limits are low enough to require analysis in the onsite lab which is open only 6 days a week. Frequency reduction will remove a requirement that the lab be opened for a 7th day. In case of a bypass on any day the lab is closed, South Valley will bring in lab personnel to open the lab for TRC analysis.			
*j. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.			
*k. These reflect changes and additions required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limit rule. The rule requires that all monitoring shall be based on 24-hour composite samples by use of an automatic sampler or a minimum of four grab samples collected a minimum of two hours apart. This collection method is only for the monthly samples being collected in compliance with the rule.			

**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
*l. Total Dissolved Solids, and Temperature are being sampled in support of the work being done for the TMDL currently underway for the Jordan River. The Pollutants of Concern will be monitored and reported monthly by the facility on Discharge Monitoring Report, but will not have a limit associated with them. If South Valley decides to sample more frequently for these POC's, the additional data will be welcome.			
*m. The metals results from 2015 to 2020 were reviewed and checked for RP. The RP recommended that the monitoring frequency for mercury be increase.			

3. Compliance Schedule

- a. There is no compliance schedule associated with this permit at this time.

4. Chronic Whole Effluent Toxicity (WET) Testing.

- a. *Whole Effluent Testing – Chronic Toxicity.*

Starting on June 1 2022, the permittee shall monthly conduct chronic static renewal toxicity tests on a composite sample of the final effluent at Outfall(s) 001. The sample shall be collected at the point of compliance 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* and *Pimephales promelas* (fathead minnow).

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 62.2% 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 I.C.4.b Accelerated Testing).

If possible, dilution water should be obtained from the receiving stream.

If the permit contains a total residual chlorine limitation such that it may interfere with WET testing (>0.20 mg/L), the permittee may dechlorinate the sample in accordance with the standard method. If dechlorination is negatively affecting the test, the permittee may collect the sample just before chlorination with Director approval.

Monthly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the required reporting period. Monthly test results shall be reported along with the DMR submitted for that month. The format for the report shall be consistent with Appendix C of “Utah Pollutant Discharge Elimination

**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity, Utah Division of Water Quality, February, 2018.

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. All reduction of WET testing is 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



**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

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 I 4.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:

**PART I**  
**DISCHARGE PERMIT NO. UT0024384**  
**WASTEWATER**

- (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 by NetDMR, entered into NetDMR no later than the 28<sup>th</sup> day of the month following the completed reporting period. The first report is due on July 28, 2022. 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.

## **II. INDUSTRIAL PRETREATMENT PROGRAM**

- A. Pretreatment Program Delegation. The permittee has been delegated primary responsibility for enforcing against discharges prohibited by *40 CFR 403.5* and applying and enforcing any national Pretreatment Standards established by the United States Environmental Protection Agency in accordance with Section 307 (b) and (c) of *The Clean Water Act (CWA)*, as amended by *The Water Quality Act (WQA)*, of 1987.

The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, and procedures described in the Pretreatment Program that has been submitted to DWQ by the permittee. Such program commits the permittee to do the following:

1. Carry out inspection, surveillance, and monitoring procedures, which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the pretreatment standards. At a minimum, all significant industrial users shall be inspected and sampled by the permittee at least once per year;
2. Control through permit, order, or similar means, the contribution to the POTW by each industrial user to ensure compliance with applicable pretreatment standards and requirements;
3. Require development, as necessary, of compliance schedules by each industrial user for the installation of control technologies to meet applicable pretreatment standards;
4. Maintain and update industrial user information as necessary, to ensure that all IUs are properly permitted and/or controlled at all times;
5. Enforce all applicable pretreatment standards and requirements and obtain appropriate remedies for noncompliance by any industrial user;
6. Annually publish a list of industrial users that were determined to be in significant noncompliance during the previous year. The notice must be published before March 28 of the following year;
7. Maintain an adequate revenue structure and staffing level for continued implementation of the Pretreatment Program.
8. Evaluate all significant industrial users at least once every two years to determine if they need to develop a slug prevention plan. If a slug prevention plan is required, the permittee shall insure that the plan contains at least the minimum elements required in *40 CFR 403.8(f)(2)(v)*;
9. Notify all significant industrial users of their obligation to comply with applicable requirements under *Subtitles C and D* of the *Resource Conservation and Recovery Act (RCRA)*; and
10. Develop, implement, and maintain an enforcement response plan as required by *40 CFR 403.8(f)(5)* which shall, at a minimum,
  - a. Describe how the POTW will investigate instances of noncompliance;
  - b. Describe the types of escalating enforcement responses the POTW will take in response to all anticipated type of industrial user violations; and

**PART II**  
**DISCHARGE PERMIT NO. UT0024384**  
**PRETREATMENT**

- c. Describe the time periods within which such responses will be taken and identify the POTW staff position(s) responsible for pursuing these actions.
11. Establish and enforce specific local limits as necessary to implement the provisions of the *40 CFR Parts 403.5(a)* and *(b)*, and as required by *40 CFR Part 403.5(c)*.
- B. Program Updates. The permittee is required to modify its pretreatment program, as necessary, to reflect changes in the regulations of *40 CFR 403*. Such modifications shall be completed within the time frame set forth by the applicable regulations. Modification of the approved pretreatment program must be done in accordance with the requirements of *40 CFR 403.18*. Modifications of the pretreatment program which are deemed substantial, either by the Director or *40 CFR 403.18*, shall not be implemented until after approval has been granted by the Director. Substantial changes include, but are not limited to, any change in any legal authority, major modification in the administrative structure for the pretreatment program or operating agreement(s), a reduction in sampling or inspecting of industrial users, or a change in the method of funding the program.
- C. Annual Report. The permittee shall provide the Division of Water Quality and EPA with an annual report briefly describing the pretreatment program activities over the previous calendar year. Reports shall be submitted no later than March 28 of each year. These annual reports shall, at a minimum, include:
1. An updated listing of industrial users within the service area for the POTW.
  2. A descriptive summary of the compliance activities including numbers of any major enforcement actions, i.e., administrative orders, penalties, civil actions, etc.
  3. An assessment of the compliance status of industrial users and the effectiveness of the Pretreatment Program in meeting its needs and objectives within the service area for the POTW.
  4. A description of all changes made to the pretreatment program implement by the permittee, per *Section B* of this section.
  5. Other information as may be determined necessary by the Director.
- D. General and Specific Prohibitions. Pretreatment standards (*40 CFR 403.5*) specifically prohibit the introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:
1. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, waste streams with a closed cup flashpoint of less than 140°F (60°C);
  2. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;
  3. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;
  4. Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge at such volume or strength as to cause interference in the POTW;

**PART II  
DISCHARGE PERMIT NO. UT0024384  
PRETREATMENT**

5. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104°F (40°C);
  6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
  7. Pollutants, which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems;
  8. Any trucked or hauled pollutants, except at discharge points designated by the POTW; or
  9. Any pollutant that causes pass through or interference at the POTW.
  10. Any specific pollutant which exceeds any local limitation established by the POTW in accordance with the requirement of *40 CFR 403.5(c)* and *40 CFR 403.5(d)*.
- E. Categorical Standards. In addition to the general and specific limitations expressed in *Part D* of this section, applicable National Categorical Pretreatment Standards must be met by all industrial users of the POTW. These standards are published in the federal regulations at *40 CFR 405* et. seq.
- F. Self-Monitoring and Reporting Requirements.
1. Influent and Effluent Monitoring and Reporting Requirements. The permittee shall sample and analyze both the influent and effluent, for the parameters listed in the Monitoring for Pretreatment Program Table.

Monitoring for Pretreatment Program Table				
Parameter	Reporting Limit	Sample Type	Frequency	Units
Total Arsenic	0.161	Composite	Quarterly	mg/L
Total Cadmium	0.0035			
Total Chromium	0.0157			
Total Copper	0.0444			
Total Lead	0.0272			
Total Molybdenum	NA			
Total Nickel	0.258			
Total Selenium	0.006			
Total Silver	0.0491			
Total Zinc	0.481			
Total Cyanide	0.0084	Composite/Grab	Yearly	
Total Mercury	0.000019			
TTOs	NA			

2. A method must be used that has a reporting limit as stated in the reporting limit column in the table above. If a method is not available the permittee must submit documentation to the Director regarding the method that will be used.
3. The influent and effluent shall be analyzed by the permittee for total toxic pollutants (TTOs) listed in 40 CFR 122 Appendix D Table II (Organic Toxic Pollutants). The pesticides fraction of Appendix D, Table II is suspended unless pesticides are expected to be present.

**PART II**  
**DISCHARGE PERMIT NO. UT0024384**  
**PRETREATMENT**

4. In accordance with the requirements of 40 CFR Part 403.5(c), the permittee shall determine if there is a need to develop or revise its local limits in order to implement the general and specific prohibitions of 40 CFR Part 403.5 (a) and Part 403.5 (b). A technical evaluation of the need to develop or revise local limits shall be submitted to the Director within 12 months of the effective date of this permit. This evaluation should be conducted in accordance with the latest revision of the EPA Local Limits Development Guidance, July 2004. If a technical evaluation, reveals that development or revision of local limits is necessary, the permittee shall submit the proposed local limits revision to the Division of Water Quality for approval, and after approval implement the new local limits. Implementation of the local limits, must be completed per the approval by the Director.
  5. Revised local limits must be submitted per the requirements set forth by DWQ.
  6. The results of the analyses of metals, cyanide and toxic organics shall be submitted along with the Discharge Monitoring Report (DMR) at the end of the earliest possible reporting period. Also, the permittee must submit a copy of the toxic organics data to the Pretreatment Coordinator for DWQ via email.
  7. Reporting and Monitoring of Pollutants of Concern
    - a. For local limit parameters it is recommended that the most sensitive method be used for analysis. This will determine if the parameter is present and provide removal efficiencies based on actual data rather than literature values.
    - b. If a parameter load is greater than the allowable headworks load, for any pollutant listed in Part II.F.1. or a pollutant of concern listed in the local limit development document, the permittee must report the information to the Pretreatment Coordinator for DWQ. If the loading exceeds the allowable headworks load, increase sampling must occur based on the requirements given by the Pretreatment Coordinator for DWQ. If needed sampling may need to occur to find the source(s) of the increase. This may include sampling of the collection system. Notification regarding the exceedances of the allowable headworks loading can be provided via email.
- G. Enforcement Notice. *UCA 19-5-104* provides that the State may issue a notice to the POTW stating that a determination has been made that appropriate enforcement action must be taken against an industrial user for noncompliance with any pretreatment requirements within 30 days. The issuance of such notice shall not be construed to limit the authority of the Director.
- H. Formal Action. The Director retains the right to take legal action against any industrial user and/or POTW for those cases where a permit violation has occurred because of the failure of an industrial user to meet an applicable pretreatment standard.

### **III. BIOSOLIDS REQUIREMENTS**

A. Biosolids Treatment and Disposal. The authorization to dispose of biosolids provided under this permit is limited to those biosolids produced from the treatment works owned and operated by the permittee. The treatment methods and disposal practices are designated below.

1. Treatment

a. Heat Drying -solids are dried by direct or indirect contact with hot gases to reduce the moisture content of the solids to 10 percent or lower. Either the temperature of the solids particles or exceeds 80° C (176° F) or the wet bulb temperature of the gas in contact with the solids as the solids leaves the dryer exceeds 80° C (176° F) (40 CFR 503.32(a)(8)(ii) Appendix B. B. 2.

2. Description of Biosolids Disposal Method

- a. Class A biosolids may be sold or given away to the public for lawn and garden use or land application.
- b. Class B biosolids may be land applied for agriculture use or at reclamation sites at agronomic rates.
- c. Biosolids may be disposed of in a landfill or transferred to another facility for treatment and/or disposal.

3. Changes in Treatment Systems and Disposal Practices.

- a. Should the permittee change their disposal methods or the biosolids generation and handling processes of the plant, the permittee must notify the Director at least 30 days in advance if the process/method is specified in 40 CFR 503. This includes, but is not limited to, the permanent addition or removal of any biosolids treatment units (i.e., digesters, drying beds, belt presses, etc.) and/or any other change.
- b. Should the permittee change their disposal methods or the biosolids generation and handling processes of the plant, the permittee must notify the Director at least 180 days in advance if the process/method is not specified in 40 CFR 503. This includes, but is not limited to, the permanent addition or removal of any biosolids treatment units (i.e., digesters, drying beds, belt presses, etc.) and/or any other change.

For any biosolids that are land filled, the requirements in *Section 2.12* of the latest version of the *EPA Region VIII Biosolids Management Handbook* must be followed

B. Specific Limitations and Monitoring Requirements. All biosolids generated by this facility to be sold or given away to the public shall meet the requirements of *Part III.B.1, 2, 3 and 4* listed below.

1. Metals Limitations. All biosolids sold or given away in a bag or similar container for application to lawns and home gardens must meet the metals limitations as described below. If these metals limitations are not met, the biosolids must be landfilled.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis				
Heavy Metals	Table 1	Table 2	Table 3	Table 4
	Ceiling Conc. Limits <sup>1, 2</sup> , (mg/kg)	CPLR <sup>3</sup> , (mg/ha)	Pollutant Conc. Limits <sup>1, 2</sup> , (mg/kg)	APLR <sup>4</sup> , (mg/ha-yr)
Total Arsenic	75	41	41	2.0
Total Cadmium	85	39	39	1.9
Total Copper	4300	1500	1500	75
Total Lead	840	300	300	15
Total Mercury	57	17	17	0.85
Total Molybdenum	75	N/A	N/A	N/A
Total Nickel	420	420	420	21
Total Selenium	100	100	100	5.0
Total Zinc	7500	2800	2800	140
1 - The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application				
2 - These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period				
3 - CPLR - Cumulative Pollutant Loading Rate				
4 - APLR - Annual Pollutant Loading Rate				

2. Pathogen Limitations. All biosolids sold or given away in a bag or a similar container for application to lawns and home gardens must meet the pathogen limitations for Class A. Land applied biosolids must meet the pathogen limitations for Class B as described below. If the pathogen limitations are not met, the biosolids must be landfilled.
- a. Class A biosolids shall meet one of the pathogen measurement requirements in the following Pathogen Control Class table or shall meet the requirements for a Process to Further Reduce Pathogens as defined in *40 CFR Part 503.32(a) Sewage Sludge – Class A*.
- (1) South Valley currently uses the following practices that can meet Class A Pathogen requirements found under (*40 CFR 503.32(a)(8)(H)*), (*Appendix B, B.2.*):
- (a) Heat Drying - solids are dried by direct or indirect contact with hot gases to reduce the moisture content of the solids to 10 percent or lower. Either the temperature of the solids particles or exceeds 80° C (176° F) or the wet bulb temperature of the gas in contact with the solids as the solids leaves the dryer exceeds 80° C (176° F) (*40 CFR 503.32(a)(8)(H) Appendix B. B.*
- b. Class B biosolids shall meet the pathogen measurement requirements in the following Pathogen Control Class table or shall meet the requirements for a Process to Significantly Reduce Pathogens as defined in *40 CFR Part 503.32(b) Sewage Sludge – Class B*. South Valley currently has no chosen method of achieving PSRP.

In addition, the permittee shall comply with all applicable site restrictions listed below (*40 CFR Part 503.32,(b),(5)*):

- (1) Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application.



**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- (2) Food crops with harvested parts below the land surface shall not be harvested for 20 months after application if the biosolids remains on the land surface for four months or more prior to incorporation into the soil.
- (3) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.
- (4) Food crops, feed crops, and fiber crops shall not be harvested from the land for 30 days after application.
- (5) Animals shall not be allowed to graze on the land for 30 days after application.
- (6) Turf grown on land where biosolids is applied shall not be harvested for one year after application if the harvested turf is placed on either land with a high potential for public exposure or a lawn.
- (7) Public access to land with a high potential for public exposure shall be restricted for one year after application.
- (8) Public access to land with a low potential for public exposure shall be restricted for 30 days after application.
- (9) The sludge or the application of the sludge shall not cause or contribute to the harm of a threatened or endangered species or result in the destruction or adverse modification of critical habitat of a threatened or endangered species after application.

Pathogen Control Class	
503.32 (a)(1) - (5), (7), (8), Class A	503.32 (b)(1) - (5), Class B
B Salmonella species –less than three (3) MPN <sup>1</sup> per four (4) grams total solids (DWB) <sup>2</sup> or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB).	Fecal Coliforms – less than 2,000,000 MPN or CFU <sup>3</sup> per gram total solids (DWB).
503.32 (a)(6) Class A—Alternative 4	
B Salmonella species –less than three (3) MPN per four (4) grams total solids (DWB) or less than 1,000 MPN Fecal Coliforms per gram total solids (DWB), And - Enteric viruses –less than one (1) plaque forming unit per four (4) grams total solids (DWB) And - Viable helminth ova –less than one (1) per four (4) grams total solids (DWB)	
1 - MPN – Most Probable Number	
2 - DWB – Dry Weight Basis	
3 - CFU – Colony Forming Units	

3. Vector Attraction Reduction Requirements.

- a. The permittee will meet vector attraction reduction through use of one of the methods listed in *40 CFR 503.33*. South Valley can meet the vector attraction reduction requirements through one of the methods listed below.

(1) Heat Drying-solids are dried to less than 90% solids (*40 CFR 503.33(b)*).

If the permittee intends to use another one of the alternatives, the Director and the EPA must be informed at least thirty (30) days prior to its use. This change may be made without additional public comment.

4. Self-Monitoring Requirements.

- a. At a minimum, upon the effective date of this permit, all chemical pollutants, pathogens and applicable vector attraction reduction requirements shall be monitored according to *40 CFR 503.16(1)(a)*.

Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46)		
Amount of Biosolids Disposed Per Year		Monitoring Frequency
Dry US Tons	Dry Metric Tons	Per Year or Batch
> 0 to < 320	> 0 to < 290	Once Per Year or Batch
> 320 to < 1650	> 290 to < 1,500	Once a Quarter or Four Times
> 1,650 to < 16,500	> 1,500 to < 15,000 *1	Bi-Monthly or Six Times
> 16,500	> 15,000	Monthly or Twelve Times
*1. South Valley has produced on average 5000 DMT of biosolids, over the past 10 years. Therefore, they should sample at least six (6) times a year.		

- b. Sample collection, preservation and analysis shall be performed in a manner consistent with the requirements of *40 CFR 503* and/or other criteria specific to this permit. A metals analysis is to be performed using *Method SW 846* with *Method 3050* used for digestion. For the digestion procedure, an amount of biosolids equivalent to a dry weight of one gram shall be used. The methods are also described in the latest version of the *Region VIII Biosolids Management Handbook*.
- c. The Director may request additional monitoring for specific pollutants derived from biosolids if the data shows a potential for concern.
- d. After two (2) years of monitoring at the frequency specified, the permittee may request that the Director reduce the sampling frequency for the heavy metals. The frequency cannot be reduced to less than once per year for biosolids that are sold or given away to the public for any parameter. The frequency also cannot be reduced for any of the pathogen or vector attraction reduction requirements listed in this permit.

C. Management Practices of Biosolids.

1. Biosolids Distribution Information

- a. For biosolids that are sold or given away, an information sheet shall be provided to the person who receives the biosolids. The label or information sheet shall contain:
- (1) The name and address of the person who prepared the biosolids for a sale or to be given away.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- (2) A statement that prohibits the application of the biosolids to the land except in accordance with the instructions on the label or information sheet.
2. Biosolids Application Site Storage
    - a. For biosolids or material derived from biosolids that are stored in piles for one year or longer, measures shall be taken to ensure that erosion (whether by wind or water) does not occur. However, best management practices should also be used for piles used for biosolids treatment. If a treatment pile is considered to have caused a problem, best management practices could be added as a requirement in the next permit renewal
3. Land Application Practices
    - a. The permittee shall operate and maintain the land application site operations in accordance with the following requirements:
      - (1) The permittee shall provide to the Director and the EPA within 90 days of the effective date of this permit a land application plan.
      - (2) Application of biosolids shall be conducted in a manner that will not contaminate the groundwater or impair the use classification for that water underlying the sites.
      - (3) Application of biosolids shall be conducted in a manner that will not cause a violation of any receiving water quality standard from discharges of surface runoff from the land application sites. Biosolids shall not be applied to land 10 meters or less from waters of the United States (as defined in 40 CFR 122.2).
      - (4) No person shall apply biosolids for beneficial use to frozen, ice-covered, or snow-covered land where the slope of such land is greater than three percent and is less than or equal to six percent unless one of the following requirements is met:
        - (a) there is 80 percent vegetative ground cover; or,
        - (b) approval has been obtained based upon a plan demonstrating adequate runoff containment measures.
      - (5) Application of biosolids is prohibited to frozen, ice-covered, or snow-covered sites where the slope of the site exceeds six percent.
      - (6) Agronomic Rate
        - (a) Application of biosolids shall be conducted in a manner that does not exceed the agronomic rate for available nitrogen of the crops grown on the site. At a minimum, the permittee is required to follow the methods for calculating agronomic rate outlined in the latest version of the *Region VIII Biosolids Management Handbook* (other methods may be approved by the Director). The treatment plant shall provide written notification to the applier of the biosolids of the concentration of total nitrogen (as N on a dry weight basis) in the biosolids. Written permission from the Director is required to exceed the agronomic rate.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- (b) The permittee may request the limits of *Part III, C, 6* be modified if different limits would be justified based on local conditions. The limits are required to be developed in cooperation with the local agricultural extension office or university.
  - (c) Deep soil monitoring for nitrate-nitrogen is required for all land application sites (does not apply to sites where biosolids are applied less than once every five years). A minimum of six samples for each 320 (or less) acre area is to be collected. These samples are to be collected down to either a 5-foot depth, or the confining layer, whichever is shallower (sample at 1 foot, 2-foot, 3-foot, 4 foot and 5-foot intervals). Each of these one-foot interval samples shall be analyzed for nitrate-nitrogen. In addition to the one-foot interval samples, a composite sample of the 5-foot intervals shall be taken, and analyzed for nitrate-nitrogen as well. Samples are required to be taken once every five years for non-irrigated sites that receive more than 18 inches of precipitation annually or for irrigated sites
- (7) Biosolids shall not be applied to any site area with standing surface water. If the annual high groundwater level is known or suspected to be within five feet of the surface, additional deep soil monitoring for nitrate-nitrogen as described in *Part III.C.(6),(c)*. is to be performed. At a minimum, this additional monitoring will involve a collection of more samples in the affected area and possibly more frequent sampling. The exact number of samples to be collected will be outlined in a deep soil monitoring plan to be submitted to the Director and the EPA within 90 days of the effective date of this permit. The plan is subject to approval by the Director.
- (8) The specified cover crop shall be planted during the next available planting season. If this does not occur, the permittee shall notify the Director in writing. Additional restrictions may be placed on the application of the biosolids on that site on a case-by-case basis to control nitrate movement. Deep soil monitoring may be increased under the discretion of the Director.
- (9) When weather and or soil conditions prevent adherence to the biosolids application procedure, biosolids shall not be applied on the site.
- (10) For biosolids that are sold or given away, an information sheet shall be provided to the person who receives the biosolids. The label or information sheet shall contain:
- (a) The name and address of the person who prepared the biosolids for sale or give away for application to the land.
  - (b) A statement that prohibits the application of the biosolids to the land except in accordance with the instructions on the label or information sheet.
  - (c) The annual whole biosolids application rate for the biosolids that do not cause the metals loading rates in Tables 1, 2, and 3 (*Part III.B.1.*) to be exceeded.
- (11) Biosolids subject to the cumulative pollutant loading rates in Table 2 (*Part III.B.1.*) shall not be applied to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates in Table 2 have been reached.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- (12) If the treatment plant applies the biosolids, it shall provide the owner or leaseholder of the land on which the biosolids are applied notice and necessary information to comply with the requirements in this permit.
  - (13) The permittee shall inspect the application of the biosolids to active sites to prevent malfunctions and deterioration, operator errors and discharges, which may cause or lead to the release of biosolids to the environment or a threat to human health. The permittee must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment. The permittee shall keep an inspection log or summary including at least the date and time of inspection, the printed name and the handwritten signature of the inspector, a notation of observations made and the date and nature of any repairs or corrective action.
- D. Special Conditions on Biosolids Storage. Permanent storage of biosolids is prohibited. Biosolids shall not be temporarily stored for more than two (2) years. Written permission to store biosolids for more than two years must be obtained from the Director. Storage of biosolids for more than two years will be allowed only if it is determined that significant treatment is occurring.
- E. Representative Sampling. Biosolids samples used to measure compliance with *Part III* of this Permit shall be collected at locations representative of the quality of biosolids generated at the treatment works and immediately prior to land application.
- F. Reporting of Monitoring Results.
1. Biosolids. The permittee shall provide the results of all monitoring performed in accordance with Part III.B, and information on management practices, biosolids treatment, site restrictions and certifications shall be provided no later than February 19 of each year. Each report is for the previous calendar year. If no biosolids were sold or given away during the reporting period, "no biosolids were sold or given away" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the Signatory Requirements (see Part VII.G), and submitted to the Utah Division of Water Quality and the EPA by the NeT-Biosolids system through the EPA Central Data Exchange (CDX) System.
- G. Additional Record Keeping Requirements Specific to Biosolids.
1. Unless otherwise required by the Director, **the permittee is not required to keep records** on compost products if the permittee prepared them from biosolids that meet the limits in Table 3 (*Part III.B.1*), the Class A pathogen requirements in *Part III.B.2* and the vector attraction reduction requirements in *Part III.B.3*. The Director may notify the permittee that additional record keeping is required if it is determined to be significant to protecting public health and the environment.
  2. **The permittee is required** to keep the following information for at least 5 years:
    - a. Concentration of each heavy metal in Table 3 (*Part III.B.1*).
    - b. A description of how the pathogen reduction requirements in *Part III.B.2* were met.
    - c. A description of how the vector attraction reduction requirements in *Part III.B.3* were met.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- d. A description of how the management practices in *Part III.C* were met (if necessary).
- e. The following certification statement:

"I certify under the penalty of law, that the heavy metals requirements in *Part III.B.1*, the pathogen requirements in *Part III.B.2*, the vector attraction requirements in *Part III.B.3*, the management practices in *Part III.C*. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements, the vector attraction reduction requirements and the management practices have been met. I am aware that there are significant penalties for false certification including the possibility of imprisonment."

- 3. 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 the life of the permit. Data collected on site, copies of Biosolids Report forms, and a copy of this UPDES biosolids-only permit must be maintained on site during the duration of activity at the permitted location.

**IV. STORM WATER REQUIREMENTS.**

- A. Industrial Storm Water Permit. Based on the type of industrial activities occurring at the facility, the permittee is required to maintain separate coverage or an appropriate exclusion under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activities (UTR000000). If the facility is not already covered, the permittee has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP or exclusion documentation.

## V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

- A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.
- B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40 CFR Part 503*, utilizing sufficiently sensitive test methods 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.



**PART V**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

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 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;

**PART V**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,
5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Director, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

## VI. COMPLIANCE RESPONSIBILITIES

- A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at *Part VI.G, Bypass of Treatment Facilities* and *Part VI.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.
- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also include 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:
  - (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.

**PART VI**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- c. *Unanticipated bypass.* The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part IV.H, Twenty-Four Hour Reporting*. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

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

**VII. GENERAL REQUIREMENTS**

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

**PART VII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under *paragraph VII.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph VII.G.2* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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

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

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

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

L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

**PART VII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- M. Transfers. This permit may be automatically transferred to a new permittee if:
1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;
  2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
  3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.
- O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:
1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
  2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
  3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and 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. Use the following paragraph if WET testing is required at the facility:

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;



**PART VII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

1. Toxicity is detected, as per *Part I.C.4.a* of this permit, during the duration of this permit.
2. The TRE results indicate that the toxicant(s) represent pollutant(s) or pollutant parameter(s) that may be controlled with specific numerical limits, and the Director concludes that numerical controls are appropriate.
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.

## **VIII. DEFINITIONS**

### **A. Wastewater.**

1. The "7-day (and weekly) average", other than for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.
2. The "30-day (and monthly) average," other than for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
3. "Act," means the *Utah Water Quality Act*.
4. "Acute toxicity" occurs when 50 percent or more mortality is observed for either test species at any effluent concentration (lethal concentration or "LC<sub>50</sub>").
5. "Annual Loading Cap" is the highest allowable phosphorus loading discharged over a calendar year, calculated as the sum of all the monthly loading discharges measured during a calendar year divided by the number of monthly discharges measured during that year.
6. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
7. "Chronic toxicity" occurs when the IC<sub>25</sub> < XX% effluent. The XX% effluent is the concentration of the effluent in the receiving water, at the end of the mixing zone expressed as per cent effluent.
8. "IC<sub>25</sub>" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.
9. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

**PART VIII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

- a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
  - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
  - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every “X” gallons of flow); and,
  - d. Continuous sample volume, with sample collection rate proportional to flow rate.
10. “CWA” means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
  11. “Daily Maximum” (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
  12. “EPA,” means the United States Environmental Protection Agency.
  13. “Director,” means Director of the Division of Water Quality.
  14. A “grab” sample, for monitoring requirements, is defined as a single “dip and take” sample collected at a representative point in the discharge stream.
  15. An “instantaneous” measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
  16. “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.
  17. “Upset,” means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

**B. Biosolids.**

1. “Biosolids,” means any material or material derived from sewage solids that have been biologically treated.
2. “Dry Weight-Basis,” means 100 percent solids (i.e. zero percent moisture).
3. “Land Application” is the spraying or spreading of biosolids onto the land surface; the injection of biosolids below the land surface; or the incorporation of biosolids into the land

**PART VIII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

so that the biosolids can either condition the soil or fertilize crops or vegetation grown in the soil. Land application includes distribution and marketing (i.e. the selling or giving away of the biosolids).

4. "Pathogen," means an organism that is capable of producing an infection or disease in a susceptible host.
5. "Pollutant" for the purposes of this permit is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organisms that after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food-chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms.
6. "Runoff" is rainwater, leachate, or other liquid that drains over any part of a land surface and runs off the land surface.
7. "Similar Container" is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.
8. "Total Solids" are the materials in the biosolids that remain as a residue if the biosolids are dried at 103° or 105° Celsius.
9. "Treatment Works" are either Federally owned, publicly owned, or privately-owned devices or systems used to treat (including recycling and reclamation) either domestic sewage or a combination of domestic sewage and industrial waste or liquid manure.
10. "Vector Attraction" is the characteristic of biosolids that attracts rodents, flies, mosquito's or other organisms capable of transporting infectious agents.
11. "Animals" for the purpose of this permit are domestic livestock.
12. "Annual Whole Sludge Application Rate" is the amount of sewage sludge (dry-weight basis) that can be applied to a unit area of land during a cropping cycle.
13. "Agronomic Rate" is the whole sludge application rate (dry-weight basis) designed to: (1) provide the amount of nitrogen needed by the crop or vegetation grown on the land; and (2) minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.
14. "Annual Pollutant Loading Rate" is the maximum amount of a pollutant (dry-weight basis) that can be applied to a unit area of land during a 365-day period.
15. "Application Site or Land Application Site" means all contiguous areas of a users' property intended for sludge application.

**PART VIII**  
**DISCHARGE PERMIT NO. UT0024384**  
**BIOSOLIDS PERMIT NO. UTL-024384**

16. “Cumulative Pollutant Loading Rate” is the maximum amount of an inorganic pollutant (dry-weight basis) that can be applied to a unit area of land.
17. “Grit and Screenings” are sand, gravel, cinders, other materials with a high specific gravity and relatively large materials such as rags generated during preliminary treatment of domestic sewage at a treatment works and shall be disposed of according to *40 CFR 258*.
18. “High Potential for Public Contact Site” is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
19. “Low Potential for Public Contact Site” is the land with a low potential for contact by the public. This includes, but is not limited to, farms, ranches, reclamation areas, and other lands which are private lands, restricted public lands, or lands which are not generally accessible to or used by the public.
20. “Monthly Average” is the arithmetic mean of all measurements taken during the month.
21. “Volatile Solids” is the amount of the total solids in sewage sludge lost when the sludge is combusted at 550 degrees Celsius for 15-20 minutes in the presence of excess air.

**FACT SHEET AND STATEMENT OF BASIS  
SOUTH VALLEY WATER RECLAMATION FACILITY  
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS, & REUSE  
UPDES PERMIT NUMBER: UT0024384  
UPDES BIOSOLIDS PERMIT NUMBER: UTL-024384  
MAJOR MUNICIPAL**

**FACILITY CONTACTS**

<u>Name</u>	<u>Title</u>	<u>Email</u>
Lee Rawlings,	General Manager,	<a href="mailto:lrawlings@svwater.com">lrawlings@svwater.com</a>
Taigon Worthen, P.E.,	Facility Engineer Manager,	<a href="mailto:tworthen@svwater.com">tworthen@svwater.com</a>
Spencer Parkinson	Pretreatment Coordinator	<a href="mailto:sparkinson@svwater.com">sparkinson@svwater.com</a>
Randy Wyness	Facility Operations Director	<a href="mailto:rwyness@svwater.com">rwyness@svwater.com</a>

Facility Name: South Valley Water Reclamation Facility  
Mailing and Facility Address: 7495 South 1300 West  
West Jordan, Utah 84084  
Telephone: (801) 566-7711  
Actual Address: 7495 South 1300 West, West Jordan, Utah

**DESCRIPTION OF FACILITY**

This South Valley Water Reclamation Facility (South Valley) was completed in 1985 under the authority of the South Valley Joint Administrative Board. The authority over South Valley changed in 2003 and the present governing body is the Board of Directors. The Board represents the cities of Midvale, West Jordan, South Valley Sewer District, Midvalley Improvement District, and Sandy Suburban Improvement District. It serves the represented areas previously mentioned in addition to the towns of Bluffdale, Copperton, Draper, Herriman, South Jordan, Sandy, Riverton and other unincorporated areas in parts of Salt Lake County.

The plant design flow capacity is 50 MGD with a peak flow of 82.5 MGD. The plant design influent peak monthly organic capacity is 95,860 lbs./day BOD<sub>5</sub> and 95,860 lbs./day TSS. The total current service population equivalent is 411,000 people. The present flow is approximately 20 MGD on average and 35 MGD at peak flow.

The facility consists of 3 step screens (6 mm), 2 aerated grit chambers, 5 plug flow bioreactors, 6 final clarifiers, UV disinfection, 3 chlorine contact basins (used as backup to UV and for disinfection of onsite water use), a cascade aerator, 1 DAFT thickener, four belt filter presses and 2 Thermal Drying trains rated at 8.0 dry tons per day (dtpd) each. The facility is located at 7495 South 1300 West in West Jordan, Utah with an outfall to the Jordan River at latitude 40°36'41" and longitude 111°55'34". Approximately 2/3 of bio-solids are thermally dried and hauled offsite to various landfills and/or agricultural users. The remaining 1/3 of bio-solids are shipped to a soils regeneration site or sent to a solid waste landfill.

In 2005 *E. coli* bacteriological criteria were added to Utah Water Quality Standards, with the concurrent removal of fecal coliform bacteria; this change is a long-standing recommendation from EPA. The criteria of 126 organisms per 100 milliliters (org/100 ml) for *E. coli* is considered to be equivalent to that of 200-org/100 ml Fecal Coliforms.

South Valley requested a change from using carbonaceous biochemical oxygen demand (CBOD) as their effluent limit to using BOD<sub>5</sub> for the 2010 permit renewal. The BOD<sub>5</sub> value was calculated in a previous WLA (2010) and then a conversion factor was used to determine what the CBOD limit would be. The use of a BOD<sub>5</sub> limit will be continued from the previous permit in this renewal permit and will be 15 mg/L for the monthly average and 21mg/L for the max weekly value.

During the 2010 Permit cycle, the Jordan Basin Water Reclamation Facility commenced operation and the flows at South Valley were reduced.

For the 2016 Permit Renewal, Division of Water Quality (DWQ) included an effluent flow limit in the permit. Flow is not considered a pollutant, but is included in the permit to help determine pollutant loadings. The DWQ Reasonable Potential Analysis (RP) resulted in an increase in the monitoring frequency for copper, cyanide and selenium from quarterly to monthly. The low level necessary to evaluate mercury for RP has required that South Valley use a lower level of detection for mercury. DWQ also used a new model to develop the WLA, this resulted in minor adjustment to limits for this permit cycle.

The monitoring frequencies for many parameters were changed to be more consistent with DWQ’s “Monitoring, Recording, and Reporting Guidelines”. At the request of the South Valley, a review of the records was conducted and it was identified that a reduction in monitoring frequency was approved in 1999 and the record of it had been dropped from the FSSOB. The increase was then reversed through a modification of the permit. The details are included in the Summary of Changes from Previous Permit section of the FSSOB.

**SUMMARY OF CHANGES FROM PREVIOUS PERMIT**

**TBPEL**

On December 16, 2014, the Utah Water Quality Board adopted *Utah Administrative Code (UAC) R317-1-3.3, Technology-Based Limits for Controlling Phosphorous Pollution*. The Technology-Based Phosphorous Effluent Limits (TBPEL) establishes new regulations for the discharge of phosphorus to surface waters and is self-implementing. The TBPEL rule includes the following requirements for non-lagoon wastewater treatment plants:

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

On June 31, 2018, DWQ approved South Valley’s variance request not to extend beyond April 1, 2022 and with an interim total phosphorous annual average limit of 3.0 mg/L beginning January 1, 2020. This permit was modified, incorporating the approved variance with the interim limits and dates that were public noticed in the local newspaper, in which no comments were received.

The permit effluent limits incorporated the following changes:

Parameter	Effluent Limitations				
	Maximum Monthly Avg	Maximum Weekly Avg	Annual Average	Daily Minimum	Daily Maximum
TBPEL Rule Limit, Total Phosphorous, mg/L					
Interim Limit <sup>1</sup>	-	-	3.0	-	-

Parameter	Effluent Limitations				
	Maximum Monthly Avg	Maximum Weekly Avg	Annual Average	Daily Minimum	Daily Maximum
Final Limit <sup>2</sup>	-	-	1.0	-	-
1. TBPEL of 3.0 mg/L goes into effect on January 1, 2020.					
2. The final phosphorus limit goes on April 1, 2022.					

The TBPEL changes will be carried forward in this renewal. South Valley is on schedule to meet the TBPEL limits by April 1, 2022. The TBPEL requirements were completed prior to this permit renewal going into effect. All conditions of the Variance have been met and will no longer be needed; TBPEL limit and references in the permit have been removed and the final Total Phosphorous limit of 1.0 mg/L remains.

**Monitoring Frequency**

South Valley’s permit was modified to reflect changes in the monitoring frequency. The basis for this modification is described below.

In a letter dated January 17, 1999 and received January 28, 1999, South Valley requested the reduction in monitoring frequency for BOD<sub>5</sub>, TSS, fecal and total coliforms, pH and DO from daily to four (4) times a week. South Valley supported the request with fifteen years of consistent performance by the facility. DWQ sent a letter on February 2, 1999 agreeing with the request to reduce monitoring to four (4) times a week and informing South Valley that the change was considered a major permit modification and it would be public noticed shortly.

The permit modification to a monitoring frequency of four (4) times a week was public noticed in the Salt Lake Tribune and Deseret News on February 14, 1999 through March 16, 1999. The modification was completed, signed, and the modified permit was effective April 1, 1999.

During 2001, the South Valley permit was again renewed. During this renewal, South Valley requested a reduction in monitoring frequency from four (4) times a week to three (3) times a week. The request was granted and the permit was public noticed in the Salt Lake Tribune and Deseret News on June 10, 2001. Public comments were accepted through July 10, 2001. The permit became effective on September 1, 2001.

During the 2016 renewal the monitoring frequencies for many parameters were changed from three (3) times a week to five (5) times a week. South Valley brought to DWQ’s attention that at some time around 2000 they had requested the reduction in frequency and it had been granted. DWQ completed a review of the hard copy facility file to verify this, and was able to locate the documentation of the above modifications. As a result, the monitoring frequency will be reduced to four (4) times a week for BOD<sub>5</sub>, TSS, *E.coli*, Ammonia, and DO.

The changes are indicated in the Table below:

Self-Monitoring and Reporting Requirements Changes			
Parameter	Existing Frequency	Modified Frequency	Units
BOD <sub>5</sub> , Influent	5 x Weekly	4 x Weekly	mg/L
Effluent	5 x Weekly	4 x Weekly	mg/L
TSS, Influent	5 x Weekly	4 x Weekly	mg/L
Effluent	5 x Weekly	4 x Weekly	mg/L
<i>E. coli</i>	5 x Weekly	4 x Weekly	No./100mL



Self-Monitoring and Reporting Requirements Changes			
Parameter	Existing Frequency	Modified Frequency	Units
pH	5 x Weekly	4 x Weekly	SU
Ammonia	5 x Weekly	4 x Weekly	mg/L
DO	5 x Weekly	4 x Weekly	mg/L

**Receiving Stream Classification**

South Valley discharges to the Jordan River, which according to *Utah Administrative Code (UAC) R317-2-13*: was classified 2B, 3A, and 4.

Class 2B -- Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

Class 3A -- Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.

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

On December 2, 2020, the Utah Water Quality Board adopted a revised water quality standard (WQS) effective December 3, 2020. The revised WQS was submitted to the EPA for review in January 2021. March 15, 2021 the EPA responded with the approval of the revised WQS for the classification of the Jordan River from a 3A to 3B. Which means the section of the Jordan River is now classified as 2B, 3B, and 4.

Class 2B -- Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

Class 3B -- Protected for warm water species of game fish and other warm 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.

**RP Analysis**

The metals data was screened to determine which parameters required a Reasonable Potential (RP) test. Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is needed. A copy of the initial screening is included in the “Effluent Metals and RP Screening Results” table in attachment 3. The initial screening check for metals showed that the full model needed to be run on cadmium, copper, cyanide, and mercury. The RP process indicated that there were no changes to the limits or monitoring frequency recommended for cadmium and copper. The RP process indicated that a Chronic limit was recommended for cyanide and that increased monitoring was recommended for mercury.

As a result of the RP process, the mercury monitoring frequency will be increased from quarterly to monthly and the facility will start to sample and analyze for free cyanide in the effluent as well as use a grab samples for free and total cyanide.

**WET Guidance**

In 2018 DWQ finalized and updated Whole Effluent Toxicity (WET) Permit and Enforcement Guidance and started following it in all permit renewals. With this update, DWQ updated the standard language used in all permits and FSSOB's. This will be the first time the new WET Guidance will be used on the South Valley Permit.

One of the items that has changed in the standard language is that there is no longer language directly allowing the use of CO<sub>2</sub> Atmosphere to prevent pH drift during WET testing. It was determined that since the permit calls out 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 the method required for conducting wet tests. Part 11.3.6.2, 12.3.5.2 and 13.3.6.2 of that document allows for a CO<sub>2</sub> atmosphere to control pH. If the facilities request to use it, the DWQ will review the request and WET Test history to determine if the use is appropriate. South Valley submitted a request on December 10, 2021 (DWQ-2021-032622) to use the CO<sub>2</sub> Atmosphere. The DWQ has reviewed the South Valley WET Testing history and approved the use of CO<sub>2</sub> Atmosphere to prevent pH drift.

Another change as a result of the WET Guidance update is the requirement that a facility discharging greater than 20 MGD will sample Monthly. A review of the records indicates that South Valley has not been required to monitor WET more frequently than Quarterly. For this renewal South Valley will be required to monitor WET monthly using alternating species. The WET Policy and Permit both allow this frequency to be reduced after 10 passing WET Tests when the permittee requests it.

A concern over the frequency of testing and retesting after a failure was recognized; i.e., that under certain circumstances a facility could fail a Chronic Wet Test, commence Accelerated testing and end up having the retesting overlap for multiple subsequent sampling events. During the discussion of this possibility, it was determined that the WET language and policy allows for the suspension of regularly scheduled WET testing during the accelerated testing period and, provided the test was passed, an accelerated testing event could be used in place of a regularly scheduled test.

Therefore, it was determined that when a Chronic WET testing a failure occurs and the permittee commences with the Accelerated Testing (Part I, C. 4, b and c of the permit), regularly scheduled Chronic WET testing requirements for that species are suspended until the conclusion of the Accelerated Testing to establish a pattern of toxicity.

**WQBEL Changes from WLA**

Prior to development of the WLA, the DWQ and the facilities that discharge to the Jordan River worked to get a better understanding of the flows in the river. Specifically, they worked on updating the understanding of the 7Q10 low flow for the Jordan River. As a result, several limits did change for the facilities in WLA. Also, the new WLA adjusted the seasonal timing of the limits to reflect the climatological seasons and the flows in the Jordan River.

The ammonia limits for the summer season were impacted the greatest by this change. But the monthly average ammonia limits for the fall and spring seasons were also reduced.

Changes to Water Quality Based Effluent Limitations					
Previous WLA Permit Limits			New WLA Permit Limits		
Season/Month	Monthly Avg	Maximum	Season/Month	Monthly Avg	Maximum
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	4.0	10.8	Summer (Jun-Aug)	1.5	6.0
Fall (Oct-Dec)	4.0	9.0	Fall (Sep - Nov)	3.0	9.0
Winter (Jan-Mar)	4.0	9.4	Winter (Dec - Feb)	4.0	9.4
Spring (Apr-Jun)	4.0	7.4	Spring (Mar -May)	3.0	7.4
TRC, mg/L					
Summer (Jul-Sep)	-	0.030	Summer (Jun-Aug)	-	0.028
Fall (Oct-Dec)	-	0.027	Fall (Sep - Nov)	-	0.022
Winter (Jan-Mar)	-	0.028	Winter (Dec - Feb)	-	0.028
Spring (Apr-Jun)	-	0.027	Spring (Mar -May)	-	0.023

**DISCHARGE**

**DESCRIPTION OF DISCHARGE**

South Valley has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. A summary of 36 months of self-monitoring data is included at the end of this FSSOB. There were no significant violations during that time.

Outfall

Description of Discharge Point

001

Located at latitude 40°36'41" and longitude 111°55'34".  
The discharge is through a 60-inch pipe runs from the northeast side of the plant to the Jordan River

**RECEIVING WATERS AND STREAM CLASSIFICATION**

The discharge flows into the Jordan River, which is classified 2B, 3B, and 4 according to *Utah Administrative Code (UAC) R317-2-13*:

- Class 2B -- Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.
- Class 3B -- Protected for warm water species of game fish and other warm 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.

**TOTAL MAXIMUM DAILY LOAD (TMDL) REQUIREMENTS**

A QUAL2Kw model of the Jordan River was populated and calibrated as part of the TMDL study (Stantec Consulting 2010, UDWQ 2010). The model was subsequently validated to a synoptic survey conducted by UDWQ and the Jordan River/Farmington Bay Water Quality Council (JRFBWQC) during July 2014 (UDWQ 2015). The model validation identified areas for future improvement of the model; however, the model was considered suitable for application to the WLA for ammonia. Due to ongoing studies related to the TMDL, this WLA used for permit development does not address parameters related to dissolved oxygen, including biochemical oxygen demand (BOD), dissolved oxygen (DO), total nitrogen (TN), and total phosphorus (TP).

**BASIS FOR EFFLUENT LIMITATIONS**

Limitations on total suspended solids (TSS), *E. coli*, pH and percent removal for BOD5 and TSS are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. The oil and grease are based on best professional judgment (BPJ). All other parameters were determined by the WLA (attached) for discharge to the Jordan River. It has been determined that this discharge will not cause a violation of water quality standards. An Antidegradation Level II review is not required since the Level I review shows that water quality impacts are minimal. The permittee is expected to be able to comply with these limitations.

**Reasonable Potential Analysis**

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

A quantitative RP analysis was performed on cadmium, copper, cyanide, and mercury to determine if there was reasonable potential for the discharge to exceed the applicable water quality standards. Based on the RP analysis, the following parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard: cyanide. In addition, the RP analysis for mercury indicates increased/improved monitoring is required. A copy of the RP analysis is included at the end of this Fact Sheet.

The permit limitations are

Parameter	Effluent Limitations *a				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow *b, *c	50	-	-	-	-
BOD <sub>5</sub> , mg/L	15	21	-	-	-
BOD <sub>5</sub> Min. % Removal	85	-	-	-	-
TSS, mg/L	25	35	-	-	-
TSS Min. % Removal	85	-	-	-	-
Dissolved Oxygen, mg/L	-	-	-	5.0	-
Total Ammonia (as N), mg/L					
Summer (Jun-Aug)	1.5	-	-	-	6.0
Fall (Sep - Nov)	3.0	-	-	-	9.0
Winter (Dec - Feb)	4.0	-	-	-	9.4
Spring (Mar -May)	3.0	-	-	-	7.4
TRC, mg/L *d					
Summer (Jun-Aug)	-	-	-	-	0.028
Fall (Sep - Nov)	-	-	-	-	0.022
Winter (Dec - Feb)	-	-	-	-	0.028
Spring (Mar -May)	-	-	-	-	0.023
<i>E. coli</i> , No./100mL	126	157	-	-	-
WET, Chronic Biomonitoring	-	-	-	-	IC <sub>25</sub> > 62.2% effluent
Oil & Grease, mg/L	-	-	-	-	10.0
pH, Standard Units	-	-	-	6.5	9

Total Phosphorous, mg/L	-	-	1.0	-	-
*a. See Definitions, <i>Part VIII</i> , for definition of terms.					
*b. Flow is not a pollutant; it is included in the permit to help determine loading levels. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.					
*c. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.					
*d. Analytical results less than 0.06 mg/l will not be considered out of compliance with the permit. For purposes of calculating averages and reporting on the Discharge Monitoring Report form, the following will apply:					
1) analytical values less than 0.02 mg/L shall be considered zero; and					
2) analytical values less than 0.06 mg/L and equal to or greater than 0.02 mg/L will be recorded as measured.					

**SELF-MONITORING AND REPORTING REQUIREMENTS**

Many of the following self-monitoring requirements are the same as in the previous permit. All changes have been mentioned in the summary of changes above. The permit will require reports to be submitted monthly and annually, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab sheets for biomonitoring must be attached to the biomonitoring DMR. Lab sheets for metals and toxic organics must be attached to the DMRs.

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow *b, *c	Continuous	Recorder	MGD
BOD <sub>5</sub> , Influent *g	4 x Weekly	Composite	mg/L
Effluent	4 x Weekly	Composite	mg/L
TSS, Influent *g	4 x Weekly	Composite	mg/L
Effluent	4 x Weekly	Composite	mg/L
<i>E. coli</i>	4 x Weekly	Grab	No./100mL
pH	4 x Weekly	Grab	SU
Total Ammonia (as N)	4 x Weekly	Grab	mg/L
DO	4 x Weekly	Grab	mg/L
WET – Biomonitoring *h			
Ceriodaphnia - Chronic	Monthly with alternating species	Composite	Pass/Fail
Fathead Minnows - Chronic		Composite	Pass/Fail
TRC, mg/L, *d	6 x Weekly *i	Grab	mg/L
Oil & Grease *j	When Sheen Observed	Grab	mg/L
Total Ammonia (as N) *k	Monthly	Composite	mg/L
Orthophosphate (as P), *k			
Effluent	Monthly	Composite	mg/L
Total Phosphorus (as P), *k			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Total Kjeldahl Nitrogen			
TKN (as N), *k			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrate, NO <sub>3</sub> *k	Monthly	Composite	mg/L

Nitrite, NO2 *k	Monthly	Composite	mg/L
TDS, mg/L *l	Monthly	Composite	mg/L
Temperature, *l	Monthly	Grab	mg/L
Total Copper	Monthly	Composite	mg/L
Total Selenium	Monthly	Composite	mg/L
Total Cyanide	Monthly	Grab	mg/L
Free Cyanide	Monthly	Grab	mg/L
Total Mercury, *m	Monthly	Grab	mg/L
Metals, Influent	Quarterly	Composite/Grab	mg/L
Effluent	Quarterly	Composite/Grab	mg/L
Organic Toxics, Influent	Yearly	Grab	mg/L
Effluent	Yearly	Grab	mg/L
*a. See Definitions, <i>Part VIII</i> , for definition of terms.			
*b. Flow is not a pollutant; it is included in the permit to help determine loading levels. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.			
*c. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.			
*g. In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.			
*h. Chronic WET test on Ceriodaphnia and fathead minnows will be tested monthly, alternating between the two species.			
*d. Analytical results less than 0.06 mg/l will not be considered out of compliance with the permit. For purposes of calculating averages and reporting on the Discharge Monitoring Report form, the following will apply: <ol style="list-style-type: none"> <li>1) analytical values less than 0.02 mg/L shall be considered zero; and</li> <li>2) analytical values less than 0.06 mg/L and equal to or greater than 0.02 mg/L will be recorded as measured.</li> </ol>			
*i. Total residual chlorine monitoring frequency is 6 times a week. The chlorine disinfection is a backup system to the ultra violet system and therefore should not be needed unless the ultra violet system has a failure and is by passed. The TRC limits are low enough to require analysis in the onsite lab which is open only 6 days a week. Frequency reduction will remove a requirement that the lab be opened for a 7th day. In case of a bypass on any day the lab is closed, South Valley will bring in lab personnel to open the lab for TRC analysis.			
*j. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.			
*k. These reflect changes and additions required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limit rule. The rule requires that all monitoring shall be based on 24-hour composite samples by use of an automatic sampler or a minimum of four grab samples collected a minimum of two hours apart. This collection method is only for the monthly samples being collected in compliance with the rule.			
*l. Total Dissolved Solids, and Temperature are being sampled in support of the work being done for the TMDL currently underway for the Jordan River. The Pollutants of Concern will be monitored and reported monthly by the facility on Discharge Monitoring Report, but will not have a limit associated with them. If South Valley decides to sample more frequently for these POC's, the additional data will be welcome.			
*m. The metals results from 2015 to 2020 were reviewed and checked for RP. The RP recommended that the monitoring frequency for mercury be increase.			

**BIOSOLIDS**

For clarification purposes, sewage sludge is considered solids, until treatment or testing shows that the solids are safe, and meet beneficial use standards. After the solids are tested or treated, the solids are then known as biosolids. Class A biosolids, may be used for high public contact sites, such as home lawns and gardens, parks, or playing fields, etc. Class B biosolids may be used for low public contact sites, such as farms, rangeland, or reclamation sites, etc.

**DESCRIPTION OF TREATMENT AND DISPOSAL**

The Permittee submitted their 2020 annual biosolids report on February 3, 2021. The report states the Permittee produced 3064 dry metric tons (DMT) of solids.

The influent enters the plant passing through 6 mm screens and grit settling chambers. Washed screening and grit are removed at this location and disposed of as solid waste. The raw sewage is then lifted by centrifugal influent pumps to the activated sludge basins. In the activated sludge basins the raw wastewater is introduced to biological treatment with the flow being mixed with internal recycle and RAS to create mixed liquor. The activated sludge basins are supplied with fine bubble diffused air to supply the dissolved oxygen to complete the biological removal of BOD loading. When the mixed liquor has completed the circuit of the aeration basin it overflows a weir and flows to the secondary clarifiers for separation of the solid and liquid streams.

Solids collected from the bottom of the clarifiers are divided into Waste Activated Sludge (WAS) and Return Activated Sludge (RAS). WAS is pumped around the clock from the secondary clarifiers to the Dissolved Air Flootation (DAF) system. The DAF thickens the sludge to approximately 3% solids before sending the thickened sludge to an aerated sludge holding day tank. The solids from the day tank are pumped directly to one or more of four two-meter belt presses for dewatering as needed.

The dewatered cake is either loaded into trailers to be hauled off for landfill disposal or sent to the facility's thermal drying process. The thermal drying process uses indirect contact with heated steam which dries the material to >92% solids meeting Class A requirements. In this process biosolids are usually heated between 270° and 300° Fahrenheit for no less than 7 hours. Initial on-site studies show that the minimal drying temperature to meet pathogen reduction and vector attraction requirements to be considered Class A biosolids is 260° Fahrenheit. Studies have also shown the maximum drying temperature to be 330° Fahrenheit.

All dewatered cake and thermally dried biosolids slated for landfill disposal are loaded onto trucks owned and operated by South Valley WRF.

The last inspection conducted at the land facility site was June 29, 2021. The inspection showed that South Valley was in compliance with all aspects of the biosolids permit and biosolids management program.

**SELF-MONITORING REQUIREMENTS**

Under 40 CFR 503.16(a)(1), the self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the chart below.

Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46)		
Amount of Biosolids Disposed Per Year		Monitoring Frequency
Dry US Tons	Dry Metric Tons	Per Year or Batch
> 0 to < 320	> 0 to < 290	Once Per Year or Batch
> 320 to < 1650	> 290 to < 1,500	Once a Quarter or Four Times
> 1,650 to < 16,500	> 1,500 to < 15,000	Bi-Monthly or Six Times
> 16,500	> 15,000	Monthly or Twelve Times

South Valley has produced on average 5000 DMT of biosolids, over the past 10 years. Therefore, they need to sample at least six (6) times a year.

#### Landfill Monitoring

Under *40 CFR 258*, the landfill monitoring requirements include a paint filter test. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill (*40 CFR 258.28(c)(1)*).

### **BIOSOLIDS LIMITATIONS**

#### Heavy Metals

##### Class A Biosolids for Home Lawn and Garden Use

The intent of the heavy metals regulations of Table 3, *40 CFR 503.13* is to ensure the heavy metals do not build up in the soil in home lawn and gardens to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see *Part III. C.* of the permit) to be made available to all people who are receiving and land applying Class A biosolids to their lawns and gardens. If the instructions of the information sheet are followed to any reasonable degree, the Class A biosolids will be able to be land applied year after year, to the same lawns and garden plots without any deleterious effects to the environment. The information sheet must be provided to the public, because the permittee is not required, nor able to track the quantity of Class A biosolids that are land applied to home lawns and gardens.

##### Class A Requirements with Regards to Heavy Metals

If the biosolids are to be applied to a lawn or home garden, the biosolids shall not exceed the maximum heavy metals in Table 3 below. If the biosolids do not meet these requirements, the biosolids cannot be sold or given away for applications to home lawns and gardens.

##### Class B Requirements for Agriculture and Reclamation Sites

The intent of the heavy metals regulations of Tables 1, 2 and 3, of *40 CFR 503.13* is to ensure that heavy metals do not build up in the soil at farms, forest land, and land reclamation sites to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see *Part III. C.* of the permit) to be handed out to all people who are receiving and land applying Class B biosolids to farms, ranches, and land reclamation sites (if biosolids are only applied to land owned by the permittee, the information sheet requirements are waived). If the biosolids are land applied according to the regulations of *40 CFR 503.13*, to any reasonable degree, the Class B biosolids will be able to be land applied year after year, to the same farms, ranches, and land reclamation sites without any deleterious effects to the environment.

##### Class B Requirements with Regards to Heavy Metals

If the biosolids are to be land applied to agricultural land, forest land, a public contact site or a reclamation site it must meet at all times:

The maximum heavy metals listed in *40 CFR Part 503.13(b) Table 1* and the heavy metals loading rates in *40 CFR Part 503.13(b) Table 2*; or

The maximum heavy metals in *40 CFR Part 503.13(b) Table 1* and the monthly heavy metals concentrations in *40 CFR Part 503.13(b) Table 3*.



Tables 1, 2, and 3 of Heavy Metal Limitations

Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis				
Heavy Metals	Table 1	Table 2	Table 3	Table 4
	Ceiling Conc. Limits <sup>1</sup> , (mg/kg)	CPLR <sup>2</sup> , (mg/ha)	Pollutant Conc. Limits <sup>3</sup> (mg/kg)	APLR <sup>4</sup> , (mg/ha-yr)
Total Arsenic	75	41	41	2.0
Total Cadmium	85	39	39	1.9
Total Copper	4300	1500	1500	75
Total Lead	840	300	300	15
Total Mercury	57	17	17	0.85
Total Molybdenum	75	N/A	N/A	N/A
Total Nickel	420	420	420	21
Total Selenium	100	100	100	5.0
Total Zinc	7500	2800	2800	140
1, If the concentration of any 1 (one) of these parameters exceeds the Table 1 limit, the biosolids cannot be land applied or beneficially used in any way.				
2, CPLR - Cumulative Pollutant Loading Rate - The maximum loading for any 1 (one) of the parameters listed that may be applied to land when biosolids are land applied or beneficially used on agricultural, forestry, or a reclamation site.				
3, If the concentration of any 1 (one) of these parameters exceeds the Table 3 limit, the biosolids cannot be land applied or beneficially used in on a lawn, home garden, or other high potential public contact site. If any 1 (one) of these parameters exceeds the Table 3 limit, the biosolids may be land applied or beneficially reused on an agricultural, forestry, reclamation site, or other high potential public contact site, as long as it meets the requirements of Table 1, Table 2, and Table 4.				
4, APLR - Annual Pollutant Loading Rate - The maximum annual loading for any 1 (one) of the parameters listed that may be applied to land when biosolids are land applied or beneficially reused on agricultural, forestry, or a reclamation site, when the do meet Table 3, but do meet Table 1.				

Any violation of these limitations shall be reported in accordance with the requirements of Part III.F.1. of the permit. If the biosolids do not meet these requirements they cannot be land applied.

Pathogens

The Pathogen Control class listed in the table below must be met;

Pathogen Control Class	
503.32 (a)(1) - (5), (7), (8), Class A	503.32 (b)(1) - (5), Class B
B Salmonella species –less than three (3) MPN <sup>1</sup> per four (4) grams total solids (DWB) <sup>2</sup> or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB).	Fecal Coliforms – less than 2,000,000 MPN or CFU <sup>3</sup> per gram total solids (DWB).
503.32 (a)(6) Class A—Alternative 4	

Pathogen Control Class	
503.32 (a)(1) - (5), (7), (8), Class A	503.32 (b)(1) - (5), Class B
B <i>Salmonella</i> species –less than three (3) MPN per four (4) grams total solids (DWB) or less than 1,000 MPN Fecal Coliforms per gram total solids (DWB), And - Enteric viruses –less than one (1) plaque forming unit per four (4) grams total solids (DWB) And - Viable helminth ova –less than one (1) per four (4) grams total solids (DWB)	
1 - MPN – Most Probable Number	
2 - DWB – Dry Weight Basis	
3 - CFU – Colony Forming Units	

Class A Requirements for Home Lawn and Garden Use

If biosolids are land applied to home lawns and gardens, the biosolids need to be treated by a specific process to further reduce pathogens (PFRP), and meet a microbiological limit of less than less than 3 most probable number (MPN) of *Salmonella* per 4 grams of total solids (or less than 1,000 most probable number (MPN/g) of fecal coliform per gram of total solids) to be considered Class A biosolids. South Valley choses to achieve PFRP through a method of Heat Drying.

1. Heat Drying- solids are dried by direct or indirect contact with hot gases to reduce the moisture content of the solids to 10 percent or lower. Either the temperature of the solids particles or exceeds 80° C (176° F) or the wet bulb temperature of the gas in contact with the solids as the solids leaves the dryer exceeds 80° C (176° F) (*40 CFR 503.32(a)(8)(H) Appendix B. B. 2.*)

The practice of sale or giveaway to the public is an acceptable use of biosolids of this quality as long as the biosolids continue to meet Class A standards with respect to pathogens. If the biosolids do not meet Class A pathogen standards the biosolids cannot be sold or given away to the public, and the permittee will need find another method of beneficial use or disposal.

Pathogens Class B

If biosolids are to be land applied for agriculture or land reclamation the solids need to be treated by a specific process to significantly reduce pathogens (PSRP). South Valley currently has no chosen method of achieving PSRP.

Vector Attraction Reduction (VAR)

If the biosolids are land applied South Valley will be required to meet VAR through the use of a method of listed under *40 CFR 503.33*. South Valley can meet the vector attraction reduction requirements for Class A biosolids through the method listed below.

1. Heat Drying-solids are dried to less than 90% solids (*40 CFR 503.33(b)*).

If the biosolids do not meet a method of VAR, the biosolids cannot be land applied.

If the permittee intends to use another one of the listed alternatives in *40 CFR 503.33*, the Director and the EPA must be informed at least thirty (30) days prior to its use. This change may be made without additional public notice

Landfill Monitoring

Under 40 CFR 258, the landfill monitoring requirements include a paint filter test to determine if the biosolids exhibit free liquid. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill (40 CFR 258.28(c)(1)).

Record Keeping

The record keeping requirements from 40 CFR 503.17 are included under Part III.G. of the permit. The amount of time the records must be maintained are dependent on the quality of the biosolids in regards to the metals concentrations. If the biosolids continue to meet the metals limits of Table 3 of 40 CFR 503.13, and are sold or given away the records must be retained for a minimum of five years. If the biosolids are disposed in a landfill the records must retained for a minimum of five years.

Reporting

South Valley must report annually as required in 40 CFR 503.18. This report is to include the results of all monitoring performed in accordance with Part III.B of the permit, information on management practices, biosolids treatment, and certifications. This report is due no later than February 19 of each year. Each report is for the previous calendar year.

**MONITORING DATA**

METALS MONITORING DATA

The Permittee has been required to sample for metals at least 6 (six) times a year over the previous 5 years, and has sample the biosolids at least 11 times a year during that time period. All biosolids produced for land application or disposal over the past decade have met Table 3 of 40 CFR 503.13, therefore the South Valley biosolids qualify as EQ with regards to metals. A summary of the monitoring data is below.

South Valley Metals Monitoring Data 2011 - 2020

PERMITTEE Metals Monitoring Data, 2011 – 2020			
Parameter	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
Arsenic	41.0	5.7	17.6
Cadmium	39.0	0.357	2.87
Copper	1,500.0	242	769
Lead	300.0	7.5	36.5
Mercury	17.0	0.46	3.95
Molybdenum	75.0	5.5	18
Nickel	400.0	8.17	26.9
Selenium	36.0	5.86	26.3
Zinc	2,800.0	225	615

**STORM WATER**

Separate storm water permits may be required based on the types of activities occurring on site.

Permit coverage under the Multi Sector General Permit (MSGP) for Storm Water Discharges from Industrial Activities is required based on the Standard Industrial Classification (SIC) code for the facility and the types of industrial activities occurring. Previously storm water discharge requirements and coverage were combined in this individual permit. These have been separated to provide consistency among permittees, electronic reporting for storm water discharge monitoring reports, and increase flexibility to changing site conditions.

Information on storm water permit requirements can be found at <http://stormwater.utah.gov>.

### **PRETREATMENT REQUIREMENTS**

The pretreatment requirements, regarding administering an approved pretreatment program, remain the same as in the current permit. Any changes to the pretreatment program, must be submitted for approval to the Division of Water Quality prior to implementing the change, 40 CFR 403.18. Authority to require a pretreatment program is provided for in 19-5-108 UCA, 1953 ann. and UAC R317-8-8.

Sampling of metals will be conducted quarterly and the sampling of organic toxics yearly, see Part II of the UPDES Permit. This is consistent with the UPDES Pretreatment Guidance for Sampling of POTWs, which is based on the design flow of the wastewater treatment plant. Additional requirements have been added to the permit to ensure that if the allowable headworks loading is above the value calculated for the local limit development that additional monitoring and notification must occur. The permittee must submit the analysis for the TTO, via email, to the Pretreatment Coordinator for the DWQ.

Technically based local limits must be developed per 40 CFR 403.5(a) and 403.5(b). This evaluation may indicate that present local limits are sufficiently protective, or that the local limits must be revised. The permittee will be required to perform an annual evaluation of the need to revise or develop technically based local limits to implement the general and specific prohibitions of 40 CFR Part 403.5(a) and Part 403.5(b). This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised. The initial evaluation is due twelve months after the effective date of the permit. As part of this evaluation, the permit requires influent and effluent monitoring for metals and organic toxics as stated in the permit the most sensitive method should be used for analyzing pollutants of concern as determined by the local limit development. The permittee should utilize the EPA Local Limits Development Guidance to justify the re-evaluation of the local limits. Information is provided in Chapter 7 of the EPA Local Limits Development Guidance 2004 to assist with the development of revising the local limits.

### **BIOMONITORING REQUIREMENTS**

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring), dated February 2018. 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 the permittee is a major municipal discharger with a flow of over 20 MGD, the renewal permit will require monthly WET testing. The permit will contain the standard requirements for re-testing upon failure of a WET test, and for a Toxicity Reduction Evaluation (TRE) as appropriate.

Chronic toxicity occurs when the survival, growth, or reproduction for either test species, when exposed to a dilution of 62.2% effluent or lower, is significantly less (at 95% confidence level) than that of the control specimens. The 62.2% effluent dilution criterion is based upon the waste load analysis and is consistent with previous permit conditions. The permit will also contain a toxicity limitation re-opener provision. This provision allows for modification of the permit at any time to include WET limitations and/or increased WET monitoring, should additional information indicate the presence of toxicity in the discharge.

**PERMIT DURATION**

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

Drafted and Reviewed by  
Daniel Griffin, Discharge Permit Writer  
Daniel Griffin, Biosolids, Reasonable Potential Analysis  
Jennifer Robinson, Pretreatment  
Lonnie Shull, Biomonitoring  
Carl Adams, Storm Water  
Sandy Wingert, TMDL/Watershed  
Nick von Stackelberg, Wasteload Analysis  
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Initial Period

Began: February 22, 2022

Ended: March 24, 2022

Extension

Began: March 24, 2022

Ended: April 25, 2022

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

The Public Noticed of the draft permit was public noticed on the Division of Water Quality Public Notice Webpage.

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

**ADDENDUM TO FSSOB**

During the comment period a request was made for an extension of the period. The request was granted and the closing date was extended to April 25, 2022. No further comments were received during the extended comment period.

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

During finalization of the permit, it was identified that the seasons for the total residual chlorine (TRC) limits were shifted from calendar quarters to climatological quarters so they would match up with the changes made for ammonia limits, but the TRC limits in the WLA were not shifted, and had remained as

calendar based quarterly limits. Since changing these months back would result in less stringent limits during the months of June and December, the changes are considered Major, and require the changes to permit and FSSOB to be re Public Noticed.

This will be done as a modification to the permit, after it has been issued. The modification to the permit will rectify this by shifting them back.

DWQ-2021-020406

This Page Intentionally Left Blank

# **ATTACHMENT 1**

*Effluent Monitoring Data*



This Page Intentionally Left Blank

## Effluent Monitoring Data.

Param	Flow		BOD5		TSS		E. coli		Ammonia	
Unit	MGD		mg/L		mg/L		#/100mL		mg/L	
	Acute	Chronic	Acute	Chronic	Acute	Chronic	Acute	Chronic	Max	Chronic
Limit			21	15	35	25	157	126	13	4
Jan-18	35.87	21.17	12.4	9.3	13	9	6	3	0.2	0.12
Feb-18	35.62	20.21	10.5	8.9	11	8	7	4	0.4	0.23
Mar-18	37.74	20.48	10	8.9	10	8	14	7	0.4	0.25
Apr-18	36.34	20.32	9.9	8.4	10	8	20	12	0.3	0.14
May-18	39.76	20	8.6	7	8	6	18	14	0.4	0.12
Jun-18	34.36	21.14	6.9	5.8	8	6	86	23	0.2	0.12
Jul-18	34.06	19.39	6.8	6.6	6	5	15	11	0.2	0.1
Aug-18	33.86	19.2	6.9	7.4	6	7	120	33	0.1	0.11
Sep-18	36.15	19	10.7	6.6	12	5	66	26	0.1	0.11
Oct-18	36.68	18.86	6.4	5.6	6	5	16	14	0.1	0.11
Nov-18	36.18	18.38	8	7.6	7	7	44	19	0.2	0.13
Dec-18	33.79	19.17	11.7	10.8	17	12	27	12	0.6	0.19
Jan-19	33.36	20.3	13.5	10.7	19	13	17	7	0.4	0.23
Feb-19	35.04	19.78	13.5	9.7	19	11	14	6	0.4	0.2
Mar-19	35.83	19.73	13.5	6.9	19	5	14	6	0.2	0.11
Apr-19	33.52	19.71	13.5	7.9	19	8	14	6	0.1	0.1
May-19	33.73	19.54	7.4	6	6	5	10	5	0.1	0.08
Jun-19	31.83	19.59	7.9	6.2	9	6	9	6	0.1	0.08
Jul-19	33.08	19.64	7	6.5	5	6	38	16	0.3	0.12
Aug-19	36.58	20	10.1	6.4	15	7	51	39	0.2	0.11
Sep-19	34.83	20	8.8	6.6	7	6	34	29	0.7	0.13
Oct-19	33.43	19.63	5.9	5.1	5	4	23	12	0.2	0.07
Nov-19	36.49	19.27	6.7	5.6	7	6	23	12	0.4	0.1
Dec-19	35.94	19.58	6.1	5.7	7	6	89	63	0.5	0.19
Jan-20	32.86	19.53	7.9	7.3	9	8	72	19	0.8	0.21
Feb-20	33.49	19.65	7.2	7	7	6	16	11	0.7	0.34
Mar-20	32.15	19.3	8.7	7.2	7	7	42	25	0.1	0.09
Apr-20	33.21	19.33	12	7.5	12	8	28	9	0.1	0.08
May-20	36.99	21.08	6.7	5.4	6	5	17	11	0.1	0.08
Jun-20	36.17	21.13	7.5	6.5	8	7	25	17	0.1	0.08
Jul-20	31.62	20.71	7.2	6.3	10	6	28	13	0.1	0.08
Aug-20	33.3	20.86	7.1	6.6	7	5	44	21	0.1	0.08
Sep-20	36.24	20.8	7.3	5.9	6	6	20	18	0.1	0.09
Oct-20	32.3	20.27	8.8	5.6	7	5	20	13	0.2	0.08
Nov-20	34.64	19.67	4.4	3.9	5	4	30	24	0.1	0.06
Dec-20	32.9	19.77	4.5	4.3	5	5	29	10	0.1	0.05
Jan-21	33.12	19.68	10.2	6.7	10	8	33	18	0.1	0.06
Feb-21	39.83	19.95	7	6.3	9	8	13	12	0.4	0.09
Mar-21	35.78	19.73	6.7	6.1	10	7	12	9	0.1	0.07
Apr-21	36.35	19.42	6.5	5.9	7	6	16	9	0.1	0.08
May-21	33.06	20.43	8.2	6.6	8	7	18	14	0.1	0.08
Jun-21	34.82	20.27	7.5	6.2	8	7	18	15	1.3	0.14
Jul-21	41.11	20.6	7.3	6.2	8	6	21	16	0.2	0.12

Param	DO	pH		TRC	CN	Cu	Se
Unit	mg/L	SU		mg/L	mg/L	mg/L	mg/L
	Min	Min	Max	Max	Average		
Limit	5	6.5	9	0.03			
Jan-18	7.7	7.4	7.5	0.02	0.002	0.0102	0.0022
Feb-18	7.7	7.4	7.5	0.02	0.003	0.0079	0.0019
Mar-18	7.9	7.4	7.5	0.02	ND	0.01	0.0019
Apr-18	7.9	7.4	7.5	0.02	ND	0.0073	0.0017
May-18	7.3	7.4	7.5	0.02	0.002	0.0073	0.0016
Jun-18	7.1	7.3	7.6	0.02	0.0002	0.0215	0.0019
Jul-18	7	7.4	7.6	0.02	ND	0.0069	0.002
Aug-18	6.8	7.5	7.7	0.02	ND	0.0079	0.0016
Sep-18	6.9	7.5	7.6	0.02	ND	0.0081	0.0019
Oct-18	6.9	7.5	7.6	0.02	ND	0.0066	0.0018
Nov-18	7.3	7.4	7.6	0.02	ND	0.0061	0.0016
Dec-18	7.2	7.4	7.5	0.02	0.002	0.0073	0.0019
Jan-19	7.9	7.4	7.5	0.02	0.003	0.0078	0.0018
Feb-19	7.5	7.4	7.6	0.02	0.002	0.0055	0.0018
Mar-19	8.1	7.4	7.6	0.02	0.002	0.0041	0.0021
Apr-19	7.7	7.3	7.6	0.02	0.002	0.0048	0.0019
May-19	7.4	7.4	7.5	0.02	0.002	0.005	0.0018
Jun-19	7.5	7.4	7.6	0.02	0.002	0.0064	0.0021
Jul-19	7.1	7.3	7.6	0.02	0.002	0.0067	0.0021
Aug-19	6.9	7.4	7.6	0.02	0.002	0.0061	0.0007
Sep-19	7	7.4	7.6	0.02	0.002	0.009	0.0012
Oct-19	7.2	7.4	7.6	0.02	0.002	0.0056	0.0015
Nov-19	7.1	7.3	7.6	0.02	0.002	0.0053	0.0018
Dec-19	8	7.4	7.6	0.02	0.002	0.0069	0.001
Jan-20	7.4	7.3	7.5	0.02	0.002	0.0063	0.0009
Feb-20	8	7.4	7.6	0.03	0.003	0.0052	0.0009
Mar-20	8	7.5	7.6	0.02	0.002	0.0054	0.0008
Apr-20	7.8	7.2	7.6	0.02	ND	0.0045	ND
May-20	7.6	7.4	7.7	0.02	0.004	0.0049	0.001
Jun-20	7.4	6.5	7.6	0.02	0.004	0.0079	0.0006
Jul-20	7.1	7.4	7.7	0.02	0.004	0.0067	0.0008
Aug-20	6.9	7.3	7.7	0.02	0.002	0.0083	0.0005
Sep-20	6.8	7.5	7.7	0.02	0.003	0.0059	0.0011
Oct-20	7	7.4	7.7	0.02	ND	0.0175	ND
Nov-20	7.1	7.5	7.8	0.02	0.003	0.0052	0.0007
Dec-20	7.7	7.4	7.7	0.02	ND	0.0361	0.0012
Jan-21	8.2	7.4	7.6	0.02	0.003	0.0056	0.0014
Feb-21	7.9	7.4	7.6	0.02	0.004	0.0058	0.001
Mar-21	7.9	7.4	7.6	0.02	0.005	0.0067	0.001
Apr-21	7.6	7.3	7.6	0.02	0.002	0.0065	0.001
May-21	7.5	7.4	7.5	0.02	0.004	0.0077	0.0011
Jun-21	7.1	7.4	7.5	0.02	ND	0.0065	0.0013
Jul-21	6.9	7.4	7.6	0.02	0.002	0.0073	ND

TBPEL Monitoring							TMDL Parameters	
	Effluent				Influent		Effluent	
Param	NO2	NO3	TKN	Tot P	TKN	Tot P	TDS	Temperature
Stat	Chronic				Acute			
Month	mg/L						mg/L	deg C
Jan-18		6.9	1.7	0.52	50.5	6.2	860	16.8
Feb-18	0.1	6.5	2.3	1.3	42.3	6.4	888	16.4
Mar-18	0.2	7.7	2.6	4.3	41.7	6.5	748	16.6
Apr-18	0.2	6.6	1.4	2.8	43.8	6.6	780	18
May-18		6.9	1.9	1.8	45.2	5.6	728	19.8
Jun-18		7.9	2.4	2.2	44.8	5.7	792	21.8
Jul-18		6.2	2.1	2.2	37.6	5.2	752	24
Aug-18	0.1	6.1	1.7	2.1	36.9	5.2	704	24.7
Sep-18	0.1	6.8	1.7	3.2	36	5.4	728	24.2
Oct-18	0.1	6.3	1.8	2.4	40.1	5.4	712	22.1
Nov-18		7.7		1.9	36.3	5.7	672	19.7
Dec-18		7.8	2.5	3.2	43.9	5.6	680	17.7
Jan-19		7.4	2.6	1.7	47.3	6	704	16.4
Feb-19	0.1	7.3	1.7	0.3	39	5.3	844	15.3
Mar-19	0.2	6.3	1.6	1.8	46.1	6.3	788	16.2
Apr-19	0.1	6	2.1	1.8	35.9	5.3	836	17.7
May-19	0.1	6.8	1.2	1.3	39.2	5.4	768	19.1
Jun-19	0.1	8	1.4	2.7	45.9	5.7	764	21
Jul-19	0.1	5.4	1.8	3.2	37.9	6.1	756	23
Aug-19	0.1	5.3	1.3	0.96	36.9	5.3	768	24.1
Sep-19	0.1	6.7	1.8	2.3	43.5	5.9	748	23.6
Oct-19	0.1	7.4	1.5	0.31	45.5	5.4	748	21
Nov-19	0.1	7.1	1.8	1.2	42.9	5.5	760	19.3
Dec-19	0.2	6.7	1.7	0.85	41.2	13	864	17.5
Jan-20	0.1	6.8	2.2	0.96	45.8	5.8	912	16.3
Feb-20	0.2	6	1.6	0.25	44	4.9	824	15.9
Mar-20	0.1	6.7	2.1	0.33	47	5.4	716	16.7
Apr-20		7.7	1.3	0.72	43.8	5.6	752	18.2
May-20	0.1	3.4	1.4	0.86	41.9	5.1	704	19.99
Jun-20	0.3	8.1	1.7	3.3	42.5	5.3	744	21.6
Jul-20	0.1	6.7	1.6	1.2	7.4	5.1	744	23.3
Aug-20	0.1	8.5	1.7	2.9	36.1	6.5	756	24.6
Sep-20		8.8		1.9	39.9	6	740	23.7
Oct-20		8.8	1.2	1	47.3	5.6	748	22.1
Nov-20		6.2	1	0.22	43	5.4	648	19.9
Dec-20		8.1	1.3	1.5	32.5	5	692	17.5
Jan-21		7.2	2	1.8	47.3	4.9	736	15.9
Feb-21		8.3	1.4	0.32	39.2	6.3	764	16
Mar-21	0.1	9.5	1.4	0.44	44.9	5.9	788	16.9
Apr-21	0.1	10.1	1.5	0.34	41.5	5.8	828	18
May-21	0.4	8.8	1.8	0.52	38.3	5.9	832	19.8
Jun-21	0.2	7.6	1.5	0.23	45.9	5.3	796	22.2
Jul-21	0.4	7.9	1.9	0.36	41.9	2.6	828	24.4

7 Day Static Renewal Chronic WET		
	Species	
Quarter	Ceriodaphnia	Pimephales Promelas
2018 Q1		Pass
2018 Q2	Fail	
2018 Q3		Pass
2018 Q4	Pass	
2019 Q1		Fail
2019 Q2	Fail	
2019 Q3		Pass
2019 Q4	Pass	
2020 Q1		Pass
2020 Q2	Fail	
2020 Q3		Pass
2020 Q4	Fail	
2021 Q1		Pass
2021 Q2	Fail	

Quarterly Maximums														
Month	Ag	Al	As	Cd	CN	Cr	Cu	Fe	Hg	Mo	Ni	Pb	Se	Zn
2018 Q1	ND	ND	0.0021	ND	ND	ND	0.0075	0.03	1.10E-06	ND	0.0062	0.0005	0.0026	0.08
2018 Q2	ND	ND	0.0023	ND	ND	ND	0.0077	0.02	2.30E-06	ND	0.0046	0.0005	0.0016	0.09
2018 Q3	ND	ND	0.0034	ND	ND	ND	0.0052	0.0052	7.00E-13	ND	0.0077	ND	0.0024	0.07
2018 Q4	ND	ND	0.0029	ND	ND	ND	0.0059	0.02	1.40E-12	ND	0.0041	ND	0.0017	0.06
2019 Q1	ND	ND	0.002	ND	0.005	ND	0.0092	0.04	1.30E-12	ND	0.0035	ND	0.0019	0.06
2019 Q2	ND	ND	0.0024	ND	0.002	ND	0.0046	0.04	2.60E-12	0.01	0.0029	ND	0.0017	0.05
2019 Q3	ND	ND	0.0034	ND	ND	ND	0.0062	0.05	1.10E-06	ND	0.0013	ND	0.0009	0.06
2019 Q4	ND	0.09	0.0025	ND	0.023	ND	0.0067	0.02	1.80E-12	ND	0.0015	ND	0.0009	0.06
2020 Q1	ND	0.1	0.0012	ND	ND	ND	0.0055	0.02	1.20E-12	ND	0.0011	ND	0.0008	0.08
2020 Q2	ND	0.07	0.0034	ND	ND	ND	0.0063	0.03	ND	ND	0.0012	ND	0.0011	0.04
2020 Q3	ND	0.09	0.0035	ND	ND	ND	0.0095	0.02	1.10E-12	ND	0.0021	ND	0.0006	0.04
2020 Q4	ND	0.07	0.0031	0.0002	0.012	ND	0.0067	0.02	ND	ND	0.0014	ND	0.0008	0.04
2021 Q1	ND	0.08	0.0019	ND	0.004	ND	0.0058	0.02	1.10E-06	ND	0.0011	ND	0.0009	0.05
2021 Q2	ND	0.07	0.0007	0.0002	0.003	ND	0.0058	0.02	ND	ND	0.0015	ND	0.0009	0.04

This Page Intentionally Left Blank

## **ATTACHMENT 2**

### *Wasteload Analysis*



This Page Intentionally Left Blank

# **Corrected Combined WLA for the Jordan River.**

**Utah Division of Water Quality  
Statement of Basis  
Wasteload Analysis for Jordan River POTWs**

**Date:** May 11, 2022

**Prepared by:** Nicholas von Stackelberg, P.E., Watershed Protection Section  
Chris Shope, Ph.D., Standards and Technical Services Section  
Suzan Tahir, Standards and Technical Services Section

**Facility:** Jordan River Publicly Owned Treatment Works (POTW)

**Receiving water:** Jordan River and State Canal

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 considers 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.

Discharges

The following dischargers are considered in this combined wasteload analysis for discharge to the Jordan River:

1. Jordan Basin Water Reclamation Facility (WRF) - UT0025852
2. South Valley Water Reclamation Facility (WRF) - UT0024384
3. Central Valley Water Reclamation Facility (WRF) - UT0024392
4. South Davis Sewer District South Wastewater Treatment Plant (WWTP) - UT0021628
5. South Davis Sewer District North Wastewater Treatment Plant (WWTP) - UT0021636

The receiving water and the maximum monthly average discharges used in this wasteload allocation are summarized in Table 1. The projected 5-year monthly average discharge was estimated by multiplying the current average discharge (2016-2021) by 10% to account for growth in the service district. Jordan Basin WRF was assumed to operate at design capacity.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

**Table 1: Receiving waters and discharge rate**

Facility	Receiving Water	Monthly Ave (MGD)	
		Design Capacity	Projected 5-YR
Jordan Basin WRF	Jordan River, from confluence with Little Cottonwood Creek to Narrows Diversion	15	15
South Valley WRF	Jordan River, from confluence with Little Cottonwood Creek to Narrows Diversion	50	21.7
Central Valley WRF	Jordan River, from North Temple Street to confluence with Little Cottonwood Creek	75	55.7
SDSD South WWTP	Jordan River, from Farmington Bay to North Temple Street	4	3.8
SDSD North WWTP	State Canal, from Farmington Bay to confluence with the Jordan River	12	8.1

Effluent water quality data were obtained from UDWQ monitoring, Jordan River/Farmington Bay Water Quality Council (JRFBWQC) monitoring, and Discharge Monitoring Reports (DMR) and Monthly Operating Reports (MOR) from each facility.

Receiving Waters

The receiving waters for this wasteload allocation are Jordan River and State Canal.

Per UAC R317-2-14, the designated beneficial uses for the Jordan River and State Canal are shown in Table 2.

**Table 2: Beneficial uses for receiving waters**

POTW	Assessment Unit	Assessment Unit Description	Assessment Unit ID	Beneficial Uses
SDSDN WWTP	State Canal <sup>a</sup>	State Canal from Farmington Bay to confluence with the Jordan River	UT16020204-034_00	2B, 3B*, 3D, 4
SDSDS WWTP	Jordan River-1 <sup>a</sup>	Jordan River from Farmington Bay upstream contiguous with the Davis County line	UT16020204-001_00	2B, 3B*, 3D, 4
CVWRF	Jordan River-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	UT16020204-004_00	2B, 3B*, 4
SVWRF	Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	UT16020204-005_00	2B, 3B, 4
JBWRF	Jordan River-6	Jordan River from 7800 South to Bluffdale at 14600 South	UT16020204-006_00	2B, 3B, 4

\* Site specific criteria for dissolved oxygen. See UAC R317.2.14 Table 2.14.5.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

Per UAC R317-2-6, the following is the description for each beneficial use listed in Table 2.

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

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten-year return frequency (7Q10). The seasonal 7Q10 flows calculated in the *Jordan River Low Flow Analysis* report (Hansen Allen and Luce, 2021) were used for the critical low flows for the POTWs, tributaries and diversions along the Jordan River. The critical low flows are summarized in Table 3.

**Table 3: Critical low flows along Jordan River**

QUAL2Kw Segment No(s)	Source/Diversion Name	7Q10			
		WINTER	SPRING	SUMMER	FALL
31	Jordan Narrows (Total)	3.2	7.7	222	6.4
31-32	Groundwater Segment	3	3	223	3
32	JVWCD Pumps	3	3	207	3
32	ULDC North & South	3	3	180	3
32	Utah & Salt Lake Canal	3	3	117	3
32	East Jordan Canal	2.9	2.8	76.7	3.4
32	Jordan River Station No 1	2.9	2.8	76.7	3.4
32-51	Groundwater Segment	23	24	82	17
37	Jordan & Salt Lake Canal	23	24	67	17
37	South Jordan Canal	23	24	27	17
47	Rose Creek	<b>23</b>	<b>24</b>	<b>27</b>	<b>17</b>
51	Jordan Basin WRF	35	36	37	28
51-76	Groundwater Segment	62	64	44	46
54	Corner Canyon Creek	62	65	44	46
59	Riverton 126th Pump Station	62	65	44	46
65	Midas Creek	62	65	44	47
66	Willow Creek	63	66	45	47
74	North Jordan Canal	27	32	27	23
74	Dry Creek	27	32	28	23
76	Jordan River at 9000 South	27	32	28	23
76-84	Groundwater Segment	39	40	43	36
76	9000 South Drain	39	40	43	36
81	Bingham Creek	<b>40</b>	<b>40</b>	<b>47</b>	<b>37</b>
84	South Valley WRF	71	71	80	68
84-111	Groundwater Segment	112	97	130	110
85	7200 South Drain	112	97	130	110
97	Little Cottonwood Creek	113	98	139	112
98	Brighton Canal	113	98	139	112
100	Big Cottonwood Creek	<b>119</b>	<b>106</b>	<b>161</b>	<b>123</b>
N/A	Mill Creek above Central Valley	3	10	21	10
111	Mill Creek at Jordan River	122	116	182	133

Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs

QUAL2Kw Segment No(s)	Source/Diversion Name	7Q10			
		WINTER	SPRING	SUMMER	FALL
111	Central Valley WRF	191	188	255	200
111-115	Groundwater Segment	197	192	263	206
112	Decker Lake Outfall	197	192	265	207
115	Jordan River above Surplus Canal	197	192	265	207
115-118	Groundwater Segment	200	195	267	210
116	Surplus Canal	25	11	26	89
118	Jordan River at 1700 South	25	11	26	89
118-133	Groundwater Segment	37	48	104	92
122	1300 South Conduits	39	50	121	93
130	City Creek/N Temple Conduit	40	52	123	93
133	Jordan River at 500 North	40	52	123	93
133-151	Groundwater Segment	51	64	134	104
151	South Davis South WRF	55	67	137	107
151-162	Groundwater Segment	62	74	144	114
162	State Canal	21	25	48	38
162-171	Groundwater Segment	26	31	54	44
162	A-1 Drain	26	31	54	44
169	South Davis North WRF	34	39	62	52
171	Mill Creek (Davis County)	34	38	62	51
171-172	Groundwater Segment	35	40	63	52
172	Stone Creek	36	41	63	53

Receiving and tributary water quality data were obtained from UDWQ and WFWQC monitoring sites. The average seasonal value was calculated for each constituent with available data in the receiving water for the period 2006 - 2021.

TMDL

The 303(d) list of impairments of the Jordan River, Mill Creek, and State Canal in *Utah's Final 2016 303(d) Water Quality Assessment Report dated December 7, 2016* (Utah DWQ 2016) is summarized in Table 4. The table also includes changes in the *Utah Combined 2018/2020 303(d) Water Quality Assessment Report dated February 9, 2021*, which has not been approved to date. The dissolved oxygen impairment in the lower Jordan River (below Surplus Canal) was addressed by the *Jordan River Total Maximum Daily Load Water Quality Study – Phase 1* (Cirrus Ecological Solutions and Stantec Consultants 2013), which identified organic matter as the pollutant of concern and recommended additional studies to determine the sources and allocation [CS1]. The E. coli impairment in the Jordan River watershed is currently being identified and addressed through a Total Maximum Daily Load Study within Utah DWQ.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

**Table 4: List of impairments of Jordan River and State Canal**

Assessment Unit	Assessment Unit Description	Assessment Unit ID	Impaired Parameter
State Canal	State Canal from Farmington Bay to confluence with the Jordan River	UT16020204-034_00	Total Ammonia as N Min Dissolved Oxygen Total Dissolved Solids
Jordan River-1	Jordan River from Farmington Bay upstream contiguous with the Davis County line	UT16020204-001_00	E. coli *DissolvedCopper Min Dissolved Oxygen Total Dissolved Solids Bioassessment/Macroinv
Jordan River 2	Jordan River from Davis County line upstream to North Temple Street	UT16020204-002_00	E. coli Min Dissolved Oxygen *Total Dissolved Solids Bioassessment/Macroinv
Jordan River-3	Jordan River from North Temple to 2100 South	UT16020204-003_00	E. coli Total Phosphorus as P Min Dissolved Oxygen Bioassessment/Macroinv
Jordan River-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	UT16020204-004_00	E. coli Total Dissolved Solids Bioassessment/Macroinv
Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	UT16020204-005_00	E. coli Max Temperature Total Dissolved Solids
Jordan River-6	Jordan River from 7800 South to Bluffdale at 14600 South	UT16020204-006_00	*Dissolved Selenium Max Temperature Total Dissolved Solids Bioassessment/Macroinv
Jordan River-7	Jordan River from Bluffdale at 14600 South to Narrows	UT16020204-007_00	Max Temperature **Total Dissolved Solids Bioassessment/Macroinv
Jordan River-8	Jordan River from Narrows to Utah Lake	UT16020201-008_00	Arsenic Total Dissolved Solids
* impaired parameter in 2016 IR but not in 2018/2020 IR ** impaired as of 2018/2020 IR			

Mixing Zone

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

The mixing zone was presumed to remain within the maximum allowable mixing zone dimensions for each discharge. Acute limits were calculated using 50% of the seasonal critical low flow.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

Parameters of Concern

The parameters of concern considered in this wasteload allocation are total ammonia (TAN) and total recoverable metals. Due to ongoing studies related to the TMDL, this wasteload allocation does not address parameters related to dissolved oxygen, including biochemical oxygen demand (BOD), dissolved oxygen (DO), total nitrogen (TN), and total phosphorus (TP).

Water Quality Modeling

A QUAL2Kw model of the Jordan River was populated and calibrated as part of the DO TMDL study (Stantec Consulting 2010, UDWQ 2010). The model was subsequently validated to a synoptic survey conducted by UDWQ and the Jordan River/Farmington Bay Water Quality Council (JRFBWQC) during July 2014 (UDWQ 2015). The model validation identified areas for future improvement of the model; however, the model was considered suitable for application to the wasteload allocation for ammonia.

The TMDL model of the Jordan River extends 52.4 miles from the outlet of Utah Lake to Burton Dam. For the purposes of the WLA, the model was split at Burnham Dam (approximately 1.7 miles upstream of Burton Dam) and extended down State Canal to the Farmington Bay Waterfowl Management Area (approximately 3.5 miles downstream from Burnham Dam). The following point sources were added to the State Canal: A-1 Drain, South Davis Sewer District North WWTP, and outlet channel from Bountiful Pond (Mill Creek and Stone Creek). In addition, the Jordan Basin WRF discharge was added to the Jordan River, as this discharge was not active at the time of the model calibration.

The Jordan River WLA QUAL2Kw model was used for determining the WQBEL for ammonia. Effluent concentrations were adjusted up to the current permit limits so that water quality criteria were not exceeded in the receiving water. Background conditions for each plant were characterized by assuming each upstream plant was operating at the low flow rate with average ammonia concentration in the effluent. For calculating the chronic ammonia criterion, fish early life stages (ELS) were assumed to be present during all seasons except downstream of the CVWRF and SDSA plants, where ELS were assumed to be present from March through October. Per UAC R317-2-14, Table 2.14.2, the site specific standard for ammonia for the Jordan River from Mill Creek to 900 South was applied.

A mass balance mixing analysis was used to calculate the seasonal WLA for conservative constituents such as metals. Each wastewater treatment plant was granted a full allocation at the point of discharge. Background condition in the Jordan River for each plant was characterized by either a single or combined, multiple monitoring location data.

The calibration, validation and wasteload models are available for review by request.



**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in an incompletely mixed condition are calculated in the WLA in order to generate WET limits. The LC<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA (Table 5). The WET limit for LC<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Table 5: WET Limits for IC<sub>25</sub>**

<b>Facility</b>	<b>Percent Effluent</b>
Jordan Basin WRF	46%
South Valley WRF	62%
Central Valley WRF	39%
SDSD South WWTP	21%
SDSD North WWTP	63%

Effluent Limits

The water quality based effluent limits determined as part of this combined wasteload allocation are summarized in Table 6.

Since the DO impairment of the Jordan River is being addressed through the TMDL process, limits were not calculated for DO, BOD/CBOD, or nutrients. The permit limits for DO and BOD/CBOD were calculated in a previous permit issued prior to the impairment of the Jordan River and are carried forward in this WLA.

Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs

**Table 6: Water Quality Based Effluent Limits Summary**

Effluent Constituent	Averaging Period	Jordan Basin	South Valley	Central Valley	SDSD South WWTP	SDSD North WWTP
Flow (MGD)	Monthly	15	50	75	4	12
Ammonia Acute (mg/L)	Daily					
Summer (Jun-Aug)		6.0	6.0	13.1	30.0	24.0
Fall (Sep-Nov)		6.0	9.0	15.9	40.0	16.2
Winter (Dec-Feb)		9.0	9.4	12.3	17.0	13.0
Spring (Mar-May)		8.0	7.4	15.9	26.0	15.0
Ammonia Chronic (mg/L)	Monthly					
Summer (Jun-Aug)		1.5	1.5	3.7	8.0	5.5
Fall (Sep-Nov)		2.5	3.0		20.0	7.5
(Sep-Oct)				4.5		
(Nov)				5.9		
Winter (Dec-Feb)		3.0	4.0	5.8	14.0	6.5
Spring (Mar-May)		2.5	3.0	5.3	12.0	6.0
TRC Acute (mg/L)	Daily					
Summer (Jun-Aug)		N/A <sup>b</sup>	0.028	N/A <sup>b</sup>	0.321	0.066
Fall (Sep-Nov)		N/A <sup>b</sup>	0.022	N/A <sup>b</sup>	0.253	0.057
Winter (Dec-Feb)		N/A <sup>b</sup>	0.028	N/A <sup>b</sup>	0.134	0.045
Spring (Mar-May)		N/A <sup>b</sup>	0.023	N/A <sup>b</sup>	0.163	0.048
DO (mg/L)	Minimum	5.0	5.0	5.0	5.0	5.0
BOD <sub>5</sub> /CBOD <sub>5</sub> (mg/L)	Monthly	BOD <sub>5</sub>	BOD <sub>5</sub>	CBOD <sub>5</sub>	BOD <sub>5</sub>	BOD <sub>5</sub>
Summer		15.0	15.0	16.0	20.0	20.0
Fall/Winter/Spring		15.0	15.0	20.0	25.0	25.0
BOD <sub>5</sub> /CBOD <sub>5</sub> (mg/L)	Weekly	BOD <sub>5</sub>	BOD <sub>5</sub>	CBOD <sub>5</sub>	BOD <sub>5</sub>	BOD <sub>5</sub>
Summer		21.0	21.0	27.0	27.0	27.0
Fall/Winter/Spring		21.0	21.0	28.0	35.0	35.0

a: Limit due to impairment of receiving segment.  
b: Ultraviolet disinfection utilized, hence no limit for TRC

QUAL2Kw rates, input and output are summarized in Appendix A. The WQBELs for conservative constituents are summarized in Appendix B. Per R317-2.14.2, cyanide numeric criteria for aquatic life is based on free cyanide, which is a portion of total cyanide. Models and supporting documentation are available for review upon request.

Files:

- Wasteload Report: *220511-JordanRiverPOTWWLA\_2021.docx*
- QUAL2Kw Calibration Model: *jordan\_aug2009\_q2kw\_calib\_2010-8-26.xls*
- QUAL2Kw Validation Model: *jordan\_q2kw\_synoptic\_2014-07-22.xlsm*
- QUAL2Kw Wasteload Model: *jordan\_potw\_q2kw\_wla\_2021.xlsm*
- JBWRF Metals Wasteload Model: *JBWRF\_WLA\_2021.xlsm*
- SVWRF Metals Wasteload Model: *SVWRF\_WLA\_2021.xlsm*
- CVWRF Metals Wasteload Model: *CVWRF\_WLA\_JR\_2021.xlsm*
- SDSWRF Metals Wasteload Model: *SDSDSWWTP\_WLA\_2021.xlsm*
- SDNWRF Metals Wasteload Model: *SDSDNWWTP\_WLA\_2021.xlsm*

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

References:

Cirrus Ecological Solutions and Stantec Consulting. 2013. *Jordan River Total Maximum Daily Load Water Quality Study – Phase I*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality.

Hansen, Allen and Luce Inc. 2021. Jordan River Low Flow Analysis. Wasatch Front Water Quality Council and South Davis Sewer District.

Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller. 2012. *Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality.

Stantec Consulting. 2010. *Jordan River TMDL: 2010 QUAL2Kw Model Calibration Technical Memo Public Draft*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality. February 22, 2010. 18 pp.

Utah DWQ. 2010. *Jordan River TMDL QUAL2Kw model refinement*. Prepared by N. Von Stackelberg P.E., State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2021. *Utah Wasteload Analysis Procedures Version 2.0*. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ 2012. *Field Data Collection for QUAL2Kw Model Build and Calibration Standard Operating Procedures Version 1.0*. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2015. *Jordan River Summer 2014 Synoptic Survey and QUAL2Kw Model Validation Report*. Prepared by N. Von Stackelberg P.E., State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2016. *Utah's 2016 303(d) [Water Quality Assessment Report](#)*. December October 2016. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2021. *Utah's Combined 2018/2020 303(d) [Water Quality Assessment Report](#)*. August 2021. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah Division of Water Quality

**WASTELOAD ANALYSIS [WLA]**

Date: 12/9/2021

**Appendix A: QUAL2Kw Analysis for Ammonia**

Discharging Facility: Jordan River POTWs  
 Receiving Water: Jordan River and State Canal

Fully Mixed: Yes  
 Acute River Width: 100%  
 Chronic River Width: 100%

**Modeling Information**

A QUAL2Kw model was used to determine these effluent limits.

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

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

**Model Inputs**

The following were utilized as inputs for the analysis.

Headwater - Utah Lake	Summer	Fall	Winter	Spring
Flow (cfs)	222.0	6.4	3.2	7.7
Temperature, Mean (deg C)	22.3	13.9	2.7	11.4
Temperature, Diel Range (deg C)	3.0	2.5	2.0	2.5
Specific Conductance (µmhos)	1593	1689	1817	1513
Inorganic Suspended Solids (mg/L)	66.2	53.8	7.6	48.1
Dissolved Oxygen, Mean (mg/L)	6.9	8.5	23.2	14.2
Dissolved Oxygen, Diel Range (mg/L)	2.5	2.0	1.5	2.0
CBOD <sub>5</sub> (mg/L)	1.8	2.7	2.3	2.0
Organic Nitrogen (mg/L)	0.426	0.396	0.533	0.441
NH <sub>4</sub> -Nitrogen (mg/L)	0.056	0.176	0.232	0.073
NO <sub>3</sub> -Nitrogen (mg/L)	0.061	0.275	0.586	0.178
Organic Phosphorus (mg/L)	0.047	0.051	0.019	0.031
Inorganic Ortho-Phosphorus (mg/L)	0.038	0.040	0.039	0.035
Phytoplankton (µg/L)	20.3	22.0	15.6	10.2
Detritus [POM] (mg/L)	14.0	10.4	4.7	8.5
Alkalinity (mg/L)	200	191	220	200
pH	8.4	8.2	8.1	8.3

**Discharge Information - Jordan Basin WRF**

Chronic	Summer	Fall	Winter	Spring
Flow (MGD)	6.6	6.6	7.6	7.3
Temperature (deg C)	22.1	18.7	15.6	18.3
Specific Conductance (µmhos)	1791	1791	1791	1791
Inorganic Suspended Solids (mg/L)	1.7	1.7	1.7	1.7
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)	15.0	15.0	15.0	15.0
Organic Nitrogen (mg/L)	0.383	0.791	0.719	0.913
NH <sub>4</sub> -Nitrogen (mg/L)	0.620	0.058	0.084	0.074
NO <sub>3</sub> -Nitrogen (mg/L)	9.886	9.796	9.204	9.143
Organic Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Inorganic Ortho-Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	0.5	0.5	0.5	0.5
Alkalinity (mg/L)	200	200	200	200
pH	7.6	7.5	7.4	7.4

Acute	Summer	Fall	Winter	Spring
Flow (MGD)	6.6	6.6	7.6	7.3
pH	7.6	7.5	7.4	7.4

Utah Division of Water Quality

**Discharge Information - South Valley WRF**

<b>Chronic</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	21.2	20.5	19.8	19.8
Temperature (deg C)	21.6	20.0	14.7	16.7
Specific Conductance (µmhos)	1517	1444	1543	1459
Inorganic Suspended Solids (mg/L)	0.0	0.4	2.0	1.1
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)	15.0	15.0	15.0	15.0
Organic Nitrogen (mg/L)	1.862	1.447	1.624	1.559
NH4-Nitrogen (mg/L)	0.108	0.103	0.340	0.188
NO3-Nitrogen (mg/L)	6.654	7.117	7.093	6.960
Organic Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Inorganic Ortho-Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	4.1	4.2	4.8	4.4
Alkalinity (mg/L)	189	184	170	173
pH	7.7	7.7	7.6	7.6

  

<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	21.2	20.5	19.8	19.8
pH	7.7	7.7	7.6	7.6

**Discharge Information - Central Valley WRF**

<b>Chronic</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	47.4	43.5	44.1	46.5
Temperature (deg C)	21.2	18.4	12.7	14.8
Specific Conductance (µmhos)	1330	1271	1422	1422
Inorganic Suspended Solids (mg/L)	1.1	0.0	0.4	0.3
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)	27.0	28.0	28.0	28.0
Organic Nitrogen (mg/L)	3.207	0.119	0.033	1.678
NH4-Nitrogen (mg/L)	0.681	1.297	1.842	1.794
NO3-Nitrogen (mg/L)	16.579	17.817	17.525	13.829
Organic Phosphorus (mg/L)	0.955	1.082	1.532	1.611
Inorganic Ortho-Phosphorus (mg/L)	3.045	2.918	2.468	2.389
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	4.5	6.7	5.6	4.1
Alkalinity (mg/L)	172	164	173	179
pH	7.4	7.4	7.3	7.2

  

<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	75.0	75.0	75.0	75.0
pH	7.4	7.4	7.3	7.2

**Discharge Information - South Davis Sewer District South WWTP**

<b>Chronic</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	2.0	2.0	2.5	2.5
Temperature (deg C)	22.0	19.6	12.1	16.6
Specific Conductance (µmhos)	2658	2659	2913	2852
Inorganic Suspended Solids (mg/L)	6.8	6.6	5.9	6.7
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)	20.0	25.0	25.0	25.0
Organic Nitrogen (mg/L)	5.174	3.692	1.908	1.114
NH4-Nitrogen (mg/L)	7.685	13.067	27.675	16.446
NO3-Nitrogen (mg/L)	7.685	13.067	27.675	16.446
Organic Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Inorganic Ortho-Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	4.9	4.5	7.0	6.4
Alkalinity (mg/L)	282	292	328	323
pH	7.7	7.6	7.7	7.7

  

<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	2.0	2.0	2.5	2.5
pH	7.7	7.6	7.7	7.7

Utah Division of Water Quality

**Discharge Information - South Davis Sewer District North WWTP**

<b>Chronic</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	4.8	4.8	4.8	4.9
Temperature (deg C)	22.5	20.5	12.9	16.4
Specific Conductance (µmhos)	1986	2017	2258	1981
Inorganic Suspended Solids (mg/L)	6.0	6.0	6.9	6.6
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)	20.0	25.0	25.0	25.0
Organic Nitrogen (mg/L)	2.108	1.267	0.908	3.754
NH4-Nitrogen (mg/L)	7.938	8.583	14.175	9.446
NO3-Nitrogen (mg/L)	10.351	10.170	9.671	10.839
Organic Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Inorganic Ortho-Phosphorus (mg/L)	0.500	0.500	0.500	0.500
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	4.9	7.8	9.2	8.9
Alkalinity (mg/L)	324	324	324	324
pH	7.2	7.2	7.4	7.4

  

<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	4.8	4.8	4.8	4.9
pH	7.2	7.2	7.4	7.4

**Tributary - Little Cottonwood Creek**

	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	8.5	1.6	1.4	1.4
Temperature, Mean (deg C)	16.1	11.5	3.3	9.0
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1085	1214	2554	815
Inorganic Suspended Solids (mg/L)	33.9	15.1	9.6	12.9
Dissolved Oxygen, Mean (mg/L)	8.1	9.3	11.4	10.7
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	1.5	1.9	3.9	1.5
Organic Nitrogen (mg/L)	0.230	0.425	0.385	0.010
NH4-Nitrogen (mg/L)	0.022	0.032	0.098	0.058
NO3-Nitrogen (mg/L)	0.424	0.647	1.040	0.591
Organic Phosphorus (mg/L)	0.039	0.016	0.010	0.016
Inorganic Ortho-Phosphorus (mg/L)	0.032	0.029	0.021	0.025
Phytoplankton (µg/L)	17.2	17.6	6.0	16.1
Detritus [POM] (mg/L)	6.1	3.8	8.1	5.1
Alkalinity (mg/L)	118	238	232	165
pH	8.2	8.1	7.8	8.2

**Tributary - Big Cottonwood Creek**

	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	21.7	10.8	5.9	7.9
Temperature, Mean (deg C)	17.0	12.1	4.5	8.8
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1026	1088	1406	655
Inorganic Suspended Solids (mg/L)	23.9	12.9	8.7	19.3
Dissolved Oxygen, Mean (mg/L)	8.3	9.4	11.3	10.9
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	1.5	1.8	3.3	1.5
Organic Nitrogen (mg/L)	0.417	0.300	0.285	0.160
NH4-Nitrogen (mg/L)	0.023	0.023	0.050	0.036
NO3-Nitrogen (mg/L)	0.325	0.408	0.716	0.389
Organic Phosphorus (mg/L)	0.015	0.006	0.011	0.016
Inorganic Ortho-Phosphorus (mg/L)	0.036	0.027	0.022	0.024
Phytoplankton (µg/L)	14.7	13.2	6.5	10.3
Detritus [POM] (mg/L)	6.2	4.5	8.4	4.9
Alkalinity (mg/L)	142	211	221	155
pH	8.3	8.2	8.1	8.2

Utah Division of Water Quality

<b>Tributary - Mill Creek above CVWRF</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	21.4	10.1	3.0	10.1
Temperature, Mean (deg C)	17.9	11.9	6.7	11.0
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1103	1086	1068	1017
Inorganic Suspended Solids (mg/L)	14.4	14.6	21.6	11.8
Dissolved Oxygen, Mean (mg/L)	8.3	8.5	10.9	9.7
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	1.5	1.5	1.5	2.4
Organic Nitrogen (mg/L)	0.264	0.400	0.311	0.054
NH <sub>4</sub> -Nitrogen (mg/L)	0.025	0.027	0.030	0.030
NO <sub>3</sub> -Nitrogen (mg/L)	1.063	1.411	1.765	1.341
Organic Phosphorus (mg/L)	0.018	0.025	0.018	0.010
Inorganic Ortho-Phosphorus (mg/L)	0.035	0.028	0.032	0.036
Phytoplankton (µg/L)	4.1	5.4	5.2	2.7
Detritus [POM] (mg/L)	4.0	4.3	10.3	4.6
Alkalinity (mg/L)	207	237	245	213
pH	7.9	7.9	7.7	7.8

<b>Tributary - Decker Lake Outlet</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	1.9	0.4	0.3	0.3
Temperature, Mean (deg C)	21.3	10.0	2.8	12.7
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1711	1908	2660	1798
Inorganic Suspended Solids (mg/L)	52.5	41.8	19.6	26.0
Dissolved Oxygen, Mean (mg/L)	5.9	9.6	12.3	10.6
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	3.9	1.9	2.0	3.8
Organic Nitrogen (mg/L)	0.682	0.408	0.389	0.511
NH <sub>4</sub> -Nitrogen (mg/L)	0.180	0.107	0.131	0.139
NO <sub>3</sub> -Nitrogen (mg/L)	0.568	1.085	1.444	0.580
Organic Phosphorus (mg/L)	0.022	0.023	0.024	0.037
Inorganic Ortho-Phosphorus (mg/L)	0.061	0.054	0.042	0.050
Phytoplankton (µg/L)	19.2	16.8	14.1	25.4
Detritus [POM] (mg/L)	7.6	7.1	9.1	6.9
Alkalinity (mg/L)	230	246	258	218
pH	8.1	8.3	8.3	8.2

<b>Tributary - 1300 South Drain</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	17.6	0.6	2.3	2.3
Temperature, Mean (deg C)	19.9	13.5	8.7	13.3
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1928	2223	2275	1968
Inorganic Suspended Solids (mg/L)	54.6	42.7	39.0	48.4
Dissolved Oxygen, Mean (mg/L)	7.9	9.1	10.2	10.2
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	2.3	2.5	1.6	1.6
Organic Nitrogen (mg/L)	0.346	0.322	0.000	-0.081
NH <sub>4</sub> -Nitrogen (mg/L)	0.029	0.031	0.065	0.038
NO <sub>3</sub> -Nitrogen (mg/L)	1.237	2.153	3.486	2.444
Organic Phosphorus (mg/L)	0.050	0.041	0.038	0.050
Inorganic Ortho-Phosphorus (mg/L)	0.076	0.056	0.046	0.043
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	7.1	6.2	5.3	6.2
Alkalinity (mg/L)	251	296	343	286
pH	8.0	8.1	8.0	8.2

Utah Division of Water Quality

<b>Tributary - North Temple Drain</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)	1.6	0.1	0.2	2.1
Temperature, Mean (deg C)	18.6	12.1	7.9	10.1
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	946	1031	1680	680
Inorganic Suspended Solids (mg/L)	5.9	0.2	3.9	10.7
Dissolved Oxygen, Mean (mg/L)	7.7	7.7	9.8	9.5
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	2.1	2.4	1.5	1.7
Organic Nitrogen (mg/L)	0.161	0.000	0.058	0.184
NH4-Nitrogen (mg/L)	0.026	0.038	0.031	0.054
NO3-Nitrogen (mg/L)	2.280	2.645	2.148	0.920
Organic Phosphorus (mg/L)	0.005	0.000	0.000	0.020
Inorganic Ortho-Phosphorus (mg/L)	0.030	0.022	0.020	0.033
Phytoplankton (µg/L)	2.4	2.4	0.8	0.4
Detritus [POM] (mg/L)	2.5	2.5	2.5	2.5
Alkalinity (mg/L)	237	237	257	221
pH	8.1	8.5	8.2	8.2

<b>Minor Tributaries - Quality</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Temperature, Mean (deg C)	19.9	13.5	8.7	13.3
Temperature, Diel Range (deg C)	0.0	0.0	0.0	0.0
Specific Conductance (µmhos)	1928	2223	2275	1968
Inorganic Suspended Solids (mg/L)	54.6	42.7	39.0	48.4
Dissolved Oxygen, Mean (mg/L)	7.9	9.1	10.2	10.2
Dissolved Oxygen, Diel Range (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	2.3	2.5	1.6	1.6
Organic Nitrogen (mg/L)	0.346	0.322	0.000	-0.081
NH4-Nitrogen (mg/L)	0.029	0.031	0.065	0.038
NO3-Nitrogen (mg/L)	1.237	2.153	3.486	2.444
Organic Phosphorus (mg/L)	0.050	0.041	0.038	0.050
Inorganic Ortho-Phosphorus (mg/L)	0.076	0.056	0.046	0.043
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	7.1	6.2	5.3	6.2
Alkalinity (mg/L)	251	296	343	286
pH	8.0	8.1	8.0	8.2

<b>Minor Tributaries - Flow (MGD)</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Corner Canyon Creek	0.0	0.0	0.0	0.0
Midas Creek (Butterfield)	0.0	0.3	0.3	0.2
Willow Creek	0.6	0.4	0.5	0.8
Dry Creek	0.2	0.1	0.2	0.3
9000 South Conduit	0.0	0.0	0.0	0.0
Bingham Creek	4.7	1.0	0.9	0.4

<b>Diversions - Flow (cfs)</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Jordan Valley Pump Station	15.6	3.0	0.0	0.0
Utah Lake Distribution Canal	27.2	0.0	0.0	0.0
Utah & Salt Lake Canal	62.3	0.0	0.0	0.0
East Jordan & Draper Canal	40.8	0.0	0.0	0.0
South Jordan Canal	15.1	0.0	0.0	0.0
Jordan & Salt Lake Canal	39.6	0.0	0.0	0.0
Beckstead Ditch	0.0	0.0	0.0	0.0
North Jordan Canal	17.1	23.9	35.8	38.6
Gardner Mill Race	0.0	0.0	0.0	0.0
Brighton Canal	0.0	0.0	0.0	0.0
Surplus Canal	241.4	120.5	175.2	183.9
Jordan River at Burnham Dam	96.0	76.0	41.0	49.0



Utah Division of Water Quality

<b>Groundwater - Quality</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Temperature, Mean (deg C)	16.0	16.0	16.0	16.0
Specific Conductance (µmhos)	2000	2000	2000	2000
Inorganic Suspended Solids (mg/L)	0.0	0.0	0.0	0.0
Dissolved Oxygen, Mean (mg/L)	0.0	0.0	0.0	0.0
CBOD <sub>5</sub> (mg/L)	2.0	2.0	2.0	2.0
Organic Nitrogen (mg/L)	0.500	0.500	0.500	0.500
NH <sub>4</sub> -Nitrogen (mg/L)	0.500	0.500	0.500	0.500
NO <sub>3</sub> -Nitrogen (mg/L)	2.000	2.000	2.000	2.000
Organic Phosphorus (mg/L)	0.050	0.050	0.050	0.050
Inorganic Ortho-Phosphorus (mg/L)	0.100	0.100	0.100	0.100
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	300	300	300	300
pH	8.0	8.0	8.0	8.0

<b>Groundwater - Flow (cfs)</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Segment 1-32	0.5	0.0	0.0	0.0
Segment 32-51	4.9	14.1	20.3	21.6
Segment 51-76	6.5	18.5	26.7	28.5
Segment 76-84	14.9	12.5	12.2	7.6
Segment 84-111	50.3	42.0	41.3	25.7
Segment 111-115	7.5	6.2	6.1	3.8
Segment 115-118	2.8	2.8	2.8	2.8
Segment 118-133	77.8	3.0	12.5	37.0
Segment 133-151	11.2	11.2	11.2	11.2
Segment 151-162	6.8	6.8	6.8	6.8
State Canal 162-171	5.6	5.6	5.6	5.6
State Canal 171-172	0.6	0.6	0.6	0.6

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

**Effluent Limitations**

**Effluent Limitations based upon Water Quality Standards for Ammonia**

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

<b>Chronic</b>	<b>Summer Jun-Aug</b>	<b>Fall Sep-Oct</b>	<b>Fall Nov</b>	<b>Winter Dec-Feb</b>	<b>Spring Mar-May</b>
<b>Flow (MGD)</b>					
Jordan Basin WRF	15.0	15.0	15.0	15.0	15.0
South Valley WRF	50.0	50.0	50.0	50.0	50.0
Central Valley WRF	75.0	75.0	75.0	75.0	75.0
SDSD South WWTP	4.0	4.0	4.0	4.0	4.0
SDSD North WWTP	12.0	12.0	12.0	12.0	12.0
<b>NH4-Nitrogen (mg/L)</b>					
Jordan Basin WRF	1.5	2.5	2.5	3.0	2.5
South Valley WRF	1.5	3.0	3.0	4.0	3.0
Central Valley WRF	3.7	4.5	5.9	5.8	5.3
SDSD South WWTP	8.0	20.0	20.0	14.0	12.0
SDSD North WWTP	5.5	7.5	7.5	6.5	6.0
<b>Acute</b>	<b>Summer Jun-Aug</b>	<b>Fall Sep-Nov</b>		<b>Winter Dec-Feb</b>	<b>Spring Mar-May</b>
<b>Flow (MGD)</b>					
Jordan Basin WRF	15.0	15.0		15.0	15.0
South Valley WRF	50.0	50.0		50.0	50.0
Central Valley WRF	75.0	75.0		75.0	75.0
SDSD South WWTP	4.0	4.0		4.0	4.0
SDSD North WWTP	12.0	12.0		12.0	12.0
<b>NH4-Nitrogen (mg/L)</b>					
Jordan Basin WRF	6.0	6.0		9.0	8.0
South Valley WRF	6.0	9.0		9.4	7.4
Central Valley WRF	13.1	15.9		12.3	15.9
SDSD South WWTP	30.0	40.0		17.0	26.0
SDSD North WWTP	24.0	16.2		13.0	15.0

**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.

**WLA Appendix for Jordan  
Basin Water Reclamation  
Facility (WRF) - UT0025852**

Utah Division of Water Quality

**Coefficients and Other Model Information**

<i>Parameter</i>	<i>Value</i>	<i>Units</i>
<b>Stoichiometry:</b>		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
<b>Inorganic suspended solids:</b>		
Settling velocity	0.001	m/d
<b>Oxygen:</b>		
Reaeration model	Internal	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
<b>Slow CBOD:</b>		
Hydrolysis rate	0	/d
Temp correction	1.047	
Oxidation rate	0.2	/d
Temp correction	1.047	
<b>Fast CBOD:</b>		
Oxidation rate	10	/d
Temp correction	1.047	
<b>Organic N:</b>		
Hydrolysis	0.4	/d
Temp correction	1.07	
Settling velocity	0.05	m/d
<b>Ammonium:</b>		
Nitrification	2	/d
Temp correction	1.07	
<b>Nitrate:</b>		
Denitrification	0.05	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.05	m/d
Temp correction	1.07	
<b>Organic P:</b>		
Hydrolysis	0.05	/d
Temp correction	1.07	
Settling velocity	0.05	m/d
<b>Inorganic P:</b>		
Settling velocity	0.5	m/d
Sed P oxygen attenuation half sat constant	0.05	mgO2/L

Utah Division of Water Quality

<b>Phytoplankton:</b>		
Max Growth rate	2	/d
Temp correction	1.07	
Respiration rate	0.1	/d
Temp correction	1.07	
Death rate	0.1	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	57.6	langleys/d
Ammonia preference	25	ugN/L
Settling velocity	0.05	m/d
<b>Bottom Plants:</b>		
Growth model	Zero-order	
Max Growth rate	50	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	50	gD/m2
Basal respiration rate	0.042	/d
Photo-respiration rate parameter	0.389	unitless
Temp correction	1.07	
Excretion rate	0.1	/d
Temp correction	1.05	
Death rate	0.1	/d
Temp correction	1.07	
External nitrogen half sat constant	163	ugN/L
External phosphorus half sat constant	48	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Bottom algae use HCO3- as substrate	Yes	
Light model	Half saturation	
Light constant	50	langleys/d
Ammonia preference	1	ugN/L
Subsistence quota for nitrogen	30	mgN/gD
Subsistence quota for phosphorus	0.4	mgP/gD
Maximum uptake rate for nitrogen	447	mgN/gD/d
Maximum uptake rate for phosphorus	114	mgP/gD/d
Internal nitrogen half sat ratio	2.9	
Internal phosphorus half sat ratio	1.8	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	
<b>Detritus (POM):</b>		
Dissolution rate	0.1	/d
Temp correction	1.07	
Settling velocity	0.1	m/d
<b>pH:</b>		
Partial pressure of carbon dioxide	347	ppm
<b>TRC:</b>		
Decay rate	0.8	/d

Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	63.4	40.4	20.4	38.3
Max. Air Temperature, F	92.8	65.7	37.3	61.4
Dew Point, Temp., F	60.2	43.6	26.8	41.6
Wind, ft./sec. @ 21 ft.	9.5	8.2	6.9	9.8
Cloud Cover, %	10%	10%	10%	10%

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

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

8-Oct-21
4:00 PM

**Facilities:** Jordan Basin Water Reclamation Facility  
**Discharging to:** Jordan River

**UPDES No:** UT-0025852

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	13.070 lbs/day	750.00 ug/l	112.673 lbs/day
Arsenic	150.00 ug/l	22.535 lbs/day	340.00 ug/l	51.079 lbs/day
Cadmium	2.18 ug/l	0.327 lbs/day	6.59 ug/l	0.989 lbs/day
Chromium III	243.79 ug/l	36.624 lbs/day	5100.48 ug/l	766.250 lbs/day
ChromiumVI	11.00 ug/l	1.653 lbs/day	16.00 ug/l	2.404 lbs/day
Copper	27.61 ug/l	4.147 lbs/day	46.31 ug/l	6.957 lbs/day
Iron			1000.00 ug/l	150.231 lbs/day
Lead	16.02 ug/l	2.406 lbs/day	411.03 ug/l	61.750 lbs/day
Mercury	0.0120 ug/l	0.002 lbs/day	2.40 ug/l	0.361 lbs/day
Nickel	152.71 ug/l	22.941 lbs/day	1373.49 ug/l	206.341 lbs/day
Selenium	4.60 ug/l	0.691 lbs/day	20.00 ug/l	3.005 lbs/day
Silver	N/A ug/l	N/A lbs/day	33.61 ug/l	5.049 lbs/day
Zinc	351.34 ug/l	52.782 lbs/day	351.34 ug/l	52.782 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

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

Metals Standards Based upon a Hardness of 355.97 mg/l as CaCO<sub>3</sub>

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.75 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	90.14 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	1163.60 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	59533.09 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.04 lbs/day
Nickel			4600.00 ug/l	1244.78 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	1.70 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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

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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>
Summer (Irrig. Season)	27.0	19.3	8.1	0.03	3.56	7.05	0.001	1067.5	
Fall	17.0	8.9	8.1	0.05	2.06	---	0.001	1054.6	
Winter	23.0	4.8	7.9	0.04	1.91	---	0.001	1054.6	
Spring	24.0	14.8	8.7	0.04	2.06	---	0.001	1054.6	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	124.00	12.10	0.06	1.35	2.65*	1.12	0.0	0.12	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	2.50	1.09	0.25	8.62	10.0			* 1/2 MDL

**Projected Discharge Information**



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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	15.00000	23.5	982.67	61.45349
Fall	15.00000	20.2		
Winter	15.00000	17.1		
Spring	15.00000	20.2		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	15.000 MGD	23.205 cfs
Fall	15.000 MGD	23.205 cfs
Winter	15.000 MGD	23.205 cfs
Spring	15.000 MGD	23.205 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 15 MGD. If the discharger is allowed to have a flow greater than 15 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	46.2% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 355.97 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	1,114.2	ug/l	167.4 lbs/day
Arsenic	310.45 ug/l	25.1 lbs/day	530.8	ug/l	79.7 lbs/day
Cadmium	4.64 ug/l	0.4 lbs/day	10.4	ug/l	1.6 lbs/day
Chromium III	525.87 ug/l	42.5 lbs/day	8,067.0	ug/l	1211.9 lbs/day
Chromium VI	19.17 ug/l	1.6 lbs/day	23.0	ug/l	3.5 lbs/day
Copper	58.42 ug/l	4.7 lbs/day	72.6	ug/l	10.9 lbs/day
Iron	N/A	N/A	1,581.8	ug/l	237.6 lbs/day
Lead	34.51 ug/l	2.8 lbs/day	650.1	ug/l	97.7 lbs/day

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

Mercury	0.03 ug/l	0.0 lbs/day	3.8	ug/l	0.6 lbs/day
Nickel	327.48 ug/l	26.5 lbs/day	2,171.1	ug/l	326.2 lbs/day
Selenium	8.68 ug/l	0.7 lbs/day	31.0	ug/l	4.7 lbs/day
Silver	N/A ug/l	N/A lbs/day	53.0	ug/l	8.0 lbs/day
Zinc	750.11 ug/l	60.6 lbs/day	550.7	ug/l	82.7 lbs/day
Cyanide	11.25 ug/l	0.9 lbs/day	34.8	ug/l	5.2 lbs/day

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

Summer	25.6 Deg. C.	78.1 Deg. F
Fall	14.3 Deg. C.	57.8 Deg. F
Winter	10.8 Deg. C.	51.4 Deg. F
Spring	20.9 Deg. C.	69.6 Deg. F

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

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

	Concentration	1 Hour Average Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	751.2 lbs/day
Nitrates as N	4.0 mg/l	600.9 lbs/day
Total Phosphorus as P	0.05 mg/l	7.5 lbs/day
Total Suspended Solids	90.0 mg/l	13520.8 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule]  
Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		1114.2				1114.2	N/A
Antimony				9303.2		9303.2	
Arsenic	216.4	530.8			0.0	216.4	310.5
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	21.6	10.4			0.0	10.4	4.6
Chromium (III)		8067.0			0.0	8067.0	525.9
Chromium (VI)	214.8	23.0			0.0	23.00	19.17
Copper	431.4	72.6				72.6	58.4
Cyanide		34.8	475979.3			34.8	11.3
Iron		1581.8				1581.8	
Lead	216.2	650.1			0.0	216.2	34.5
Mercury		3.80		0.32	0.0	0.32	0.026
Nickel		2171.1		9952.3		2171.1	327.5
Selenium	106.9	31.0			0.0	31.0	8.7
Silver		53.0			0.0	53.0	
Thallium				13.6		13.6	
Zinc		550.7				550.7	750.1
Boron	1622.3					1622.3	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	1114.2	N/A	
Antimony	9303.23		
Arsenic	216.4	310.5	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	10.4	4.6	
Chromium (III)	8067.0	526	
Chromium (VI)	23.0	19.2	
Copper	72.6	58.4	
Cyanide	34.8	11.3	
Iron	1581.8		
Lead	216.2	34.5	
Mercury	0.325	0.026	
Nickel	2171.1	327	
Selenium	31.0	8.7	
Silver	53.0	N/A	
Thallium	13.6		
Zinc	550.7	750.1	Acute Controls
Boron	1622.31		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: JBWRF\_WLA\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 1.937	REAER. Coeff. (Ka)20 (Ka)/day 20.892	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 20.552	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.237
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 3.875	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 30.735
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.957						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.

**WLA Appendix for South Valley  
Water Reclamation Facility  
(WRF) - UT0024384**

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

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

8-Oct-21
4:00 PM

**Facilities:** South Valley Water Reclamation Facility  
**Discharging to:** Jordan River

**UPDES No:** UT-0024384

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	43.567 lbs/day	750.00 ug/l	375.577 lbs/day
Arsenic	150.00 ug/l	75.115 lbs/day	340.00 ug/l	170.262 lbs/day
Cadmium	2.30 ug/l	1.151 lbs/day	7.04 ug/l	3.527 lbs/day
Chromium III	257.90 ug/l	129.150 lbs/day	5395.84 ug/l	2,702.072 lbs/day
ChromiumVI	11.00 ug/l	5.508 lbs/day	16.00 ug/l	8.012 lbs/day
Copper	29.28 ug/l	14.661 lbs/day	49.40 ug/l	24.740 lbs/day
Iron			1000.00 ug/l	500.770 lbs/day
Lead	17.48 ug/l	8.754 lbs/day	448.62 ug/l	224.653 lbs/day
Mercury	0.0120 ug/l	0.006 lbs/day	2.40 ug/l	1.202 lbs/day
Nickel	161.85 ug/l	81.049 lbs/day	1455.73 ug/l	728.984 lbs/day
Selenium	4.60 ug/l	2.304 lbs/day	20.00 ug/l	10.015 lbs/day
Silver	N/A ug/l	N/A lbs/day	37.82 ug/l	18.941 lbs/day
Zinc	372.41 ug/l	186.490 lbs/day	372.41 ug/l	186.490 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

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

Metals Standards Based upon a Hardness of 381.3 mg/l as CaCO<sub>3</sub>

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	2.50 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	300.46 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	2882.06 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	147454.23 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.10 lbs/day
Nickel			4600.00 ug/l	3083.13 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	4.22 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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



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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	
Summer (Irrig. Season)	47.0	19.1	8.0	0.14	3.41	7.10	0.000	1194.4	
Fall	37.0	10.3	7.9	0.15	3.18	---	0.010	1277.4	
Winter	40.0	6.8	9.5	0.15	2.58	---	0.000	1277.4	
Spring	40.0	14.9	8.6	0.15	3.02	---	0.025	1277.4	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	23.80	10.24	0.33	2.58	3.33	4.46	0.0	1.42	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	3.14	2.37	0.80	14.71	10.0		* 1/2 MDL	

**Projected Discharge Information**

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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	50.00000	23.9	738.67	153.98116
Fall	50.00000	19.7		
Winter	50.00000	16.3		
Spring	50.00000	19.8		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	50.000 MGD	77.350 cfs
Fall	50.000 MGD	77.350 cfs
Winter	50.000 MGD	77.350 cfs
Spring	50.000 MGD	77.350 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 50 MGD. If the discharger is allowed to have a flow greater than 50 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	62.2% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 381.3 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	970.6	ug/l	486.1 lbs/day
Arsenic	234.92 ug/l	63.3 lbs/day	440.2	ug/l	220.4 lbs/day
Cadmium	3.50 ug/l	0.9 lbs/day	9.1	ug/l	4.5 lbs/day
Chromium III	413.04 ug/l	111.3 lbs/day	7,034.4	ug/l	3522.6 lbs/day
Chromium VI	15.66 ug/l	4.2 lbs/day	19.8	ug/l	9.9 lbs/day
Copper	44.35 ug/l	12.0 lbs/day	63.1	ug/l	31.6 lbs/day
Iron	N/A	N/A	1,303.8	ug/l	652.9 lbs/day
Lead	27.24 ug/l	7.3 lbs/day	584.5	ug/l	292.7 lbs/day

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

Mercury	0.02 ug/l	0.0 lbs/day	3.1	ug/l	1.6 lbs/day
Nickel	258.28 ug/l	69.6 lbs/day	1,897.0	ug/l	950.0 lbs/day
Selenium	5.96 ug/l	1.6 lbs/day	25.4	ug/l	12.7 lbs/day
Silver	N/A ug/l	N/A lbs/day	49.1	ug/l	24.6 lbs/day
Zinc	589.75 ug/l	158.9 lbs/day	481.1	ug/l	240.9 lbs/day
Cyanide	8.36 ug/l	2.3 lbs/day	28.7	ug/l	14.4 lbs/day

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

Summer	24.3 Deg. C.	75.8 Deg. F
Fall	15.2 Deg. C.	59.4 Deg. F
Winter	11.9 Deg. C.	53.4 Deg. F
Spring	20.0 Deg. C.	67.9 Deg. F

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

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

	Concentration	1 Hour Average Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	2503.8 lbs/day
Nitrates as N	4.0 mg/l	2003.1 lbs/day
Total Phosphorus as P	0.05 mg/l	25.0 lbs/day
Total Suspended Solids	90.0 mg/l	45069.3 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule] Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		970.6				970.6	N/A
Antimony				6912.8		6912.8	
Arsenic	160.8	440.2			0.0	160.8	234.9
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	15.9	9.1			0.0	9.1	3.5
Chromium (III)		7034.4			0.0	7034.4	413.0
Chromium (VI)	159.2	19.8			0.0	19.85	15.66
Copper	318.8	63.1				63.1	44.4
Cyanide		28.7	353678.1			28.7	8.4
Iron		1303.8				1303.8	
Lead	159.9	584.5			0.0	159.9	27.2
Mercury		3.13		0.24	0.0	0.24	0.019
Nickel		1897.0		7395.1		1897.0	258.3
Selenium	78.9	25.4			0.0	25.4	6.0
Silver		49.1			0.0	49.1	
Thallium				10.1		10.1	
Zinc		481.1				481.1	589.8
Boron	1205.2					1205.2	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	970.6	N/A	
Antimony	6912.80		
Arsenic	160.8	234.9	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	9.1	3.5	
Chromium (III)	7034.4	413	
Chromium (VI)	19.8	15.7	
Copper	63.1	44.4	
Cyanide	28.7	8.4	
Iron	1303.8		
Lead	159.9	27.2	
Mercury	0.241	0.019	
Nickel	1897.0	258	
Selenium	25.4	6.0	
Silver	49.1	N/A	
Thallium	10.1		
Zinc	481.1	589.8	Acute Controls
Boron	1205.23		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: SVWRF\_WLA\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 1.920	REAER. Coeff. (Ka)20 (Ka)/day 15.113	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 14.797	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.233
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 3.840	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 30.384
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.946						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.

**WLA Appendix for Central  
Valley Water Reclamation  
Facility (WRF) - UT0024392**

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

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

20-Oct-21
4:00 PM

**Facilities:** Central Valley Water Reclamation Facility  
**Discharging to:** Jordan River

**UPDES No:** UT-0024392

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	65.350 lbs/day	750.00 ug/l	563.366 lbs/day
Arsenic	150.00 ug/l	112.673 lbs/day	340.00 ug/l	255.393 lbs/day
Cadmium	2.41 ug/l	1.808 lbs/day	7.45 ug/l	5.599 lbs/day
Chromium III	270.40 ug/l	203.113 lbs/day	5657.30 ug/l	4,249.508 lbs/day
ChromiumVI	11.00 ug/l	8.263 lbs/day	16.00 ug/l	12.018 lbs/day
Copper	30.76 ug/l	23.104 lbs/day	52.17 ug/l	39.186 lbs/day
Iron			1000.00 ug/l	751.155 lbs/day
Lead	18.82 ug/l	14.134 lbs/day	482.86 ug/l	362.699 lbs/day
Mercury	0.0120 ug/l	0.009 lbs/day	2.40 ug/l	1.803 lbs/day
Nickel	169.96 ug/l	127.663 lbs/day	1528.65 ug/l	1,148.252 lbs/day
Selenium	4.60 ug/l	3.455 lbs/day	20.00 ug/l	15.023 lbs/day
Silver	N/A ug/l	N/A lbs/day	41.78 ug/l	31.380 lbs/day
Zinc	391.09 ug/l	293.770 lbs/day	391.09 ug/l	293.770 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>



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

Metals Standards Based upon a Hardness of 403.97 mg/l as CaCO<sub>3</sub>

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	3.76 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	450.69 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	6907.33 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	353398.05 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.24 lbs/day
Nickel			4600.00 ug/l	7389.23 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	10.12 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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

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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>
Summer (Irrig. Season)	182.0	18.7	8.0	0.22	4.92	7.18	0.00	1248.8	
Fall	133.0	10.9	8.0	0.34	3.44	---	0.00	1158.0	
Winter	122.0	6.3	8.0	0.44	3.94	---	0.00	1158.0	
Spring	116.0	12.5	8.0	0.24	3.25	---	0.00	1158.0	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	221.00	42.77	0.34	4.45	2.65*	5.36	0.0	2.74	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	3.38	2.47	1.17	19.93	10.0			* 1/2 MDL

**Projected Discharge Information**

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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	75.00000	NA	982.67	307.26746
Fall	75.00000	NA		
Winter	75.00000	NA		
Spring	75.00000	NA		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	75.000 MGD	116.025 cfs
Fall	75.000 MGD	116.025 cfs
Winter	75.000 MGD	116.025 cfs
Spring	75.000 MGD	116.025 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 75 MGD. If the discharger is allowed to have a flow greater than 75 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	38.9% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 403.97 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	1,164.9	ug/l	875.0 lbs/day
Arsenic	318.21 ug/l	128.6 lbs/day	573.1	ug/l	430.5 lbs/day
Cadmium	5.64 ug/l	2.3 lbs/day	13.0	ug/l	9.8 lbs/day
Chromium III	687.58 ug/l	278.0 lbs/day	10,090.9	ug/l	7579.8 lbs/day
Chromium VI	22.02 ug/l	8.9 lbs/day	25.4	ug/l	19.1 lbs/day
Copper	70.60 ug/l	28.5 lbs/day	88.9	ug/l	66.8 lbs/day
Iron	N/A	N/A	1,784.3	ug/l	1340.3 lbs/day
Lead	44.04 ug/l	17.8 lbs/day	859.4	ug/l	645.6 lbs/day

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

Mercury	0.03 ug/l	0.0 lbs/day	4.3	ug/l	3.2 lbs/day
Nickel	431.26 ug/l	174.3 lbs/day	2,724.9	ug/l	2046.9 lbs/day
Selenium	7.95 ug/l	3.2 lbs/day	33.8	ug/l	25.4 lbs/day
Silver	N/A ug/l	N/A lbs/day	73.6	ug/l	55.3 lbs/day
Zinc	973.31 ug/l	393.5 lbs/day	682.2	ug/l	512.4 lbs/day
Cyanide	13.36 ug/l	5.4 lbs/day	39.3	ug/l	29.5 lbs/day

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

Summer	24.9 Deg. C.	76.9 Deg. F
Fall	16.6 Deg. C.	61.8 Deg. F
Winter	11.8 Deg. C.	53.3 Deg. F
Spring	18.0 Deg. C.	64.4 Deg. F

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

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

	Concentration	1 Hour Average Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	3755.8 lbs/day
Nitrates as N	4.0 mg/l	3004.6 lbs/day
Total Phosphorus as P	0.05 mg/l	37.6 lbs/day
Total Suspended Solids	90.0 mg/l	67603.9 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule] Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		1164.9				1164.9	N/A
Antimony				11045.1		11045.1	
Arsenic	256.9	573.1			0.0	256.9	318.2
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	25.1	13.0			0.0	13.0	5.6
Chromium (III)		10090.9			0.0	10090.9	687.6
Chromium (VI)	249.9	25.4			0.0	25.43	22.02
Copper	505.3	88.9				88.9	70.6
Cyanide		39.3	565098.0			39.3	13.4
Iron		1784.3				1784.3	
Lead	252.6	859.4			0.0	252.6	44.0
Mercury		4.28		0.39	0.0	0.39	0.031
Nickel		2724.9		11815.7		2724.9	431.3
Selenium	124.6	33.8			0.0	33.8	7.9
Silver		73.6			0.0	73.6	
Thallium				16.2		16.2	
Zinc		682.2				682.2	973.3
Boron	1925.9					1925.9	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	1164.9	N/A	
Antimony	11045.10		
Arsenic	256.9	318.2	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	13.0	5.6	
Chromium (III)	10090.9	688	
Chromium (VI)	25.4	22.0	
Copper	88.9	70.6	
Cyanide	39.3	13.4	
Iron	1784.3		
Lead	252.6	44.0	
Mercury	0.385	0.031	
Nickel	2724.9	431	
Selenium	33.8	7.9	
Silver	73.6	N/A	
Thallium	16.2		
Zinc	682.2	973.3	Acute Controls
Boron	1925.92		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: CVWRF\_WLA\_JR\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 0.520	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.490	REAER. Coeff. (Ka)20 (Ka)/day 2.040	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 1.978	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.226
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 3.766	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 29.647
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.921						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.

**WLA Appendix for South Davis  
Sewer District South  
Wastewater Treatment Plant  
(WWTP) - UT0021628**



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

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

8-Oct-21
4:00 PM

**Facilities:** South Davis Sewer District South Wastewater Treatment Plant      **UPDES No:** UT-0021628  
**Discharging to:** Jordan River

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration	Load*	Load*
Aluminum	87.00 ug/l**	3.485 lbs/day	750.00	ug/l	30.046 lbs/day
Arsenic	150.00 ug/l	6.009 lbs/day	340.00	ug/l	13.621 lbs/day
Cadmium	2.37 ug/l	0.095 lbs/day	7.32	ug/l	0.293 lbs/day
Chromium III	266.44 ug/l	10.674 lbs/day	5574.36	ug/l	223.318 lbs/day
ChromiumVI	11.00 ug/l	0.441 lbs/day	16.00	ug/l	0.641 lbs/day
Copper	30.29 ug/l	1.213 lbs/day	51.29	ug/l	2.055 lbs/day
Iron			1000.00	ug/l	40.062 lbs/day
Lead	18.39 ug/l	0.737 lbs/day	471.90	ug/l	18.905 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.096 lbs/day
Nickel	167.38 ug/l	6.706 lbs/day	1505.50	ug/l	60.313 lbs/day
Selenium	4.60 ug/l	0.184 lbs/day	20.00	ug/l	0.801 lbs/day
Silver	N/A ug/l	N/A lbs/day	40.50	ug/l	1.623 lbs/day
Zinc	385.16 ug/l	15.430 lbs/day	385.16	ug/l	15.430 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

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

Metals Standards Based upon a Hardness of 396.76 mg/l as CaCO<sub>3</sub>

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.20 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	24.04 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	3249.14 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	166234.93 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.11 lbs/day
Nickel			4600.00 ug/l	3475.82 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	4.76 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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

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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>
Summer (Irrig. Season)	134.0	20.6	7.9	0.71	6.03	6.91	0.00	796.7	
Fall	104.0	9.9	7.9	0.74	5.24	---	0.00	782.4	
Winter	51.0	6.8	7.9	0.87	6.15	---	0.00	782.4	
Spring	64.0	13.9	7.9	0.46	4.26	---	0.00	782.4	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	232.00	8.03	0.39	2.58	3.31	5.01	0.0	1.53	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	2.70	1.61	0.63	19.46	10.0			* 1/2 MDL

**Projected Discharge Information**

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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	4.00000	5.0	845.39	14.09829
Fall	4.00000	5.0		
Winter	4.00000	5.0		
Spring	4.00000	5.0		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	4.000 MGD	6.188 cfs
Fall	4.000 MGD	6.188 cfs
Winter	4.000 MGD	6.188 cfs
Spring	4.000 MGD	6.188 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 4 MGD. If the discharger is allowed to have a flow greater than 4 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	98.5% Effluent	[Acute]
	IC25 >	20.9% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 396.76 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	6,358.6	ug/l	254.7 lbs/day
Arsenic	3,224.33 ug/l	69.5 lbs/day	3,934.4	ug/l	157.6 lbs/day
Cadmium	45.39 ug/l	1.0 lbs/day	82.4	ug/l	3.3 lbs/day
Chromium III	5,980.15 ug/l	128.9 lbs/day	65,902.3	ug/l	2640.1 lbs/day
Chromium VI	177.46 ug/l	3.8 lbs/day	153.4	ug/l	6.1 lbs/day
Copper	577.78 ug/l	12.5 lbs/day	552.4	ug/l	22.1 lbs/day
Iron	N/A	N/A	11,827.2	ug/l	473.8 lbs/day
Lead	383.39 ug/l	8.3 lbs/day	5,564.7	ug/l	222.9 lbs/day

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

Mercury	0.27 ug/l	0.0 lbs/day	28.4	ug/l	1.1 lbs/day
Nickel	3,733.48 ug/l	80.5 lbs/day	17,776.9	ug/l	712.2 lbs/day
Selenium	69.26 ug/l	1.5 lbs/day	219.1	ug/l	8.8 lbs/day
Silver	N/A ug/l	N/A lbs/day	472.2	ug/l	18.9 lbs/day
Zinc	8,304.47 ug/l	179.0 lbs/day	4,344.8	ug/l	174.1 lbs/day
Cyanide	117.81 ug/l	2.5 lbs/day	260.2	ug/l	10.4 lbs/day

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

Summer	60.6 Deg. C.	141.2 Deg. F
Fall	41.9 Deg. C.	107.4 Deg. F
Winter	24.6 Deg. C.	76.2 Deg. F
Spring	35.2 Deg. C.	95.3 Deg. F

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

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

	<b>1 Hour Average</b>	
	Concentration	Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	200.3 lbs/day
Nitrates as N	4.0 mg/l	160.2 lbs/day
Total Phosphorus as P	0.05 mg/l	2.0 lbs/day
Total Suspended Solids	90.0 mg/l	3605.5 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule] Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		6358.6				6358.6	N/A
Antimony				97415.7		97415.7	
Arsenic	2265.5	3934.4			0.0	2265.5	3224.3
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	218.2	82.4			0.0	82.4	45.4
Chromium (III)		65902.3			0.0	65902.3	5980.2
Chromium (VI)	2209.6	153.4			0.0	153.37	177.46
Copper	4422.6	552.4				552.4	577.8
Cyanide		260.2	4984059.5			260.2	117.8
Iron		11827.2				11827.2	
Lead	2232.3	5564.7			0.0	2232.3	383.4
Mercury		28.39		3.40	0.0	3.40	0.272
Nickel		17776.9		104212.2		17776.9	3733.5
Selenium	1097.8	219.1			0.0	219.1	69.3
Silver		472.2			0.0	472.2	
Thallium				142.7		142.7	
Zinc		4344.8				4344.8	8304.5
Boron	16985.8					16985.8	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	6358.6	N/A	
Antimony	97415.71		
Arsenic	2265.5	3224.3	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	82.4	45.4	
Chromium (III)	65902.3	5980	
Chromium (VI)	153.4	177.5	Acute Controls
Copper	552.4	577.8	Acute Controls
Cyanide	260.2	117.8	
Iron	11827.2		
Lead	2232.3	383.4	
Mercury	3.398	0.272	
Nickel	17776.9	3733	
Selenium	219.1	69.3	
Silver	472.2	N/A	
Thallium	142.7		
Zinc	4344.8	8304.5	Acute Controls
Boron	16985.78		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: SDSWRF\_WLA\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 0.830	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 0.852	REAER. Coeff. (Ka)20 (Ka)/day 3.450	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 3.498	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.261
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.108	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 33.103
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.037						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.



**WLA Appendix for South Davis  
Sewer District North  
Wastewater Treatment Plant  
(WWTP) - UT0021636**

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

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

8-Oct-21
4:00 PM

**Facilities:** South Davis Sewer District North Wastewater Treatment Plant      **UPDES No:** UT-0021636  
**Discharging to:** Jordan River

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	10.456 lbs/day	750.00 ug/l	90.139 lbs/day
Arsenic	150.00 ug/l	18.028 lbs/day	340.00 ug/l	40.863 lbs/day
Cadmium	2.29 ug/l	0.275 lbs/day	7.00 ug/l	0.841 lbs/day
Chromium III	256.58 ug/l	30.837 lbs/day	5368.13 ug/l	645.167 lbs/day
ChromiumVI	11.00 ug/l	1.322 lbs/day	16.00 ug/l	1.923 lbs/day
Copper	29.12 ug/l	3.500 lbs/day	49.11 ug/l	5.903 lbs/day
Iron			1000.00 ug/l	120.185 lbs/day
Lead	17.34 ug/l	2.084 lbs/day	445.04 ug/l	53.487 lbs/day
Mercury	0.0120 ug/l	0.001 lbs/day	2.40 ug/l	0.288 lbs/day
Nickel	160.99 ug/l	19.349 lbs/day	1448.00 ug/l	174.028 lbs/day
Selenium	4.60 ug/l	0.553 lbs/day	20.00 ug/l	2.404 lbs/day
Silver	N/A ug/l	N/A lbs/day	37.42 ug/l	4.497 lbs/day
Zinc	370.43 ug/l	44.520 lbs/day	370.43 ug/l	44.520 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

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

Metals Standards Based upon a Hardness of 378.91 mg/l as CaCO<sub>3</sub>

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.60 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	72.11 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3) to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	1681.82 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	86046.39 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.06 lbs/day
Nickel			4600.00 ug/l	1799.15 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	2.46 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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

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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>
Summer (Irrig. Season)	54.0	21.2	7.9	0.36	6.03	6.82	0.00	880.9	
Fall	44.0	10.1	7.9	0.57	4.80	---	0.00	954.4	
Winter	26.0	5.8	8.0	0.64	5.73	---	0.00	954.4	
Spring	31.0	13.5	8.0	0.26	63.16	---	0.00	954.4	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	24.30	8.89	0.47	2.78	4.75	5.91	0.0	2.15	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	4.90	1.62	0.75	18.84	10.0			* 1/2 MDL

**Projected Discharge Information**

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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	12.00000	NA	982.67	49.16279
Fall	12.00000	NA		
Winter	12.00000	NA		
Spring	12.00000	NA		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	12.000 MGD	18.564 cfs
Fall	12.000 MGD	18.564 cfs
Winter	12.000 MGD	18.564 cfs
Spring	12.000 MGD	18.564 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 12 MGD. If the discharger is allowed to have a flow greater than 12 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	66.3% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 378.91 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	1,805.5	ug/l	217.0 lbs/day
Arsenic	560.47 ug/l	36.3 lbs/day	821.6	ug/l	98.7 lbs/day
Cadmium	7.57 ug/l	0.5 lbs/day	16.5	ug/l	2.0 lbs/day
Chromium III	994.84 ug/l	64.3 lbs/day	13,171.6	ug/l	1583.0 lbs/day
Chromium VI	29.18 ug/l	1.9 lbs/day	32.4	ug/l	3.9 lbs/day
Copper	96.63 ug/l	6.3 lbs/day	111.9	ug/l	13.5 lbs/day
Iron	N/A	N/A	2,454.4	ug/l	295.0 lbs/day
Lead	61.54 ug/l	4.0 lbs/day	1,089.2	ug/l	130.9 lbs/day

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

Mercury	0.05 ug/l	0.0 lbs/day	5.9	ug/l	0.7 lbs/day
Nickel	615.03 ug/l	39.8 lbs/day	3,546.9	ug/l	426.3 lbs/day
Selenium	13.27 ug/l	0.9 lbs/day	46.7	ug/l	5.6 lbs/day
Silver	N/A ug/l	N/A lbs/day	90.7	ug/l	10.9 lbs/day
Zinc	1,393.15 ug/l	90.1 lbs/day	881.8	ug/l	106.0 lbs/day
Cyanide	20.33 ug/l	1.3 lbs/day	54.0	ug/l	6.5 lbs/day

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

Summer	31.1 Deg. C.	87.9 Deg. F
Fall	18.9 Deg. C.	66.0 Deg. F
Winter	12.6 Deg. C.	54.6 Deg. F
Spring	20.9 Deg. C.	69.6 Deg. F

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

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

	Concentration	1 Hour Average Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	600.9 lbs/day
Nitrates as N	4.0 mg/l	480.7 lbs/day
Total Phosphorus as P	0.05 mg/l	6.0 lbs/day
Total Suspended Solids	90.0 mg/l	10816.6 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule] Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		1805.5				1805.5	N/A
Antimony				16808.1		16808.1	
Arsenic	390.9	821.6			0.0	390.9	560.5
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	37.7	16.5			0.0	16.5	7.6
Chromium (III)		13171.6			0.0	13171.6	994.8
Chromium (VI)	382.8	32.4			0.0	32.36	29.18
Copper	764.6	111.9				111.9	96.6
Cyanide		54.0	859948.3			54.0	20.3
Iron		2454.4				2454.4	
Lead	384.6	1089.2			0.0	384.6	61.5
Mercury		5.89		0.59	0.0	0.59	0.047
Nickel		3546.9		17980.7		3546.9	615.0
Selenium	190.7	46.7			0.0	46.7	13.3
Silver		90.7			0.0	90.7	
Thallium				24.6		24.6	
Zinc		881.8				881.8	1393.2
Boron	2930.9					2930.9	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	1805.5	N/A	
Antimony	16808.08		
Arsenic	390.9	560.5	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	16.5	7.6	
Chromium (III)	13171.6	995	
Chromium (VI)	32.4	29.2	
Copper	111.9	96.6	
Cyanide	54.0	20.3	
Iron	2454.4		
Lead	384.6	61.5	
Mercury	0.586	0.047	
Nickel	3546.9	615	
Selenium	46.7	13.3	
Silver	90.7	N/A	
Thallium	24.6		
Zinc	881.8	1393.2	Acute Controls
Boron	2930.85		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: SDNWRF\_WLA\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 1.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 1.059	REAER. Coeff. (Ka)20 (Ka)/day 6.012	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 6.191	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.275
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.235	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 34.401
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.081						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1



**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.

**After the permits were put out for public notice and comment and then issued, an error was identified in the Table 6 of the Combined WLA for the Jordan River. This error was that the seasons/moths listed in the table for the total residual chlorine limit (TRC) did not match the season/months used for calculating the limits. The error was corrected, and any required changes to the limits were made. If the change required a public notice, that will be noted in the record.**

**Superseded (Incorrect)  
Combined WLA for the Jordan  
River.**

**Utah Division of Water Quality  
Statement of Basis  
Wasteload Analysis for Jordan River POTWs**

**Date:** December 9, 2021

**Prepared by:** Nicholas von Stackelberg, P.E., Watershed Protection Section  
Chris Shope, Ph.D., Standards and Technical Services Section  
Suzan Tahir, Standards and Technical Services Section

**Facility:** Jordan River Publicly Owned Treatment Works (POTW)

**Receiving water:** Jordan River and State Canal

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 considers 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.

Discharges

The following dischargers are considered in this combined wasteload analysis for discharge to the Jordan River:

1. Jordan Basin Water Reclamation Facility (WRF) - UT0025852
2. South Valley Water Reclamation Facility (WRF) - UT0024384
3. Central Valley Water Reclamation Facility (WRF) - UT0024392
4. South Davis Sewer District South Wastewater Treatment Plant (WWTP) - UT0021628
5. South Davis Sewer District North Wastewater Treatment Plant (WWTP) - UT0021636

The receiving water and the maximum monthly average discharges used in this wasteload allocation are summarized in Table 1. The projected 5-year monthly average discharge was estimated by multiplying the current average discharge (2016-2021) by 10% to account for growth in the service district. Jordan Basin WRF was assumed to operate at design capacity.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

**Table 1: Receiving waters and discharge rate**

Facility	Receiving Water	Monthly Ave (MGD)	
		Design Capacity	Projected 5-YR
Jordan Basin WRF	Jordan River, from confluence with Little Cottonwood Creek to Narrows Diversion	15	15
South Valley WRF	Jordan River, from confluence with Little Cottonwood Creek to Narrows Diversion	50	21.7
Central Valley WRF	Jordan River, from North Temple Street to confluence with Little Cottonwood Creek	75	55.7
SDSD South WWTP	Jordan River, from Farmington Bay to North Temple Street	4	3.8
SDSD North WWTP	State Canal, from Farmington Bay to confluence with the Jordan River	12	8.1

Effluent water quality data were obtained from UDWQ monitoring, Jordan River/Farmington Bay Water Quality Council (JRFBWQC) monitoring, and Discharge Monitoring Reports (DMR) and Monthly Operating Reports (MOR) from each facility.

Receiving Waters

The receiving waters for this wasteload allocation are Jordan River and State Canal.

Per UAC R317-2-14, the designated beneficial uses for the Jordan River and State Canal are shown in Table 2.

**Table 2: Beneficial uses for receiving waters**

POTW	Assessment Unit	Assessment Unit Description	Assessment Unit ID	Beneficial Uses
SDSDN WWTP	State Canal <sup>a</sup>	State Canal from Farmington Bay to confluence with the Jordan River	UT16020204-034_00	2B, 3B*, 3D, 4
SDSDS WWTP	Jordan River-1 <sup>a</sup>	Jordan River from Farmington Bay upstream contiguous with the Davis County line	UT16020204-001_00	2B, 3B*, 3D, 4
CVWRF	Jordan River-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	UT16020204-004_00	2B, 3B*, 4
SVWRF	Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	UT16020204-005_00	2B, 3B, 4
JBWRF	Jordan River-6	Jordan River from 7800 South to Bluffdale at 14600 South	UT16020204-006_00	2B, 3B, 4

\* Site specific criteria for dissolved oxygen. See UAC R317.2.14 Table 2.14.5.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

Per UAC R317-2-6, the following is the description for each beneficial use listed in Table 2.

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

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten-year return frequency (7Q10). The seasonal 7Q10 flows calculated in the *Jordan River Low Flow Analysis* report (Hansen Allen and Luce, 2021) were used for the critical low flows for the POTWs, tributaries and diversions along the Jordan River. The critical low flows are summarized in Table 3.

**Table 3: Critical low flows along Jordan River**

QUAL2Kw Segment No(s)	Source/Diversion Name	7Q10			
		WINTER	SPRING	SUMMER	FALL
31	Jordan Narrows (Total)	3.2	7.7	222	6.4
31-32	Groundwater Segment	3	3	223	3
32	JVWCD Pumps	3	3	207	3
32	ULDC North & South	3	3	180	3
32	Utah & Salt Lake Canal	3	3	117	3
32	East Jordan Canal	2.9	2.8	76.7	3.4
32	Jordan River Station No 1	2.9	2.8	76.7	3.4
32-51	Groundwater Segment	23	24	82	17
37	Jordan & Salt Lake Canal	23	24	67	17
37	South Jordan Canal	23	24	27	17
47	Rose Creek	<b>23</b>	<b>24</b>	<b>27</b>	<b>17</b>
51	Jordan Basin WRF	35	36	37	28
51-76	Groundwater Segment	62	64	44	46
54	Corner Canyon Creek	62	65	44	46
59	Riverton 126th Pump Station	62	65	44	46
65	Midas Creek	62	65	44	47
66	Willow Creek	63	66	45	47
74	North Jordan Canal	27	32	27	23
74	Dry Creek	27	32	28	23
76	Jordan River at 9000 South	27	32	28	23
76-84	Groundwater Segment	39	40	43	36
76	9000 South Drain	39	40	43	36
81	Bingham Creek	<b>40</b>	<b>40</b>	<b>47</b>	<b>37</b>
84	South Valley WRF	71	71	80	68
84-111	Groundwater Segment	112	97	130	110
85	7200 South Drain	112	97	130	110
97	Little Cottonwood Creek	113	98	139	112
98	Brighton Canal	113	98	139	112
100	Big Cottonwood Creek	<b>119</b>	<b>106</b>	<b>161</b>	<b>123</b>
N/A	Mill Creek above Central Valley	3	10	21	10
111	Mill Creek at Jordan River	122	116	182	133

Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs

QUAL2Kw Segment No(s)	Source/Diversion Name	7Q10			
		WINTER	SPRING	SUMMER	FALL
111	Central Valley WRF	191	188	255	200
111-115	Groundwater Segment	197	192	263	206
112	Decker Lake Outfall	197	192	265	207
115	Jordan River above Surplus Canal	197	192	265	207
115-118	Groundwater Segment	200	195	267	210
116	Surplus Canal	25	11	26	89
118	Jordan River at 1700 South	25	11	26	89
118-133	Groundwater Segment	37	48	104	92
122	1300 South Conduits	39	50	121	93
130	City Creek/N Temple Conduit	40	52	123	93
133	Jordan River at 500 North	40	52	123	93
133-151	Groundwater Segment	51	64	134	104
151	South Davis South WRF	55	67	137	107
151-162	Groundwater Segment	62	74	144	114
162	State Canal	21	25	48	38
162-171	Groundwater Segment	26	31	54	44
162	A-1 Drain	26	31	54	44
169	South Davis North WRF	34	39	62	52
171	Mill Creek (Davis County)	34	38	62	51
171-172	Groundwater Segment	35	40	63	52
172	Stone Creek	36	41	63	53

Receiving and tributary water quality data were obtained from UDWQ and WFWQC monitoring sites. The average seasonal value was calculated for each constituent with available data in the receiving water for the period 2006 - 2021.

TMDL

The 303(d) list of impairments of the Jordan River, Mill Creek, and State Canal in *Utah's Final 2016 303(d) Water Quality Assessment Report dated December 7, 2016* (Utah DWQ 2016) is summarized in Table 4. The table also includes changes in the *Utah Combined 2018/2020 303(d) Water Quality Assessment Report dated February 9, 2021*, which has not been approved to date. The dissolved oxygen impairment in the lower Jordan River (below Surplus Canal) was addressed by the *Jordan River Total Maximum Daily Load Water Quality Study – Phase 1* (Cirrus Ecological Solutions and Stantec Consultants 2013), which identified organic matter as the pollutant of concern and recommended additional studies to determine the sources and allocation [CS1]. The E. coli impairment in the Jordan River watershed is currently being identified and addressed through a Total Maximum Daily Load Study within Utah DWQ.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

**Table 4: List of impairments of Jordan River and State Canal**

Assessment Unit	Assessment Unit Description	Assessment Unit ID	Impaired Parameter
State Canal	State Canal from Farmington Bay to confluence with the Jordan River	UT16020204-034_00	Total Ammonia as N Min Dissolved Oxygen Total Dissolved Solids
Jordan River-1	Jordan River from Farmington Bay upstream contiguous with the Davis County line	UT16020204-001_00	E. coli *DissolvedCopper Min Dissolved Oxygen Total Dissolved Solids Bioassessment/Macroinv
Jordan River 2	Jordan River from Davis County line upstream to North Temple Street	UT16020204-002_00	E. coli Min Dissolved Oxygen *Total Dissolved Solids Bioassessment/Macroinv
Jordan River-3	Jordan River from North Temple to 2100 South	UT16020204-003_00	E. coli Total Phosphorus as P Min Dissolved Oxygen Bioassessment/Macroinv
Jordan River-4	Jordan River from 2100 South to the confluence with Little Cottonwood Creek	UT16020204-004_00	E. coli Total Dissolved Solids Bioassessment/Macroinv
Jordan River-5	Jordan River from the confluence with Little Cottonwood Creek to 7800 South	UT16020204-005_00	E. coli Max Temperature Total Dissolved Solids
Jordan River-6	Jordan River from 7800 South to Bluffdale at 14600 South	UT16020204-006_00	*Dissolved Selenium Max Temperature Total Dissolved Solids Bioassessment/Macroinv
Jordan River-7	Jordan River from Bluffdale at 14600 South to Narrows	UT16020204-007_00	Max Temperature **Total Dissolved Solids Bioassessment/Macroinv
Jordan River-8	Jordan River from Narrows to Utah Lake	UT16020201-008_00	Arsenic Total Dissolved Solids
* impaired parameter in 2016 IR but not in 2018/2020 IR ** impaired as of 2018/2020 IR			

Mixing Zone

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

The mixing zone was presumed to remain within the maximum allowable mixing zone dimensions for each discharge. Acute limits were calculated using 50% of the seasonal critical low flow.



**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

Parameters of Concern

The parameters of concern considered in this wasteload allocation are total ammonia (TAN) and total recoverable metals. Due to ongoing studies related to the TMDL, this wasteload allocation does not address parameters related to dissolved oxygen, including biochemical oxygen demand (BOD), dissolved oxygen (DO), total nitrogen (TN), and total phosphorus (TP).

Water Quality Modeling

A QUAL2Kw model of the Jordan River was populated and calibrated as part of the DO TMDL study (Stantec Consulting 2010, UDWQ 2010). The model was subsequently validated to a synoptic survey conducted by UDWQ and the Jordan River/Farmington Bay Water Quality Council (JRFBWQC) during July 2014 (UDWQ 2015). The model validation identified areas for future improvement of the model; however, the model was considered suitable for application to the wasteload allocation for ammonia.

The TMDL model of the Jordan River extends 52.4 miles from the outlet of Utah Lake to Burton Dam. For the purposes of the WLA, the model was split at Burnham Dam (approximately 1.7 miles upstream of Burton Dam) and extended down State Canal to the Farmington Bay Waterfowl Management Area (approximately 3.5 miles downstream from Burnham Dam). The following point sources were added to the State Canal: A-1 Drain, South Davis Sewer District North WWTP, and outlet channel from Bountiful Pond (Mill Creek and Stone Creek). In addition, the Jordan Basin WRF discharge was added to the Jordan River, as this discharge was not active at the time of the model calibration.

The Jordan River WLA QUAL2Kw model was used for determining the WQBEL for ammonia. Effluent concentrations were adjusted up to the current permit limits so that water quality criteria were not exceeded in the receiving water. Background conditions for each plant were characterized by assuming each upstream plant was operating at the low flow rate with average ammonia concentration in the effluent. For calculating the chronic ammonia criterion, fish early life stages (ELS) were assumed to be present during all seasons except downstream of the CVWRF and SDS D plants, where ELS were assumed to be present from March through October. Per UAC R317-2-14, Table 2.14.2, the site specific standard for ammonia for the Jordan River from Mill Creek to 900 South was applied.

A mass balance mixing analysis was used to calculate the seasonal WLA for conservative constituents such as metals. Each wastewater treatment plant was granted a full allocation at the point of discharge. Background condition in the Jordan River for each plant was characterized by either a single or combined, multiple monitoring location data.

The calibration, validation and wasteload models are available for review by request.

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in an incompletely mixed condition are calculated in the WLA in order to generate WET limits. The LC<sub>50</sub> (lethal concentration, 50%) percent effluent for acute toxicity and the IC<sub>25</sub> (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA (Table 5). The WET limit for LC<sub>50</sub> is typically 100% effluent and does not need to be determined by the WLA.

**Table 5: WET Limits for IC<sub>25</sub>**

<b>Season</b>	<b>Percent Effluent</b>
Jordan Basin WRF	46%
South Valley WRF	62%
Central Valley WRF	39%
SDSD South WWTP	21%
SDSD North WWTP	63%

Effluent Limits

The water quality based effluent limits determined as part of this combined wasteload allocation are summarized in Table 6.

Since the DO impairment of the Jordan River is being addressed through the TMDL process, limits were not calculated for DO, BOD/CBOD, or nutrients. The permit limits for DO and BOD/CBOD were calculated in a previous permit issued prior to the impairment of the Jordan River and are carried forward in this WLA.

Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs

**Table 6: Water Quality Based Effluent Limits Summary**

Effluent Constituent	Averaging Period	Jordan Basin	South Valley	Central Valley	SDSD South WWTP	SDSD North WWTP
Flow (MGD)	Monthly	15	50	75	4	12
Ammonia Acute (mg/L)	Daily					
Summer (Jun-Aug)		6.0	6.0	13.1	30.0	24.0
Fall (Sep-Nov)		6.0	9.0	15.9	40.0	16.2
Winter (Dec-Feb)		9.0	9.4	12.3	17.0	13.0
Spring (Mar-May)		8.0	7.4	15.9	26.0	15.0
Ammonia Chronic (mg/L)	Monthly					
Summer (Jun-Aug)		1.5	1.5	3.7	8.0	5.5
Fall (Sep-Nov)		2.5	3.0		20.0	7.5
(Sep-Oct)				4.5		
(Nov)				5.9		
Winter (Dec-Feb)		3.0	4.0	5.8	14.0	6.5
Spring (Mar-May)		2.5	3.0	5.3	12.0	6.0
TRC Acute (mg/L)	Daily					
Summer (Jul-Sep)		N/A <sup>b</sup>	0.028	N/A <sup>b</sup>	0.321	0.066
Fall (Oct-Dec)		N/A <sup>b</sup>	0.022	N/A <sup>b</sup>	0.253	0.057
Winter (Jan-Mar)		N/A <sup>b</sup>	0.028	N/A <sup>b</sup>	0.134	0.045
Spring (Apr-Jun)		N/A <sup>b</sup>	0.023	N/A <sup>b</sup>	0.163	0.048
DO (mg/L)	Minimum	5.0	5.0	5.0	5.0	5.0
BOD <sub>5</sub> /CBOD <sub>5</sub> (mg/L)	Monthly	BOD <sub>5</sub>	BOD <sub>5</sub>	CBOD <sub>5</sub>	BOD <sub>5</sub>	BOD <sub>5</sub>
Summer (Jul-Sep)		15.0	15.0	16.0	20.0	20.0
Fall (Oct-Dec)		15.0	15.0	20.0	25.0	25.0
Winter (Jan-Mar)		15.0	15.0	20.0	25.0	25.0
Spring (Apr-Jun)		15.0	15.0	20.0	25.0	25.0
BOD <sub>5</sub> /CBOD <sub>5</sub> (mg/L)	Weekly	BOD <sub>5</sub>	BOD <sub>5</sub>	CBOD <sub>5</sub>	BOD <sub>5</sub>	BOD <sub>5</sub>
Summer (Jul-Sep)		21.0	21.0	27.0	27.0	27.0
Fall (Oct-Dec)		21.0	21.0	28.0	35.0	35.0
Winter (Jan-Mar)		21.0	21.0	28.0	35.0	35.0
Spring (Apr-Jun)		21.0	21.0	28.0	35.0	35.0

a: Limit due to impairment of receiving segment.  
b: Ultraviolet disinfection utilized, hence no limit for TRC

QUAL2Kw rates, input and output are summarized in Appendix A. The WQBELs for conservative constituents are summarized in Appendix B. Per R317-2.14.2, cyanide numeric criteria for aquatic life is based on free cyanide, which is a portion of total cyanide. Models and supporting documentation are available for review upon request.

Files:

- Wasteload Report: *211209-JordanRiverPOTWWLA\_2021.docx*
- QUAL2Kw Calibration Model: *jordan\_aug2009\_q2kw\_calib\_2010-8-26.xls*
- QUAL2Kw Validation Model: *jordan\_q2kw\_synoptic\_2014-07-22.xlsm*
- QUAL2Kw Wasteload Model: *jordan\_potw\_q2kw\_wla\_2021.xlsm*
- JBWRF Metals Wasteload Model: *JBWRF\_WLA\_2021.xlsm*
- SVWRF Metals Wasteload Model: *SVWRF\_WLA\_2021.xlsm*
- CVWRF Metals Wasteload Model: *CVWRF\_WLA\_JR\_2021.xlsm*
- SDSWRF Metals Wasteload Model: *SDSDSWWTP\_WLA\_2021.xlsm*
- SDNWRF Metals Wasteload Model: *SDSDNWWTP\_WLA\_2021.xlsm*

**Utah Division of Water Quality  
Wasteload Analysis  
Jordan River POTWs**

References:

Cirrus Ecological Solutions and Stantec Consulting. 2013. *Jordan River Total Maximum Daily Load Water Quality Study – Phase I*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality.

Hansen, Allen and Luce Inc. 2021. Jordan River Low Flow Analysis. Wasatch Front Water Quality Council and South Davis Sewer District.

Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller. 2012. *Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality.

Stantec Consulting. 2010. *Jordan River TMDL: 2010 QUAL2Kw Model Calibration Technical Memo Public Draft*. Prepared for State of Utah, Department of Environmental Quality, Division of Water Quality. February 22, 2010. 18 pp.

Utah DWQ. 2010. *Jordan River TMDL QUAL2Kw model refinement*. Prepared by N. Von Stackelberg P.E., State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2021. *Utah Wasteload Analysis Procedures Version 2.0*. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ 2012. *Field Data Collection for QUAL2Kw Model Build and Calibration Standard Operating Procedures Version 1.0*. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2015. *Jordan River Summer 2014 Synoptic Survey and QUAL2Kw Model Validation Report*. Prepared by N. Von Stackelberg P.E., State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2016. *Utah's 2016 303(d) [Water Quality Assessment Report](#)*. December October 2016. State of Utah, Department of Environmental Quality, Division of Water Quality.

Utah DWQ. 2021. *Utah's Combined 2018/2020 303(d) [Water Quality Assessment Report](#)*. August 2021. State of Utah, Department of Environmental Quality, Division of Water Quality.

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

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

8-Oct-21
4:00 PM

**Facilities:** South Valley Water Reclamation Facility  
**Discharging to:** Jordan River

**UPDES No:** UT-0024384

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

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

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.5 mg/l (30 Day Average) 4.0 mg/l (7Day Average) 3.0 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	43.567 lbs/day	750.00 ug/l	375.577 lbs/day
Arsenic	150.00 ug/l	75.115 lbs/day	340.00 ug/l	170.262 lbs/day
Cadmium	2.30 ug/l	1.151 lbs/day	7.04 ug/l	3.527 lbs/day
Chromium III	257.90 ug/l	129.150 lbs/day	5395.84 ug/l	2,702.072 lbs/day
ChromiumVI	11.00 ug/l	5.508 lbs/day	16.00 ug/l	8.012 lbs/day
Copper	29.28 ug/l	14.661 lbs/day	49.40 ug/l	24.740 lbs/day
Iron			1000.00 ug/l	500.770 lbs/day
Lead	17.48 ug/l	8.754 lbs/day	448.62 ug/l	224.653 lbs/day
Mercury	0.0120 ug/l	0.006 lbs/day	2.40 ug/l	1.202 lbs/day
Nickel	161.85 ug/l	81.049 lbs/day	1455.73 ug/l	728.984 lbs/day
Selenium	4.60 ug/l	2.304 lbs/day	20.00 ug/l	10.015 lbs/day
Silver	N/A ug/l	N/A lbs/day	37.82 ug/l	18.941 lbs/day
Zinc	372.41 ug/l	186.490 lbs/day	372.41 ug/l	186.490 lbs/day

\* Allowed below discharge

\*\*Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO<sub>3</sub>

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

Metals Standards Based upon a Hardness of 381.3 mg/l as CaCO3

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	2.50 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	300.46 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			ug/l	lbs/day
Barium			ug/l	lbs/day
Cadmium			ug/l	lbs/day
Chromium			ug/l	lbs/day
Lead			ug/l	lbs/day
Mercury			ug/l	lbs/day
Selenium			ug/l	lbs/day
Silver			ug/l	lbs/day
Fluoride (3)			ug/l	lbs/day
to			ug/l	lbs/day
Nitrates as N			ug/l	lbs/day

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

Metals	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	2882.06 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	147454.23 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.10 lbs/day
Nickel			4600.00 ug/l	3083.13 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	4.22 lbs/day
Zinc				

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

**VII. Mathematical Modeling of Stream Quality**

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

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

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

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

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

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

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

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

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

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

**VIII. Modeling Information**

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

	<b>Stream</b>								
	<b>Critical Low</b>								
	<b>Flow</b>	<b>Temp.</b>	<b>pH</b>	<b>T-NH3</b>	<b>BOD5</b>	<b>DO</b>	<b>TRC</b>	<b>TDS</b>	
	<b>cfs</b>	<b>Deg. C</b>		<b>mg/l as N</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	<b>mg/l</b>	
Summer (Irrig. Season)	47.0	19.1	8.0	0.14	3.41	7.10	0.000	1194.4	
Fall	37.0	10.3	7.9	0.15	3.18	---	0.010	1277.4	
Winter	40.0	6.8	9.5	0.15	2.58	---	0.000	1277.4	
Spring	40.0	14.9	8.6	0.15	3.02	---	0.025	1277.4	
Dissolved Metals	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
All Seasons	23.80	10.24	0.33	2.58	3.33	4.46	0.0	1.42	
Dissolved Metals	Hg	Ni	Se	Ag	Zn	Boron			
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l			
All Seasons	0.0000	3.14	2.37	0.80	14.71	10.0		* 1/2 MDL	

**Projected Discharge Information**

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

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	50.00000	23.9	738.67	153.98116
Fall	50.00000	19.7		
Winter	50.00000	16.3		
Spring	50.00000	19.8		

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

**IX. Effluent Limitations**

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

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

**Effluent Limitation for Flow based upon Water Quality Standards**

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

Season	Daily Average	
Summer	50.000 MGD	77.350 cfs
Fall	50.000 MGD	77.350 cfs
Winter	50.000 MGD	77.350 cfs
Spring	50.000 MGD	77.350 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 50 MGD. If the discharger is allowed to have a flow greater than 50 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
	IC25 >	62.2% Effluent	[Chronic]

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 381.3 mg/l):

	4 Day Average		1 Hour Average		Load
	Concentration	Load	Concentration	Load	
Aluminum	N/A	N/A	970.6	ug/l	486.1 lbs/day
Arsenic	234.92 ug/l	63.3 lbs/day	440.2	ug/l	220.4 lbs/day
Cadmium	3.50 ug/l	0.9 lbs/day	9.1	ug/l	4.5 lbs/day
Chromium III	413.04 ug/l	111.3 lbs/day	7,034.4	ug/l	3522.6 lbs/day
Chromium VI	15.66 ug/l	4.2 lbs/day	19.8	ug/l	9.9 lbs/day
Copper	44.35 ug/l	12.0 lbs/day	63.1	ug/l	31.6 lbs/day
Iron	N/A	N/A	1,303.8	ug/l	652.9 lbs/day
Lead	27.24 ug/l	7.3 lbs/day	584.5	ug/l	292.7 lbs/day



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

Mercury	0.02 ug/l	0.0 lbs/day	3.1	ug/l	1.6 lbs/day
Nickel	258.28 ug/l	69.6 lbs/day	1,897.0	ug/l	950.0 lbs/day
Selenium	5.96 ug/l	1.6 lbs/day	25.4	ug/l	12.7 lbs/day
Silver	N/A ug/l	N/A lbs/day	49.1	ug/l	24.6 lbs/day
Zinc	589.75 ug/l	158.9 lbs/day	481.1	ug/l	240.9 lbs/day
Cyanide	8.36 ug/l	2.3 lbs/day	28.7	ug/l	14.4 lbs/day

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

Summer	24.3 Deg. C.	75.8 Deg. F
Fall	15.2 Deg. C.	59.4 Deg. F
Winter	11.9 Deg. C.	53.4 Deg. F
Spring	20.0 Deg. C.	67.9 Deg. F

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

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

	Concentration	1 Hour Average Loading
Gross Beta (pCi/l)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	2503.8 lbs/day
Nitrates as N	4.0 mg/l	2003.1 lbs/day
Total Phosphorus as P	0.05 mg/l	25.0 lbs/day
Total Suspended Solids	90.0 mg/l	45069.3 lbs/day

Note: Pollution indicator targets are for information purposes only.

**Effluent Limitations for Protection of Human Health [Toxics Rule] Based upon Water Quality Standards (Most stringent of 1C or 3A & 3B as appropriate.)**

In-stream criteria of downstream segments for Protection of Human Health [Toxics] will be met with an effluent limit as follows:

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

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

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		970.6				970.6	N/A
Antimony				6912.8		6912.8	
Arsenic	160.8	440.2			0.0	160.8	234.9
Asbestos						0.00E+00	
Barium						0.0	
Beryllium						0.0	
Cadmium	15.9	9.1			0.0	9.1	3.5
Chromium (III)		7034.4			0.0	7034.4	413.0
Chromium (VI)	159.2	19.8			0.0	19.85	15.66
Copper	318.8	63.1				63.1	44.4
Cyanide		28.7	353678.1			28.7	8.4
Iron		1303.8				1303.8	
Lead	159.9	584.5			0.0	159.9	27.2
Mercury		3.13		0.24	0.0	0.24	0.019
Nickel		1897.0		7395.1		1897.0	258.3
Selenium	78.9	25.4			0.0	25.4	6.0
Silver		49.1			0.0	49.1	
Thallium				10.1		10.1	
Zinc		481.1				481.1	589.8
Boron	1205.2					1205.2	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	970.6	N/A	
Antimony	6912.80		
Arsenic	160.8	234.9	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	9.1	3.5	
Chromium (III)	7034.4	413	
Chromium (VI)	19.8	15.7	
Copper	63.1	44.4	
Cyanide	28.7	8.4	
Iron	1303.8		
Lead	159.9	27.2	
Mercury	0.241	0.019	
Nickel	1897.0	258	
Selenium	25.4	6.0	
Silver	49.1	N/A	
Thallium	10.1		
Zinc	481.1	589.8	Acute Controls
Boron	1205.23		

**X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based

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

strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water. Based upon that review, it has been determined that an Antidegradation Level II Review is not required.

**XI. Colorado River Salinity Forum Considerations**

Discharges in the Colorado River Basin are required to have their discharge at a TDS loading of less than 1.00 tons/day unless certain exemptions apply. Refer to the Forum's Guidelines for additional information allowing for an exceedence of this value. This doesn't apply to facilities that do not discharge to the Colorado River Basin.

**XII. Summary Comments**

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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: SVWRF\_WLA\_2021.xlsm

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 1.920	REAER. Coeff. (Ka)20 (Ka)/day 15.113	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 14.797	NBOD Coeff. (Kn)20 1/day 0.250	NBOD Coeff. (Kn)T 1/day 0.233
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 3.840	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 30.384
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 0.946						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is not required.

## **ATTACHMENT 3**

*Reasonable Potential Analysis*

This Page Intentionally Left Blank

## REASONABLE POTENTIAL ANALYSIS

Water Quality has worked to improve our reasonable potential analysis (RP) for the inclusion of limits for parameters in the permit by using an EPA provided model. As a result of the model, more parameters may be included in the renewal permit. A Copy of the Reasonable Potential Analysis Guidance (RP Guide) is available at water Quality. There are four outcomes for the RP Analysis<sup>1</sup>. They are;

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

Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is needed. A copy of the initial screening is included in the “Effluent Metals and RP Screening Results” table in this attachment. The initial screening check for metals showed that the full model needed to be run on cadmium, copper, cyanide, and mercury.

### **Cadmium**

When investigating the cadmium data, almost all values were listed as non-detect (ND) with a method reporting limit of 0.002 mg/L. However only one value that was listed was higher than the MRL. In confirming the data with South Valley, they reported that there were some transcription errors and that the value for December 2020 was 0.0003 mg/L for cadmium, and not 0.003 mg/L. When this value is corrected, and the screening checked, it does not need to be checked for RP. When the RP model was run, it returned an indication of No RP. No changes will be made to the cadmium monitoring for this renewal.

### **Copper**

When looking into the copper data, none of the values are listed as non-detect (ND) with a method reporting limit of 0.001 mg/L. When the model is run the result indicates no RP for the acute and chronic WQBEL. This result indicates that the sampling frequency can remain as is in the permit.

### **Cyanide**

When looking into the cyanide data, about half the values are listed as non-detect (ND) with a method reporting limit of 0.002 mg/L. The RP Model was run for both Acute and Chronic WQBEL at both the 95% and 99% confidence intervals. The result was an indication of yes for RP for the Chronic WQBEL and a split indication for Acute. At 95% confidence interval the result was a no, and at the 99% confidence interval the result was a yes. The cyanide data is for total cyanide, but the WQBVEL are for free cyanide, which is a part of the total cyanide in a sample. This and the RP result indicate that either a limit for cyanide is included in the permit, or the facility start to sample and analyze for free cyanide in the effluent, and the RP run again next renewal. They also have been using a composite sample, while the approved method indicates it should be a grab sample. This will also be changed for the renewal.

### **Mercury**

When looking into the mercury data, almost no data is listed as non-detect (ND) with a method reporting limit of 0.0000005 mg/L. The RP Model was run for both Acute and Chronic WQBEL at both the 95% and 99% confidence intervals. The result was an indication of no for RP for the Acute WQBEL and a split indication for Chronic. At 95% confidence interval the result was a no, and at the 99% confidence interval the result was a yes. This results in the need to implement more frequent monitoring for mercury.

---

<sup>1</sup> See Reasonable Potential Analysis Guidance for definitions of terms

Summary of results						
RP Resulted Permit Changes	Monitoring Frequency			Acute Limit	Chronic Limit	
	Changes	Old	New	Changes	Changes	New
Cadmium	No			No	No	
Copper	No			No	No	
Cyanide	No			No	Yes	0.0084 mg/L *1
Free Cyanide	Yes		Monthly	No	No	
Mercury	Yes	Quarterly	Monthly	No	No	

\*1. Limit will not be imposed until RP can be conducted on Free Cyanide data.

A Summary of the RP Model inputs and outputs are included in the table below. The Metals Initial Screening Table and RP Outputs Table are included in this attachment.

Metals Monitoring and RP Check

RP Screening for metals from South Valley							
Param	Ag	Al	As	Cd	CN	Cr	Cu
Acute	0.0491	0.97	0.1608	0.0091	0.0287	0.0198	0.0631
Chronic	0.0491	0.97	0.1608	0.0035	0.0084	0.0157	0.0444
Max	0.005	0.1	0.028	0.003	0.023	0.005	0.0361
Acute	No	No	No	No	Yes	No	Yes
Chronic	No	No	No	Yes	Yes	No	Yes
Param	Fe	Hg	Mo	Ni	Pb	Se	Zn
Acute		0.000241		1.897	0.1599	0.0254	4.811
Chronic		0.000019		0.258	0.0272	0.006	0.5898
Max	0.08	0.000017	0.01	0.0077	0.001	0.0026	0.12
Acute	No	No	No	No	No	No	No
Chronic	No	Yes	No	No	No	No	No

Cadmium				Method	200.8		
				Acute QBEL	0.0091		
				Chronic QBEL	0.0035		
				MRL, mg/L	0.0002		
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	0.0004	ND	ND	ND	ND	0.0002
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	0.0033
				Maximum Value	0.0004		
				Acute Check	No		
				Chronic Check	No		



Cooper				Method		200.8		
					Acute WQBEL		0.0631	
					Chronic WQBEL		0.0444	
					MRL, mg/L		0.001	
0.0052	0.0059	0.0054	0.0072	0.0069	0.0055	0.0056	0.0063	
0.0048	0.0076	0.0065	0.0219	0.0052	0.0041	0.0067	0.007	
0.0064	0.0094	0.0051	0.0102	0.0079	0.0048	0.0053	0.0067	
0.0076	0.0088	0.006	0.0079	0.0081	0.005	0.0069	0.0095	
0.0087	0.0068	0.006	0.0075	0.0059	0.0046	0.0063	0.0083	
0.0068	0.0071	0.0081	0.01	0.0066	0.0064	0.0055	0.0059	
0.0086	0.0082	0.0084	0.0077	0.0061	0.0067	0.0052	0.0067	
0.0086	0.007	0.0076	0.0073	0.0073	0.0062	0.0054	0.0175	
0.0071	0.0075	0.0074	0.0073	0.0092	0.0061	0.0045	0.0052	
0.0054	0.0067	0.0067	0.0215	0.0078	0.009	0.0049	0.0361	
					Maximum Value		0.0361	
					Acute Check		Yes	
					Chronic Check		Yes	

Cyanide				Method		4500-CN-E		
					Acute WQBEL		0.0287	
					Chronic WQBEL		0.0084	
					MRL, mg/L		0.002	
0.002	0.002	0.002	ND	ND	0.002	ND	ND	
0.002	0.002	ND	ND	ND	0.002	0.023	0.004	
ND	0.003	0.002	0.002	ND	0.002	ND	0.004	
0.003	ND	0.002	0.003	ND	0.002	0.002	ND	
0.002	0.004	0.002	ND	ND	0.002	ND	ND	
ND	0.004	ND	ND	ND	0.002	ND	0.003	
ND	0.002	ND	ND	ND	ND	0.003	0.012	
0.002	0.003	ND	ND	0.002	ND	0.002	ND	
ND	0.004	0.002	0.002	0.005	ND	ND	0.003	
0.002	0.002	ND	0.002	0.003	0.002	0.004	ND	
					Maximum Value		0.023	
					Acute Check		Yes	
					Chronic Check		Yes	

Mercury				Method		Low level 1631		
				Acute WQBEL		0.000241		
				Chronic WQBEL		0.000019		
				MRL, mg/L		0.0000005		
0.0000012	0.000001	0.0000019	0.0000011	0.0000007	0.0000008	0.0000027	ND	
0.0000011	0.0000014	0.0000015	0.0000017	0.0000007	0.0000009	0.0000018	0.0000016	
0.0000028	0.0000011	0.000001	0.0000007	0.0000011	0.0000013	0.0000009	0.0000035	
0.000003	0.0000012	0.0000027	ND	0.0000011	0.0000008	0.0000022	0.0000011	
0.000004	0.0000014	0.0000043	0.0000011	0.0000014	0.0000026	0.0000017	0.0000053	
ND	0.000001	0.0000041	0.0000013	0.0000015	0.0000063	0.0000012	0.0000017	
0.0000019	0.0000013	0.000001	0.0000023	0.0000008	0.0000039	0.000001	ND	
0.0000063	0.0000012	0.0000009	0.0000037	ND	0.0000011	ND	0.0000103	
0.0000011	0.0000017	0.0000012	0.0000023	0.0000013	0.0000018	0.0000105	0.0000161	
ND	0.0000012	0.0000011	0.0000025	ND	0.0000021	0.000003	0.0000012	
Maximum Value					0.000017			
Acute Check					No			
Chronic Check					Yes			

RP input/output summary

RP Procedure Output	Outfall Number:		001	Data Units		mg/L
Parameter	Cadmium			Copper		
Distribution	Normal			Normal		
Reporting Limit	0.0002			0.001		
Significant Figures	2			2		
Maximum Reported Effluent Conc.	0.0004			0.0361		
Coefficient of Variation (CV)	0.36			0.57		
Acute Criterion	0.0091			0.0631		
Chronic Criterion	0.0035			0.0444		
Confidence Interval	95	99		95	99	
Projected Maximum Effluent Conc. (MEC)	0.0012	0.0008		0.035	0.044	
RP Multiplier	3.0	2.0		0.96	1.2	
RP for Acute?	No	No		No	No	
RP for Chronic?	No	No		No	No	
Outcome	D			D		

RP Procedure Output	Outfall Number:		001	Data Units	mg/L
Parameter	Cyanide (Total)			Mercury	
Distribution	Normal			Normal	
Reporting Limit	0.002			0.0000005	
Significant Figures	2			2	
Maximum Reported Effluent Conc.	0.023			0.000017	
Coefficient of Variation (CV)	1.1			0.2	
Acute Criterion	0.0287			0.000241	
Chronic Criterion	0.0084			0.000019	
Confidence Interval	95	99		95	99
Projected Maximum Effluent Conc. (MEC)	0.024	0.034		0.000016	0.000023
RP Multiplier	1.1	1.5		0.96	1.3
RP for Acute?	No	Yes		No	No
RP for Chronic?	Yes	Yes		No	Yes
Outcome	B/A			B	

Cadmium RP Results

RP Procedure Output		Effluent Data			
Facility Name:	South Valley		#		#
Permit Number:	UT0024384		1	ND	41 ND
Outfall Number:	OO1		2	ND	42 ND
Parameter	Cadmium		3	ND	43 ND
Distribution	Normal		4	ND	44 ND
Data Units	mg/L		5	ND	45 ND
Reporting Limit	0.0002		6	ND	46 ND
Significant Figures	2		7	ND	47 ND
Confidence Interval	99		8	ND	48 ND
			9	ND	49 ND
Maximum Reported Effluent Conc.	0.0004	mg/L	10	ND	50 ND
Coefficient of Variation (CV)	0.36		11	ND	51 ND
RP Multiplier	3.0		12	ND	52 ND
Projected Maximum Effluent Conc. (MEC)	0.0012	mg/L	13	ND	53 ND
			14	ND	54 ND
Acute Criterion	0.0091		15	ND	55 ND
Chronic Criterion	0.0035		16	ND	56 ND
Human Health Criterion	0		17	ND	57 ND
			18	ND	58 ND
RP for Acute?	NO		19	ND	59 ND
RP for Chronic?	NO		20	ND	60 ND
RP for Human Health?	N/A		21	ND	61 ND
			22	ND	62 ND
Confidence Interval	95		23	ND	63 ND
			24	ND	64 ND
Maximum Reported Effluent Conc.	0.0004		25	ND	65 ND
Coefficient of Variation (CV)	0.36		26	ND	66 ND
RP Multiplier	2.0		27	0.0004	67 ND
Projected Maximum Effluent Conc. (MEC)	0.0008		28	ND	68 ND
			29	ND	69 ND
Acute Criterion	0.0091		30	ND	70 ND
Chronic Criterion	0.0035		31	ND	71 ND
Human Health Criterion	0		32	ND	72 ND
			33	ND	73 ND
RP for Acute?	NO		34	ND	74 ND
RP for Chronic?	NO		35	ND	75 ND
RP for Human Health?	N/A		36	ND	76 ND
			37	ND	77 0.0002
			38	ND	78 ND
			39	ND	79 ND
			40	ND	80 0.0003

Copper RP Results

RP Procedure Output			Effluent Data			
Facility Name:	South Valley		#		#	
Permit Number:	UT0024384		1	0.0052	41	0.0069
Outfall Number:	OO1		2	0.0048	42	0.0052
Parameter	Copper		3	0.0064	43	0.0079
Distribution	Normal		4	0.0076	44	0.0081
Data Units	mg/L		5	0.0087	45	0.0059
Reporting Limit	0.001		6	0.0068	46	0.0066
Significant Figures	2		7	0.0086	47	0.0061
Confidence Interval	99		8	0.0086	48	0.0073
			9	0.0071	49	0.0092
Maximum Reported Effluent Conc.	0.0361	mg/L	10	0.0054	50	0.0078
Coefficient of Variation (CV)	0.57		11	0.0059	51	0.0055
RP Multiplier	1.2		12	0.0076	52	0.0041
Projected Maximum Effluent Conc. (MEC)	0.044	mg/L	13	0.0094	53	0.0048
			14	0.0088	54	0.005
Acute Criterion	0.0631		15	0.0068	55	0.0046
Chronic Criterion	0.0444		16	0.0071	56	0.0064
Human Health Criterion	0		17	0.0082	57	0.0067
			18	0.007	58	0.0062
RP for Acute?	NO		19	0.0075	59	0.0061
RP for Chronic?	NO		20	0.0067	60	0.009
RP for Human Health?	N/A		21	0.0054	61	0.0056
			22	0.0065	62	0.0067
Confidence Interval	99		23	0.0051	63	0.0053
			24	0.006	64	0.0069
Maximum Reported Effluent Conc.	0.0361		25	0.006	65	0.0063
Coefficient of Variation (CV)	0.57		26	0.0081	66	0.0055
RP Multiplier	0.96		27	0.0084	67	0.0052
Projected Maximum Effluent Conc. (MEC)	0.035		28	0.0076	68	0.0054
			29	0.0074	69	0.0045
Acute Criterion	0.0631		30	0.0067	70	0.0049
Chronic Criterion	0.0444		31	0.0072	71	0.0063
Human Health Criterion	0		32	0.0219	72	0.007
			33	0.0102	73	0.0067
RP for Acute?	NO		34	0.0079	74	0.0095
RP for Chronic?	NO		35	0.0075	75	0.0083
RP for Human Health?	N/A		36	0.01	76	0.0059
			37	0.0077	77	0.0067
			38	0.0073	78	0.0175
			39	0.0073	79	0.0052
			40	0.0215	80	0.0361

Cyanide (Total) RP Results

RP Procedure Output		Effluent Data				
Facility Name:	South Valley	1	0.002	41	ND	
Permit Number:	UT0024384	2	0.002	42	ND	
Outfall Number:	OO1	3	ND	43	ND	
Parameter		4	0.003	44	ND	
Distribution	Cyanide (Total)	5	0.002	45	ND	
Data Units	Normal	6	ND	46	ND	
Reporting Limit	mg/L	7	ND	47	ND	
Significant Figures	0.002	8	0.002	48	0.002	
Confidence Interval	2	9	ND	49	0.005	
	99	10	0.002	50	0.003	
Maximum Reported Effluent Conc.		mg/L	11	0.002	51	0.002
Coefficient of Variation (CV)	0.023		12	0.002	52	0.002
RP Multiplier	1.1		13	0.003	53	0.002
Projected Maximum Effluent Conc. (MEC)	1.5	mg/L	14	ND	54	0.002
	0.034		15	0.004	55	0.002
Acute Criterion			16	0.004	56	0.002
Chronic Criterion	0.0287		17	0.002	57	ND
Human Health Criterion	0.0084		18	0.003	58	ND
	0		19	0.004	59	ND
RP for Acute?			20	0.002	60	0.002
RP for Chronic?	YES		21	0.002	61	ND
RP for Human Health?	YES		22	ND	62	0.023
			23	0.002	63	ND
Confidence Interval	95		24	0.002	64	0.002
			25	0.002	65	ND
Maximum Reported Effluent Conc.	0.023		26	ND	66	ND
Coefficient of Variation (CV)	1.1		27	ND	67	0.003
RP Multiplier	1.1		28	ND	68	0.002
Projected Maximum Effluent Conc. (MEC)	0.024		29	0.002	69	ND
			30	ND	70	0.004
Acute Criterion	0.0287		31	ND	71	ND
Chronic Criterion	0.0084		32	ND	72	0.004
Human Health Criterion	0		33	0.002	73	0.004
			34	0.003	74	ND
RP for Acute?	NO		35	ND	75	ND
RP for Chronic?	YES		36	ND	76	0.003
RP for Human Health?	N/A		37	ND	77	0.012
			38	ND	78	ND
			39	0.002	79	0.003
			40	0.002	80	ND
			1	0.002	41	ND

Mercury RP Results

RP Procedure Output		Effluent Data				
Facility Name:	South Valley	#		#		
Permit Number:	UT0024384	1	0.0000012	41	0.0000007	
Outfall Number:	OO1	2	0.0000011	42	0.0000007	
Parameter	Mercury	3	0.0000028	43	0.0000011	
Distribution	Normal	4	0.0000003	44	0.0000011	
Data Units	mg/L	5	0.0000004	45	0.0000014	
Reporting Limit	0.0000005	6	ND	46	0.0000015	
Significant Figures	2	7	0.0000019	47	0.0000008	
Confidence Interval	99	8	0.0000063	48	ND	
		9	0.0000011	49	0.0000013	
Maximum Reported Effluent Conc.	0.000017	mg/L	10	ND	50	ND
Coefficient of Variation (CV)	1.2		11	0.0000001	51	0.0000008
RP Multiplier	1.3		12	0.0000014	52	0.0000009
Projected Maximum Effluent Conc. (MEC)	0.000023	mg/L	13	0.0000011	53	0.0000013
			14	0.0000012	54	0.0000008
Acute Criterion	0.000241		15	0.0000014	55	0.0000026
Chronic Criterion	0.000019		16	0.0000001	56	0.0000063
Human Health Criterion	0		17	0.0000013	57	0.0000039
			18	0.0000012	58	0.0000011
RP for Acute?	NO		19	0.0000017	59	0.0000018
RP for Chronic?	YES		20	0.0000012	60	0.0000021
RP for Human Health?	N/A		21	0.0000019	61	0.0000027
			22	0.0000015	62	0.0000018
Confidence Interval	95		23	0.0000001	63	0.0000009
			24	0.0000027	64	0.0000022
Maximum Reported Effluent Conc.	0.000017		25	0.0000043	65	0.0000017
Coefficient of Variation (CV)	1.2		26	0.0000041	66	0.0000012
RP Multiplier	0.96		27	0.0000001	67	0.0000001
Projected Maximum Effluent Conc. (MEC)	0.000016		28	0.0000009	68	ND
			29	0.0000012	69	0.0000105
Acute Criterion	0.000241		30	0.0000011	70	0.0000003
Chronic Criterion	0.000019		31	0.0000011	71	ND
Human Health Criterion	0		32	0.0000017	72	0.0000016
			33	0.0000007	73	0.0000035
RP for Acute?	NO		34	ND	74	0.0000011
RP for Chronic?	NO		35	0.0000011	75	0.0000053
RP for Human Health?	N/A		36	0.0000013	76	0.0000017
			37	0.0000023	77	ND
			38	0.0000037	78	0.0000103
			39	0.0000023	79	0.0000161
			40	0.0000025	80	0.0000012