

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. **UT0024414**  
Biosolids Permit No. **UTL024414**

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

**SILVER CREEK WATER RECLAMATION FACILITY**

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named **SILVER CREEK,**

to dispose of biosolids,

and to discharge storm water,

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

**This permit shall become effective on July 1, 2020.**

**This permit expires at midnight on June 30, 2025.**

Signed this 10<sup>th</sup> day of June, 2020.



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Erica Brown Gaddis, PhD  
Director

DWQ-2019-016406

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**PART I**  
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**WASTEWATER**

**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</u>	<u>Description of Discharge Point</u>
001	Located at latitude 40°344'40" and longitude 111°28'45". The discharge is from the end of a 24 inch pipe on the Northeast side of the treatment plant. The pipe discharges to the wetlands area of Silver Creek; with the Silver Creek main channel about 1000 feet East of discharge point 001.

- B. Narrative Standard. It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.
- C. Specific Limitations and Self-Monitoring Requirements.
1. Effective immediately, and lasting through the life of this permit, there shall be no chronic toxicity in Outfall 001 as defined in **Part VIII**, and determined by test procedures described in *Part I. C.3.a & b* of this permit.
  2. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below.

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**Interim Limits**

SCWRF construction was completed April 2019. At the time of renewal, SCWRF did not have a full year of plant optimization for CBOD<sub>5</sub>, ammonia and total nitrogen; therefore those parameters have an interim limit effective until December 31, 2020:

<b>Table 1</b>							
<b>Permit Limitations Effective Until December 31, 2020</b>							
<b>Parameter</b>	<b>Effluent Limitations<sup>a, b, c, d</sup></b>						
	<b>Maximum Monthly Avg</b>	<b>Maximum Weekly Avg</b>	<b>Maximum Monthly Load</b>	<b>Yearly Average</b>	<b>Daily Minimum</b>	<b>Daily Maximum</b>	<b>Annual Load</b>
CBOD <sub>5</sub> , mg/L	20	--	--	--	--	--	--
CBOD Min. % Removal	85	--	--	--	--	--	--
TSS, mg/L	25	35	--	--	--	--	--
TSS Min. % Removal	85	--	--	--	--	--	--
<i>E. coli</i> , No./100mL	126	157	--	--	--	--	--
pH, Standard Units	--	--	--	--	6.5	9	--
<b>Total Ammonia (as N), mg/L</b>							
April – August	4.0	--	--	--	--	--	--
September - December	4.5	--	--	--	--	--	--
Dissolved Oxygen, mg/L	--	--	--	--	5.5	--	--
Oil & Grease, mg/L	--	--	--	--	--	10.0	--
TDS, mg/L	1900	--	--	--	--	--	--
Total Phosphorus, mg/L	1	--	--	--	--	--	--
<b>Total Phosphorus, lbs</b>							
April - Sept	--	--	4,581	--	--	--	--
Annual Load	--	--	--	--	--	--	10,690
WET, Chronic Biomonitoring	--	--	--	--	--	IC <sub>25</sub> > 100% effluent (from WLA)	--

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**Permit Limits**

SCWRF permit limitations beginning January 1, 2021:

Table 2							
Permit Limitations Beginning January 1, 2021							
Parameter	Effluent Limitations <sup>a, b, c, d</sup>						
	Maximum Monthly Avg	Maximum Weekly Avg	Maximum Monthly Load	Yearly Average	Daily Minimum	Daily Maximum	Annual Load
CBOD <sub>5</sub> , mg/L	10	--	--	--	--	--	--
CBOD Min. % Removal	85	--	--	--	--	--	--
TSS, mg/L	25	35	--	--	--	--	--
TSS Min. % Removal	85	--	--	--	--	--	--
<i>E. coli</i> , No./100mL	126	157	--	--	--	--	--
pH, Standard Units	--	--	--	--	6.5	9	--
<b>Total Ammonia (as N), mg/L</b>							
July – August	1.0	--	--	--	--	--	--
September - November	2.5	--	--	--	--	--	--
December - March	3.0	--	--	--	--	--	--
April - June	2.5	--	--	--	--	--	--
Dissolved Oxygen, mg/L	--	--	--	--	5.5	--	--
Oil & Grease, mg/L	--	--	--	--	--	10.0	--
TDS, mg/L	1900	--	--	--	--	--	--
Total Phosphorus, mg/L	1	--	--	--	--	--	--
<b>Total Phosphorus, lbs</b>							
April - Sept	--	--	4,581	--	--	--	--
Annual Load	--	--	--	--	--	--	10,690
<b>Total Nitrogen, mg/L</b>							
July – August	10.0	--	--	--	--	--	--
September - November	10.5	--	--	--	--	--	--
December - March	11.0	--	--	--	--	--	--
April - June	10.5	--	--	--	--	--	--
<b>Total Nitrogen, lbs</b>							
April - Sept	--	--	45,817	--	--	--	--
Annual Load	--	--	--	--	--	--	107,112
WET, Chronic Biomonitoring	--	--	--	--	--	IC <sub>25</sub> > 100% effluent (from WLA)	--

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<b>Table 3</b>			
<b>Parameter</b>	<b>Self-Monitoring and Reporting Requirements <sup>a, b, c, d</sup></b>		
	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>Total Flow <sup>e, f</sup></b>	Continuous	Recorder	MGD
<b>CBOD<sub>5</sub></b>			
<b>Influent <sup>g</sup></b>	2 x weekly	Composite	mg/L
<b>Effluent</b>	2 x weekly	Composite	mg/L
<b>Removal</b>	Monthly	Calculated	%
<b>TSS</b>			
<b>Influent <sup>g</sup></b>	2 x weekly	Composite	mg/L
<b>Effluent</b>	2 x weekly	Composite	mg/L
<b>Removal</b>	Monthly	Calculated	%
<b><i>E. coli</i>, No./100mL</b>	2 x weekly	Grab	No./100mL
<b>pH, Standard Units</b>	2 x weekly	Grab	SU
<b>Total Ammonia (as N)</b>	2 x weekly	Grab	mg/L
<b>Total Ammonia</b>	Monthly	Calculated	lbs
<b>Dissolved Oxygen</b>	2 x weekly	Grab	mg/L
<b>Oil &amp; Grease <sup>h</sup></b>	Monthly	Grab	mg/L
<b>TDS</b>	Monthly	Grab	mg/L
<b>Total Phosphorus <sup>i</sup></b>			
<b>Influent</b>	Monthly	Grab	mg/L
<b>Effluent</b>	Monthly	Grab	mg/L
<b>Total Phosphorus</b>	Summer	Calculated	lbs/semi-annual
<b>Total Phosphorus</b>	Annual	Calculated	lbs/yr
<b>Total Nitrogen <sup>j</sup></b>	Monthly	Calculated	mg/L
<b>Total Nitrogen <sup>j</sup></b>	April - Sept	Calculated	lbs/semi-annual
<b>Total Nitrogen <sup>j</sup></b>	Annual	Calculated	lbs/yr
<b>Orthophosphate, (as P) <sup>j</sup> Effluent</b>	Monthly	Grab	mg/L
<b>Nitrate, NO<sub>3</sub> <sup>j</sup></b>	Monthly	Grab	mg/L
<b>Nitrate, NO<sub>2</sub> <sup>j</sup></b>	Monthly	Grab	mg/L
<b>Total Kjeldahl Nitrogen <sup>j</sup></b>			
<b>Influent</b>	Monthly	Composite	mg/L
<b>Effluent</b>	Monthly	Composite	mg/L
<b>Temperature, degree</b>	Monthly	Grab	Fahrenheit
<b>WET, Biomonitoring <sup>k, l</sup></b>			
<b>Fathead Minnows - Chronic</b>	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
<b>Ceriodaphnia - Chronic</b>	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail
<b>Metals <sup>m, n</sup></b>			
<b>Influent</b>	Quarterly	Composite/Grab	mg/L
<b>Effluent</b>	Quarterly	Composite/Grab	mg/L
<b>Organic Toxics</b>			
<b>Influent</b>	Yearly	Grab	mg/L
<b>Effluent</b>	Yearly	Grab	mg/L

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**Table References**

- a. See Definitions, *Part VIII*, for definition of terms.
- b. All parameters in this table will be reported on the monthly Discharge Monitoring Report.
- c. Metals samples should be analyzed using a method that meets MDL requirements. If a test method is not available the permittee must submit documentation to the Director regarding the method that will be used. The sample type (composite or grab) should be performed according to the methods requirements.
- d. There shall be no visible sheen or floating solids or visible foam in other than trace amounts.
- e. Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- f. 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. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report 9 under "NODI" in NetDMR.
- i. The permittee shall calculate phosphorus load in pounds each month and show a cumulative total of the yearly pounds for each monthly report until December. January 1, of each year, the permittee will start at zero so that the phosphorus load is totalized from January to December on the monthly reports each year. Phosphorus load shall be calculated using the total volume from a monthly flow and the average of the monthly phosphorus concentrations.
- j. Reflect the adoption of UAC R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
- k. The chronic Ceriodaphnia will be tested during the 2nd and 4th quarters, and the chronic fathead minnows will be tested during the 1st and 3rd quarters.
- l. TUC is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test IC<sub>25</sub>. The TUC is an indicator and an exceedance is not used for determining compliance.
- m. Metals are being sampled in support of the work being done for the Reasonable Potential Analysis. The Metal parameters will be monitored and reported on a quarterly basis by the facility on Discharge Monitoring Report, but will not have a limit associated with them. If SCWRF decides to sample more frequently for these parameters, the additional data shall be reported to DWQ per Part V. E of this permit.

n. Metals				
Aluminum	Cadmium	Cyanide	Nickel	Zinc
Arsenic	Total Chromium	Lead	Selenium	
Barium	Copper	Mercury	Silver	

**Table References End**

3. Chronic Whole Effluent Toxicity (WET) Testing.

a. *Whole Effluent Testing – Chronic Toxicity.*

Starting immediately, the permittee shall quarterly, 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.

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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 100% 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.3.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.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the required reporting period (e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28). 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 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. Minor facilities may be less than quarterly at the discretion of the Director.

- b. *Accelerated Testing*. When whole effluent toxicity is indicated during routine WET testing as specified in this permit, the permittee shall notify the Director in writing within 5 days after becoming aware of the test result. The permittee shall perform an accelerated schedule of WET testing to establish whether a pattern of toxicity exists unless the permittee notifies the Director and commences a PTI, TIE, or a TRE. Accelerated testing or the PTI, TIE, or TRE will begin within fourteen days after the

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permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under Part I. Pattern of Toxicity. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.

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

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

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

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

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

- d. *Preliminary Toxicity Investigation.*

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

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- (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.3.e Toxicity Reduction Evaluation
  - (4) If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Director, with supporting testing evidence.
- e. *Toxicity Reduction Evaluation (TRE)*. If a pattern of toxicity is detected the permittee shall initiate a TIE/TRE within 7 days unless the Director has accepted the decision to complete a PTI. With adequate justification, the Director may extend the 7-day deadline. The purpose of the TIE portion of a TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and the TRE will control or provide treatment for the toxicity.

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

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

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

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

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

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

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

Failure to conduct an adequate TIE/TRE plan or program as described above, or the submittal of a plan or program judged inadequate by the Director, shall be

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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 on a DMR in NetDMR no later than the 28<sup>th</sup> day of the month following the completed reporting period. If no discharge occurs during the reporting period, “no discharge” shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part VII.G)*, and submitted by NetDMR, or to the Division of Water Quality at the following address:

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

2. Annual Reporting of Wastewater Monitoring Results. Monitoring results obtained during the previous year shall be summarized and included in the Municipal Wastewater Planning Program (MWPP) submitted annually by April 1st. If no reuse occurs during the reporting period, “no reuse” shall be reported for those applicable effluent parameters. Legible copies of these, and all other reports required herein, shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part VII.G)*, and submitted to the Division of Water Quality at the following address:

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

**PART II**  
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**PRETREATMENT**

**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 permittee's approved Pretreatment Program submission. 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;

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- b. Describe the types of escalating enforcement responses the POTW will take in response to all anticipated type of industrial user violations; and
  - 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 approved program which result in less stringent industrial user requirements shall not be effective until after approval has been granted by the Director.
- C. Annual Report. The permittee shall provide the Division of Water Quality and EPA with an annual report briefly describing the permittee's 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 the permittee's industrial users.
  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 the permittee's industrial users and the effectiveness of the permittee's Pretreatment Program in meeting its needs and objectives.
  4. A summary of all sampling data taken of the influent and effluent for those pollutants listed in *Part II.H*.
  5. A description of all substantive changes made to the permittee's pretreatment program referenced in *Section B* of this section. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure or operating agreement(s), a significant reduction in monitoring, or a change in the method of funding the program.
  6. 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 140oF (60oC);
  2. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;

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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;
  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, non-biodegradable 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 A and 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. 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.
- G. 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.
- H. 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.

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Monitoring for Pretreatment Program Table				
Parameter	MDL a*	Sample Type	Frequency	Units
Total Aluminum	0.087	Composite	Quarterly	mg/L
Total Arsenic	0.01			
Total Cadmium	0.0008			
Total Chromium	0.050			
Total Copper	0.030			
Total Lead	0.019			
Total Molybdenum	NA			
Total Nickel	0.100			
Total Selenium	0.0046			
Total Silver	0.041			
Total Zinc	0.300			
Total Cyanide	0.0052	Composite/Grab	Yearly	
Total Mercury	0.000012			
TTOs, b*	NA			

a\* The minimum detection limit (MDL) of the test method used for analysis must be below this limit, if a test method is not available the permittee must submit documentation to the Director regarding the method that will be used.

b\* In addition, the permittee shall analyze the treatment facility influent and effluent for the presence of the toxic pollutants 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.

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.

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. If a parameter load is greater than the allowable head works load, for any pollutant listed in Part II.H.1. or a pollutant of concern listed in the local limit development document, the permittee must report the exceedances to the DWQ's Pretreatment Coordinator. If the loading exceeds the allowable headworks load, increase sampling must occur based on the requirements given by the DWQ's Pretreatment Coordinator. 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.

- 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 Division 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. 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

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Water Quality for approval, and after approval implement the new local limits, within 12 months of the Division's determination that a revision is necessary.

### 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. Landfill - If the solids are land filled the solids must be covered with soil or another approved material at the end of each operating day for vector attraction reduction (40 CFR 503.33(b)(11))

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/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.

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Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis				
Heavy Metals	Table 1	Table 2	Table 3	Table 4
	Ceiling Conc. Limits, (mg/kg)	CPLR*, (mg/ha)	Pollutant Conc. Limits, (mg/kg)	APLR†, (mg/ha-yr)
Total Arsenic	75	41	41	41
Total Cadmium	85	39	39	39
Total Copper	4300	1500	1500	1500
Total Lead	840	300	300	300
Total Mercury	57	17	17	17
Total Molybdenum	75	N/A	N/A	N/A
Total Nickel	420	420	420	420
Total Selenium	100	100	100	100
Total Zinc	7500	2800	2800	2800

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*.
  - 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*. 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.
    - (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.

\* CPLR -- Cumulative Pollutant Loading Rate

† APLR – Annual Pollutant Loading Rate

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- (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‡ per four (4) grams total solids (DWB)§ or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB).	Fecal Coliforms – less than 2,000,000 MPN or CFU** 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)	

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*. Facility is meeting the requirements through the following methods.
  - (1) Facility is meeting vector attraction reduction through 40 CFR Part 503.33, b, 11 “Landfill -- If the solids are land filled the solids must be covered with soil or another approved material at the end of each operating day for vector attraction reduction”
  - (2) Facility transfers solids to another facility (E.T. Technologies) where they are stabilized and use as cover on the Salt Lake County Landfill.

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‡ MPN – Most Probable Number  
§ DWB – Dry Weight Basis.  
\*\* CFU – Colony Forming Units

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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 <sup>††</sup>	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

- 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.

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<sup>††</sup> SBWRD produces enough biosolids at their facilities to be required to sample at least four times a year. But all the biosolids are transferred to another facility for further treatment and use at the land fill. This is considered disposal and as a result SBWRD has been allowed to reduce the monitoring frequency below the required four times per year. In the future, if SBWRD employs Land Application of biosolids, or another form of beneficial use, they will need to increase the monitoring they perform prior to beginning that practice.

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- (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.

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- (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.

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- (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.
  - (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 by NetDMR<sup>‡‡</sup> or at the following address:  
  
Original to: Biosolids Coordinator  
Utah Division of Water Quality  
PO Box 144870  
Salt Lake City Utah, 84114-4870
- 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

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<sup>‡‡</sup> Starting January 1, 2017 monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Annual Biosolids Reports should also be submitted through this system.

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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.
  - 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. Coverage of This Section. The requirements listed under this section shall apply to storm water discharges. Storm water discharges from the following portions of the facility may be eligible for coverage under this permit: biosolids drying beds, haul or access roads on which transportation of biosolids may occur, grit screen cleaning areas, chemical loading, unloading and storage areas, salt or sand storage areas, vehicle or equipment storage and maintenance areas, or any other wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility that may have a reasonable expectation to contribute to pollutants in a storm water discharge.
- B. Prohibition of Non-Storm Water Discharges. Except for discharges identified in *Part I.*, and discharges described below in this paragraph, non-storm water discharges are prohibited. The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from emergency firefighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.
- C. Storm Water Pollution Prevention Plan Requirements. The permittee must have (on site) and implement a storm water pollution prevention plan as a condition of this permit.
1. Contents of the Plan. The plan shall include, at a minimum, the following items:
- a. *Pollution Prevention Team.* Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.
- b. *Description of Potential Pollutant Sources.* Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:
- (1) *Drainage.* A site map indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the wastewater treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or

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discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:

- (a) Drainage direction and discharge points from all wastewater associated activities including but not limited to grit screen cleaning, bio-solids drying beds and transport, chemical/material loading, unloading and storage areas, vehicle maintenance areas, salt or sand storage areas.
  - (b) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
  - (c) Location of bio-solids drying beds where exposed to precipitation or where the transportation of bio-solids may be spilled onto internal roadways or tracked off site.
  - (d) Location where grit screen cleaning or other routinely performed industrial activities are located and are exposed to precipitation.
  - (e) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.
  - (f) Locations where any major spills or leaks of toxic or hazardous materials have occurred.
  - (g) Location of any sand or salt piles.
  - (h) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
  - (i) Location of receiving streams or other surface water bodies.
  - (j) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- (2) *Inventory of Exposed Materials.* An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.
- (3) *Spills and Leaks.* A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of

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- 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.
- (4) *Sampling Data.* A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.
  - (5) *Summary of Potential Pollutant Sources and Risk Assessment.* A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes; and onsite waste disposal practices. Specific potential pollutants shall be identified where known.
- c. *Measures and Controls.* The permittee shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:
- (1) *Good Housekeeping.* All areas that may contribute pollutants to storm water discharges shall be maintained in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Where applicable, such measures or other equivalent measures would include the following: sweepers and covered storage to minimize dust generation and storm runoff; conservation of vegetation where possible to minimize erosion; sweeping of haul roads, bio-solids access points, and exits to reduce or eliminate off site tracking; sweeping of sand or salt storage areas to minimize entrainment in storm water runoff; collection, removal, and proper disposal of waste oils and other fluids resulting from vehicle and equipment maintenance; other equivalent measures to address identified potential sources of pollution.
  - (2) *Preventive Maintenance.* A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.
  - (3) *Spill Prevention and Response Procedures.* Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

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- (4) *Inspections.* In addition to the comprehensive site evaluation required under paragraph (*Part IV.C.1.c.(10)*) of this section, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: access roads/rail lines, equipment storage and maintenance areas (both indoor and outdoor areas); fueling; material handling areas, residual treatment, storage, and disposal areas; and wastewater treatment areas. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.
- (5) *Employee Training.* Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping practices; proper procedures for using fertilizers, herbicides and pesticides.
- (6) *Record keeping and Internal Reporting Procedures.* A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.
- (7) *Non-storm Water Discharges.*
- (a) *Certification.* The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part VII.G* of this permit.
- (b) *Exceptions.* Except for flows from emergency firefighting activities, sources of non-storm water listed in *Part IV.B. (Prohibition of Non-storm Water Discharges)* of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
- (c) *Failure to Certify.* Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the *Director* within 180 days after the effective date of this permit. If the failure to

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certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State, which are not, authorized by a *UPDES* permit are unlawful, and must be terminated.

- (8) *Sediment and Erosion Control.* The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
- (9) *Management of Runoff.* The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this permit] shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the wastewater facility for treatment.
- (10) *Comprehensive Site Compliance Evaluation.* Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:
  - (a) Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.
  - (b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this section and pollution prevention measures and controls identified in the plan in accordance with *Part IV.C.1.c*. (Measures and Controls) of this section shall be revised as appropriate within 2 weeks of such evaluation and shall provide for

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implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

- (c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph (b) (above) shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part VII.G* (Signatory Requirements) of this permit.
- (11) *Deadlines for Plan Preparation and Compliance.* The permittee shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit. If the permittee already has a plan, it shall be revised according to *Part IV.C.1.c.(10)*, Comprehensive Site Evaluation.
- (12) *Keeping Plans Current.* The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

**D. Monitoring and Reporting Requirements.**

- 1. Quarterly Visual Examination of Storm Water Quality. Facilities shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January through March; April through June; July through September; and October through December.
  - a. *Sample and Data Collection.* Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.
  - b. *Visual Storm Water Discharge Examination Reports.* Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include

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the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

- c. *Representative Discharge.* When the permittee has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- d. *Adverse Conditions.* When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).
- e. *Inactive and Unstaffed Site.* When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

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**V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS**

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

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report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
  - a. Any noncompliance which may endanger health or the environment;
  - b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part 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.*
- 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;

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

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**VI. COMPLIANCE RESPONSIBILITIES**

- A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.
- B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding \$50,000 per day. Except as provided at *Part VI.G, Bypass of Treatment Facilities* and *Part VI.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.
- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.
- G. Bypass of Treatment Facilities.
1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.

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2. Prohibition of Bypass.

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

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- b. *Emergency Bypass.* Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.
- c. *Unanticipated bypass.* The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part V.H, Twenty Four Hour Reporting.* The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

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

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**VII. GENERAL REQUIREMENTS**

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

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- b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
3. Changes to authorization. If an authorization under *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.

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

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

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1. Toxicity is detected, as per *Part I.C.3.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.
- Q. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

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**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. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
6. "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.
7. "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.
8. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
  - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

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- b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
  - c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every “X” gallons of flow); and,
  - d. Continuous sample volume, with sample collection rate proportional to flow rate.
9. “CWA,” means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.
10. “Daily Maximum” (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.
11. “EPA,” means the United States Environmental Protection Agency.
12. “Director,” means Director of the Division of Water Quality.
13. A “grab” sample, for monitoring requirements, is defined as a single “dip and take” sample collected at a representative point in the discharge stream.
14. An “instantaneous” measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.
15. “Severe Property Damage,” means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
16. “Total Nitrogen” is the calculation of total kjeldahl nitrogen (TKN) + (Nitrate + Nitrite). TKN is the calculated of total organic nitrogen + total ammonia.
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).

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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 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 mosquitos 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.

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15. "Application Site or Land Application Site" means all contiguous areas of a users' property intended for sludge application.
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.

C. Storm Water.

1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
2. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
3. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of *Appendix I* in the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity. Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.
4. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.

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5. “Landfill” means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.
6. “Land application unit” means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
7. “Municipal separate storm sewer system” (large and/or medium) means all municipal separate storm sewers that are either:
  - a. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or
  - b. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or
  - c. Owned or operated by a municipality other than those described in paragraph *a.* or *b.* (above) and that are designated by the *Director* as part of the large or medium municipal separate storm sewer system.
8. “NOI” means “notice of intent”, it is an application form that is used to obtain coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
9. “NOT” means “notice of termination”, it is a form used to terminate coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
10. “Point source” means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
11. “Section 313 water priority chemical” means a chemical or chemical categories that:
  - a. Are listed at *40 CFR 372.65* pursuant to *Section 313* of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III of the Superfund Amendments and Reauthorization Act (SARA)* of 1986);
  - b. Are present at or above threshold levels at a facility subject to *EPCRA Section 313* reporting requirements; and
  - c. Meet at least one of the following criteria:

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- (1) Are listed in *Appendix D* of *40 CFR Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);
  - (2) Are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*; or
  - (3) Are pollutants for which EPA has published acute or chronic water quality criteria. See *Appendix III* of this permit. This appendix was revised based on final rulemaking EPA published in the *Federal Register* November 30, 1994.
12. “Significant materials” includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *CERCLA*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
13. “Significant spills” includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40 CFR 110.10* and *CFR 117.21*) or *Section 102 of CERCLA* (see *40 CFR 302.4*).
14. “Storm water” means storm water runoff, snowmelt runoff, and surface runoff and drainage.
15. “SWDMR” means “storm water discharge monitoring report”, a report of the results of storm water monitoring required by the permit. The Division of Water Quality provides the storm water discharge monitoring report form.
16. “Storm water associated with industrial activity” (*UAC R317-8-3.8(6)(c) & (d)*) means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the *UPDES* program. For the categories of industries identified in paragraphs (*a*) through (*j*) of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined in *40 CFR Part 401*); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph (*k*) of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are

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exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (a) to (k) of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5*. The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);
- b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;
- c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;
- d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D* of RCRA;
- f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
- g. Steam electric power generating facilities, including coal handling sites;

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- h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (I) to (k) of this subsection are associated with industrial activity;
  - i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;
  - j. Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 1 acre of total land area that are not part of a larger common plan of development or sale;
  - k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))
17. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

**FACT SHEET AND STATEMENT OF BASIS  
SILVER CREEK WATER RECLAMATION FACILITY  
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS & STORM WATER  
UPDES PERMIT NUMBER: UT0024414  
UPDES BIOSOLIDS PERMIT NUMBER: UTL0024414  
MAJOR MUNICIPAL**

**FACILITY CONTACTS**

Person Name:	Michael Luers	Person Name:	Chad Burrell
Position:	District Manager	Position:	Operations Manager
Phone Number:	435-649-7993	Phone Number:	435-649-7993
Person Name:	Cody Snyder	Person Name:	Travis Potter
Position:	Silver Creek Superintendent	Position:	Pretreatment Coordinator
Phone Number:	435-649-7993	Phone Number:	435-649-7993
Person Name:	Tiffini Adams	Person Name:	Chad Burrell
Position:	Laboratory Director	Position:	Biosolids Coordinator
Phone Number:	435-649-7993	Phone Number:	435-649-7993
Facility Name:	Silver Creek Water Reclamation Facility Snyderville Basin Water Reclamation District		
Mailing Address:	2800 Homestead Road Park City, UT 84098		
District Telephone:	435-649-7993	Facility Telephone:	435-214-5252
Facility Location:	7867 Silver Gate Dr. Park City, UT 84098		

**DESCRIPTION OF FACILITY**

Silver Creek Water Reclamation Facility (SCWRF) is one of two water reclamation facilities owned by the Snyderville Basin Water Reclamation District (SBWRD); East Canyon Water Reclamation Facility (ECWRF) is the other. SBWRD has a piping system that allows a portion of the wastewater flows to be delivered to either facility.

SBWRD encompasses all of Park City and the adjoining unincorporated area within the Silver Creek and East Canyon Creek watersheds. It includes the most populated portion of Summit County. SBWRD encompasses a progressive, growing and active population in an area with housing or facilities for permanent and seasonal accommodations. There are several ski resorts in the area that draw winter ski crowds. The people and businesses in the area often host events such as national or international ski competitions. A local annually occurring event that occurs every winter is the Sundance Film Festival that draws large crowds each year. These annual or one-time special events cause temporary increases in the normal yearly winter resort population. The local resorts have historically drawn visitors during the winter ski season, but are marketing travel packages during the off skiing season also.

SCWRF consists of activated sludge bio-reactors for nutrient removal and ultraviolet disinfection. The physical plant consists of (1) parshall flume (2) mechanically cleaned screens with rag washer compactors (2) grit chambers (1) influent wet well (6) influent pumps (2) equalization basins (2) bio-reactors (3) final clarifiers (4) continuous back-flush media filters (2) in channel ultraviolet disinfection units (2) diffused

air post aerators (1) effluent meter (1) sludge holding tank (2) rotary fan sludge dewatering presses. The facility was placed in service in 2019 with an annual average of 3.2 mgd and max month capacity of 4.0 mgd.

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

SCWRF has upgraded treatment and changed some of the process on site. The plant consists of (1) parshall flume (2) mechanically cleaned screens with rag washer compactors (2) grit chambers (1) influent wet well (6) influent pumps (2) equalization basins (2) bio-reactors (3) final clarifiers (4) continuous back-flush media filters (2) in channel ultraviolet disinfection units (2) diffused air post aerators (1) effluent meter (1) sludge holding tank (2) rotary fan sludge dewatering presses.

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

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

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

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

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

## DISCHARGE

### DESCRIPTION OF DISCHARGE

SCWRF reports self-monitoring results on NetDMR on a monthly basis. A summary of their DMR data for the last five years has been reviewed through [echo.epa.gov](http://echo.epa.gov). There were no effluent limit exceedances during this timeframe.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Located at latitude 40°344'40" and longitude 111°28'45". The discharge is from the end of a 24 inch pipe on the Northeast side of the treatment plant. The pipe discharges to the wetlands area of Silver Creek; with the Silver Creek main channel about 1000 feet East of discharge point 001.

### RECEIVING WATERS AND STREAM CLASSIFICATION

The receiving water for Outfall 001 is an open channel that drains to Silver Creek, which is tributary to the Weber River and Echo Reservoir. The outlet channel was determined to be a natural tributary of Silver Creek, with the same classification as Silver Creek. Per *Utah Administrative Code (UAC) R317-2-13.4a*, the designated beneficial uses for Weber River and tributaries, from Stoddard diversion to headwaters, which is a Class 1C, 2B, 3A, and 4.

- Class 1C -- Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water
- 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.

### BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS), *E. coli*, pH and percent removal for TSS are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. The CBOD<sub>5</sub> is based from the QUAL2Kw model which determines conformance with the chronic DO criteria of the stream. The oil and grease is based on best professional judgment (BPJ). Total dissolved solids (TDS) limitations are based upon the revised Silver Creek TDS criterion updated October 2019.

The Ammonia daily and monthly mg/L limit is based from the Wasteload Analysis; the monthly mass limit is calculated from the Wasteload Analysis (mg/L x 8.34 x flow, mgd x 30-days). Attached is a Wasteload Analysis for this discharge into the Silver Creek. 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.

### Parameters of Concern

The potential parameters of concern (POC) identified for the discharge/receiving water were total suspended solids (TSS), dissolved oxygen (DO), BOD<sub>5</sub>, total phosphorus (TP), total nitrogen (TN), total ammonia (TAN), *E.coli*, pH and dissolved metals.

The DO water quality standard for the Silver Creek waterway has a monthly average limitation of 6.5mg/L. SCWRF was upgraded with construction completion in April 2019. At the time of renewing the UPDES permit there was not sufficient data to implement the DO monthly average limitation at SCWRF. Therefore, SBWRD agrees to assist with the DO water quality of the receiving stream. DWQ and SBWRD will work with EPA to install a final cascading feature after the SCWRF discharge to help improve the DO in the receiving stream. SBWRD has agreed to assist in paying for the cascading feature.

SCWRF was listed as impaired for arsenic, cadmium, zinc, dissolved oxygen, pH, nitrate, total dissolved solids and benthic macro-invertebrates on the 303(d) list in *Utah's 2016 Integrated Report (DWQ)*. Quarterly monitoring is required for all metals including arsenic, cadmium and zinc.

There has been no decrease in Non-Point source cadmium and zinc levels and SCWRF should therefore not be required to meet any limit based on *Silver Creek Total Maximum Load of Dissolved Zinc and Cadmium* (Michael Baker Jr. Inc. and Psomas, 2004).

Echo Reservoir was listed as impaired for DO, temperature, and TP. The *Rockport Reservoir and Echo Reservoir TMDL Final Report* (SWCA Environmental Consultants, 2014) has allocations for TP and TN loads. Limitations for DO, TP, TN have been implemented in this permit with monthly temperature monitoring.

The WLA indicates a nitrate limitation of 10 mg/L. Nitrate is covered under a different permit limitation of TN, therefore a permit limitation will not be given.

### Reasonable Potential Analysis

Beginning on January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. In order to complete a RP analysis, more than 10 data points per parameter are needed. SCWRF upgraded was completed April 2019. At the time of renewing the UPDES permit only two data sets were available for RP analysis. This limited data set was not sufficient to complete a full run of RP. Therefore, SCWRF will be required to perform, at a minimum, quarterly metal sampling. If additional sampling is performed, it shall be reported to DWQ. Less than 10 data points may affect the RP outcomes which may require additional monitoring in the future.

### Interim Limits

SCWRF construction was completed April 2019. At the time of renewal, SCWRF did not have a full year of plant optimization for CBOD<sub>5</sub>, Ammonia and Total Nitrogen; therefore those parameters have an interim limit effective until December 31, 2020:

Table 1							
Permit Limitations Effective Until December 31, 2020							
Parameter	Effluent Limitations <sup>a, b, c, d</sup>						
	Maximum Monthly Avg	Maximum Weekly Avg	Maximum Monthly Load	Yearly Average	Daily Minimum	Daily Maximum	Annual Load
CBOD <sub>5</sub> , mg/L	20	--	--	--	--	--	--
CBOD Min. % Removal	85	--	--	--	--	--	--
TSS, mg/L	25	35	--	--	--	--	--
TSS Min. % Removal	85	--	--	--	--	--	--

<i>E. coli</i> , No./100mL	126	157	--	--	--	--	--
pH, Standard Units	--	--	--	--	6.5	9	--
<b>Total Ammonia (as N), mg/L</b>							
April – August	4.0	--	--	--	--	--	--
September - December	4.5	--	--	--	--	--	--
Dissolved Oxygen, mg/L	--	--	--	--	5.5	--	--
Oil & Grease, mg/L	--	--	--	--	--	10.0	--
TDS, mg/L	1900	--	--	--	--	--	--
Total Phosphorus, mg/L	1	--	--	--	--	--	--
<b>Total Phosphorus, lbs</b>							
April - Sept	--	--	4,581	--	--	--	--
Annual Load	--	--	--	--	--	--	10,690
WET, Chronic Biomonitoring	--	--		--	--	IC <sub>25</sub> > 100% effluent (from WLA)	

**Permit Limits**

SCWRF permit limitations beginning January 1, 2021:

<b>Table 2</b>							
<b>Permit Limitations Beginning January 1, 2021</b>							
<b>Parameter</b>	<b>Effluent Limitations<sup>a, b, c, d</sup></b>						
	<b>Maximum Monthly Avg</b>	<b>Maximum Weekly Avg</b>	<b>Maximum Monthly Load</b>	<b>Yearly Average</b>	<b>Daily Minimum</b>	<b>Daily Maximum</b>	<b>Annual Load</b>
<b>CBOD<sub>5</sub>, mg/L</b>	10	--	--	--	--	--	--
<b>CBOD Min. % Removal</b>	85	--	--	--	--	--	--
<b>TSS, mg/L</b>	25	35	--	--	--	--	--
<b>TSS Min. % Removal</b>	85	--	--	--	--	--	--
<b><i>E. coli</i>, No./100mL</b>	126	157	--	--	--	--	--
<b>pH, Standard Units</b>	--	--	--	--	6.5	9	--
<b>Total Ammonia (as N), mg/L</b>							
<b>July – August</b>	1.0	--	--	--	--	--	--
<b>September - November</b>	2.5	--	--	--	--	--	--
<b>December - March</b>	3.0	--	--	--	--	--	--
<b>April - June</b>	2.5	--	--	--	--	--	--
<b>Dissolved Oxygen, mg/L</b>	--	--	--	--	5.5	--	--
<b>Oil &amp; Grease, mg/L</b>	--	--	--	--	--	10.0	--
<b>TDS, mg/L</b>	1900	--	--	--	--	--	--
<b>Total Phosphorus, mg/L</b>	1	--	--	--	--	--	--
<b>Total Phosphorus, lbs</b>							
<b>April - Sept</b>	--	--	4,581	--	--	--	--
<b>Annual Load</b>	--	--	--	--	--	--	10,690
<b>Total Nitrogen, mg/L</b>							
<b>July – August</b>	10.0	--	--	--	--	--	--
<b>September - November</b>	10.5	--	--	--	--	--	--
<b>December - March</b>	11.0	--	--	--	--	--	--
<b>April - June</b>	10.5	--	--	--	--	--	--
<b>Total Nitrogen, lbs</b>							
<b>April - Sept</b>	--	--	45,817	--	--	--	--
<b>Annual Load</b>	--	--	--	--	--	--	107,112
<b>WET, Chronic Biomonitoring</b>	--	--	--	--	--	IC <sub>25</sub> > 100% effluent (from WLA)	--

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following self-monitoring requirements are the same as in the previous permit with additional parameter monitoring of Temperature, TDS, Total Phosphorus, Total Nitrogen, Total Kjeldahl Nitrogen and Orthophosphate. The permit will require reports to be submitted monthly, quarterly 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. Lab sheets for biomonitoring, metals and toxic organics must be attached to the appropriate DMR.

<b>Table 3</b>			
<b>Parameter</b>	<b>Self-Monitoring and Reporting Requirements<sup>a, b, c, d</sup></b>		
	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>Total Flow<sup>e, f</sup></b>	Continuous	Recorder	MGD
<b>CBOD<sub>5</sub></b>			
<b>Influent<sup>g</sup></b>	2 x weekly	Composite	mg/L
<b>Effluent</b>	2 x weekly	Composite	mg/L
<b>Removal</b>	Monthly	Calculated	%
<b>TSS</b>			
<b>Influent<sup>g</sup></b>	2 x weekly	Composite	mg/L
<b>Effluent</b>	2 x weekly	Composite	mg/L
<b>Removal</b>	Monthly	Calculated	%
<b><i>E. coli</i>, No./100mL</b>	2 x weekly	Grab	No./100mL
<b>pH, Standard Units</b>	2 x weekly	Grab	SU
<b>Total Ammonia (as N)</b>	2 x weekly	Grab	mg/L
<b>Total Ammonia</b>	Monthly	Calculated	lbs
<b>Dissolved Oxygen</b>	2 x weekly	Grab	mg/L
<b>Oil &amp; Grease<sup>h</sup></b>	Monthly	Grab	mg/L
<b>TDS</b>	Monthly	Grab	mg/L
<b>Total Phosphorus<sup>j</sup></b>			
<b>Influent</b>	Monthly	Grab	mg/L
<b>Effluent</b>	Monthly	Grab	mg/L
<b>Total Phosphorus</b>	Summer	Calculated	lbs/semi-annual
<b>Total Phosphorus</b>	Annual	Calculated	lbs/yr
<b>Total Nitrogen<sup>j</sup></b>	Monthly	Calculated	mg/L
<b>Total Nitrogen<sup>j</sup></b>	April - Sept	Calculated	lbs/semi-annual
<b>Total Nitrogen<sup>j</sup></b>	Annual	Calculated	lbs/yr
<b>Orthophosphate, (as P)<sup>j</sup> Effluent</b>	Monthly	Grab	mg/L
<b>Nitrate, NO<sub>3</sub><sup>j</sup></b>	Monthly	Grab	mg/L
<b>Nitrate, NO<sub>2</sub><sup>j</sup></b>	Monthly	Grab	mg/L
<b>Total Kjeldahl Nitrogen<sup>j</sup></b>			
<b>Influent</b>	Monthly	Composite	mg/L
<b>Effluent</b>	Monthly	Composite	mg/L
<b>Temperature, degree<sup>h</sup></b>	Monthly	Grab	Fahrenheit

<b>Table 3 (continued)</b>			
<b>Parameter</b>	<b>Self-Monitoring and Reporting Requirements<sup>a, b, c, d</sup></b>		
	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>WET, Biomonitoring<sup>k, l</sup></b>			
<b>Fathead Minnows - Chronic</b>	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
<b>Ceriodaphnia - Chronic</b>	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail

Metals <sup>m, n</sup>			
Influent	Quarterly	Composite/Grab	mg/L
Effluent	Quarterly	Composite/Grab	mg/L
Organic Toxics			
Influent	Yearly	Grab	mg/L
Effluent	Yearly	Grab	mg/L

**Table References**

- a. See Definitions, *Part VIII*, for definition of terms.
- b. All parameters in this table will be reported on the monthly Discharge Monitoring Report.
- c. Metals samples should be analyzed using a method that meets MDL requirements. If a test method is not available the permittee must submit documentation to the Director regarding the method that will be used. The sample type (composite or grab) should be performed according to the methods requirements.
- d. There shall be no visible sheen or floating solids or visible foam in other than trace amounts.
- e. Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- f. 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. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report 9 under "NODI" in NetDMR.
- i. The permittee shall calculate phosphorus load in pounds each month and show a cumulative total of the yearly pounds for each monthly report until December. January 1, of each year, the permittee will start at zero so that the phosphorus load is totalized from January to December on the monthly reports each year. Phosphorus load shall be calculated using the total volume from a monthly flow and the average of the monthly phosphorus concentrations.
- j. Reflects the adoption of UAC R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
- k. The chronic Ceriodaphnia will be tested during the 2nd and 4th quarters, and the chronic fathead minnows will be tested during the 1st and 3rd quarters.
- l. TUc is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test IC<sub>25</sub>. The TUc is an indicator and an exceedance is not used for determining compliance.
- m. Metals are being sampled in support of the work being done for the Reasonable Potential Analysis. The Metal parameters will be monitored and reported on a quarterly basis by the facility on Discharge Monitoring Report, but will not have a limit associated with them. If SCWRF decides to sample more frequently for these parameters, the additional data shall be reported to DWQ per Part V. E of this permit.

- Metals
 

Aluminum	Barium	Total	Copper	Lead	Nickel	Silver
Arsenic	Cadmium	Chromium	Cyanide	Mercury	Selenium	Zinc

**Table References End**

**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 Snyderville Basin Water Reclamation District (SBWRD) submitted their 2018 annual biosolids report on February 20, 2019. The report states the SBWRD produced 1094 dry metric tons (DMT) of solids.

The SBWRD stabilizes the solids (sewage sludge) in oxidation ditches at both of their Water Reclamation facilities with a mean cell residence time of about twenty days. The stabilized solids are dewatered with centrifuges to about eighteen percent solids. Since the solids produced by SBWRD cannot meet Class A or Class B for land application requirements at their own facilities due to odor concerns, the solids need to be further treated before any of the solids can be land applied for beneficial use.

The solids are disposed of at one of two disposal facilities; Wasatch Regional Landfill or E.T. Technologies S.R.S (E.T. Tech). Currently all the solids are transported to E.T. Tech located at 6030 West 1300 South in Salt Lake City, adjacent to the Salt Lake Valley Landfill.

ET Technologies is a soil regeneration site and operates under a special use permit issued by the Salt Lake Valley Health Department. The biosolids that are hauled to ET Tech must pass a toxicity characteristic leaching procedure (TCLP) test, which includes testing for inorganics, heavy metals, and volatile organic compounds. As the trucks pull through the weigh station the drivers receive a manifest and the loads are screened for radiation.

After the testing requirements have been performed, the biosolids are mixed with petroleum contaminated soil, sawdust, fats oils and greases from restaurants, and other waste materials. The mixture is processed in bioremediation impoundment cells for about a year before it is used for final landfill final cover at the adjacent Salt Lake Valley Solid Waste Management Facility for land reclamation purposes.

The last inspection conducted at the facility was September 11, 2019. The inspection showed that Silver Creek facility was in compliance with all aspects of the 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

SBWRD produces enough biosolids at their facilities to be required to sample at least four times a year. But all the biosolids are transferred to another facility for further treatment and use at the land fill. This is considered disposal and as a result SBWRD has been allowed to reduce the monitoring frequency below the required four times per 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 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 1 and the monthly average pollutant concentrations in Table 3 (see Table 1 and 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, (mg/kg)	CPLR <sup>1</sup> , (mg/ha)	Pollutant Conc. Limits, (mg/kg)	APLR <sup>2</sup> , (mg/ha-yr)
Total Arsenic	75	41	41	41
Total Cadmium	85	39	39	39
Total Copper	4300	1500	1500	1500
Total Lead	840	300	300	300
Total Mercury	57	17	17	17
Total Molybdenum	75	N/A	N/A	N/A
Total Nickel	420	420	420	420
Total Selenium	100	100	100	100
Total Zinc	7500	2800	2800	2800

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	
Class A	Class B
B Salmonella species –less than three (3) MPN <sup>3</sup> per four (4) grams total solids (or less than 1,000 fecal coliforms per gram total solids)	Fecal Coliforms –less than 2,000,000 colony forming units (CFU) per gram total solids
Enteric viruses –less than one (1) MPN (or plaque forming unit) per four (4) grams total solids	
Viable helminth ova –less than one (1) MPN per four (4) grams total solids	

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. The PFRP’s can be found under 40 CFR 503.32(a). The SBWRD has chosen to not achieve PFRP through any method, but has chosen to transfer the biosolids to another facility for further treatment and disposal.

<sup>1</sup> CPLR -- Cumulative Pollutant Loading Rate

<sup>2</sup> APLR – Annual Pollutant Loading Rate

<sup>3</sup> MPN –Most Probable Number

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). The PSRP's can be found under 40 CFR 503.32 (b). The SBWRD has chosen to not achieve PSRP through any method, but has chosen to transfer the biosolids to another facility for further treatment and disposal.

#### Vector Attraction Reduction (VAR)

If the biosolids are land applied SBWRD will be required to meet VAR through the use of a method of listed under *40 CFR 503.33*. The SBWRD intends to meet the vector attraction reduction requirements through the methods listed below.

1. Under *40 CFR 503.33(b)(11)*, Landfill -- If the solids are land filled the solids must be covered with soil or another approved material at the end of each operating day for vector attraction reduction.

If the biosolids do not meet a method of VAR, the biosolids cannot be land applied. Transfer of the biosolids to E.T. Tech is the handled the same as landfilling, and E.T. Tech covers/ mixes the soil at the end of each day.

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

SBWRD 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 SBWRD has sampled at least once a year since in 2010. A summary of the monitoring data is below.

Silver Creek Metals Monitoring Data 2010 through 2018.

Silver Creek Metals Monitoring Data (2010 – 2018)				
Parameter	Table 4, mg/kg Ceiling Concentration	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
Arsenic	75	41	9.99	22.6
Cadmium	85	39	5.03	17.2
Copper	4300	1,500	430	883
Lead	840	300	23.4	81.7
Mercury	57	17	0.49	1.15
Molybdenum	75	75	3.55	6.07
Nickel	420	400	7.02	12.5
Selenium	100	36	6.61	17.6
Zinc	7500	2,800	1167	2950

The biosolids met *Table 3 of 40 CFR 503.13*, limits for metals except for zinc. The zinc results are provided below.

Silver Creek Zinc Monitoring Data				
Year	Table 4, mg/kg Ceiling Concentration	Table 3, mg/kg (Exceptional Quality)	Average, mg/kg	Maximum, mg/kg
2018	7500	2,800	188	188
2017	7500	2,800	519	519
2016	7500	2,800	221	221
2015	7500	2,800	192	192
2014	7500	2,800	1500	1500
2013	7500	2,800	1330	1330
2012	7500	2,800	1760	1760
2011	7500	2,800	2950	2950
2010	7500	2,800	1840	1840

The biosolids met *Table 3 of 40 CFR 503.13*, limits for zinc except for 2011 when the results exceeded the Table 3 limit. The rest of the time the biosolids met the requirements to be considered Exceptional Quality in regards to metals for land application. In the future, if SBWRD employs Land Application of biosolids, or another form of beneficial use, they will need to increase the monitoring they preform prior to beginning that practice.

**PATHOGEN MONITORING DATA**

The SBWRD was not required to monitor the biosolids for pathogens since they are not being beneficially used, and are being transferred to the landfill. Therefore, there is no monitoring data. In the future, if SBWRD employs land application of biosolids, or another form of beneficial use, they will need to increase the monitoring they preform prior to beginning that practice.

## **STORM WATER**

### **STORMWATER REQUIREMENTS**

Storm water provisions are included in this combined UPDES permit.

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

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

1. The development of a pollution prevention team,
2. Development of drainage maps and materials stockpiles,
3. An inventory of exposed materials,
4. Spill reporting and response procedures,
5. A preventative maintenance program,
6. Employee training,
7. Certification that storm water discharges are not mixed with non-storm water discharges,
8. Compliance site evaluations and potential pollutant source identification, and
9. Visual examinations of storm water discharges.

### **PRETREATMENT REQUIREMENTS**

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

The 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 guidance developed by the Division of Water Quality. 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 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. The permittee should utilize EPA's Local Limits Development Guidance to justify the re-evaluation of 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 Silver Creek Water Reclamation Facility is classified as a major municipal discharger, the renewal permit will require whole effluent toxicity (WET) testing. Whole Effluent Toxicity Testing from Outfall 001 shall consist of alternating testing between two species *Ceriodaphnia dubia* and *Pimephales promelas* as detailed in the permit.

The permit will contain the standard requirements for accelerated testing upon failure of a WET test, and a Preliminary Toxicity Investigation (PTI) and Toxicity Reduction Evaluation (TRE) as necessary.



**ADDENDUM TO FSSOB**

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

**Responsiveness Summary**

No comments were received during the public notice period ending May 18, 2020.

DWQ-2019-016404

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**ATTACHMENT 2**

*Wasteload Analysis*

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

**Date: March 11, 2020**

**Facility: Silver Creek Water Reclamation Facility  
Snyderville Basin Water Reclamation District  
UPDES No. UT0024414**

**Receiving water: Silver Creek (1C, 2B, 3A, 4)**

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

Discharge

Outfall 001: Silver Creek

The maximum monthly mean discharge is 4.0 MGD and the maximum daily design discharge is 8.0 MGD. These discharge rates were provided by Snyderville Basin Water Reclamation District.

Receiving Water

The receiving water for Outfall 001 is an open channel that drains to Silver Creek, which is tributary to the Weber River and Echo Reservoir. The outlet channel was determined to be a natural tributary of Silver Creek, with the same classification as Silver Creek. A technical memo regarding the determination is included in Appendix D.

Per UAC R317-2-13.4.a, the designated beneficial uses for Weber River and tributaries, from Stoddard diversion to headwaters, is 1C, 2B, 3A, and 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *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.*

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Protection of Downstream Uses

Per UAC R317-2-8, *all actions to control waste discharges under these rules shall be modified as necessary to protect downstream designated uses.*

Receiving Water Critical Flow/Water Quality

Typically, the critical flow for the wasteload analysis is considered the lowest average stream flow for seven consecutive days with a ten year return frequency (7Q10). For Silver Creek, flow records from USGS stream gage # 10129900 Silver Creek Near Silver Creek Junction, UT for the active period 10/1/2001 to 12/31/2012 were obtained. The gage is located immediately downstream of the discharge from the treatment plant. Average daily discharge records were obtained from the treatment plant for the same time period. The upstream flow in Silver Creek was calculated by subtracting the treatment plant discharge from the flow gage records. The 7Q10 was calculated using the EPA computer software DFLOW V3.1b. (Table 1).

**Table 1: Seasonal critical low flow**

Season	Flow (cfs)	
	Outlet Channel	Silver Creek
Summer	0	0
Fall	0	0
Winter	0	0
Spring	0	0

Receiving water quality data was obtained from monitoring site 4926800 Silver Creek above Silver Creek WWTP. The average seasonal value was calculated for each constituent with available data in the receiving water.

Impairment/TMDL

Silver Creek was listed as impaired for arsenic, cadmium, zinc, dissolved oxygen, pH, nitrate, total dissolved solids, and benthic macroinvertebrates on the 303(d) list in *Utah's 2016 Integrated Report* (DWQ).

The *Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium* (Michael Baker Jr. Inc. and Psomas, 2004) was approved by EPA in 2004.

Echo Reservoir was listed as impaired for dissolved oxygen, temperature, and total phosphorus. The *Rockport Reservoir and Echo Reservoir TMDL Final Report* (SWCA Environmental Consultants, 2014) has allocations for total phosphorus and total nitrogen loads.

Mixing Zone

The discharge is considered instantaneously fully mixed since there is no background flow in the receiving water during the critical condition. Therefore, no mixing zone is allowed.

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Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total suspended solids (TSS), dissolved oxygen (DO), BOD<sub>5</sub>, total phosphorus (TP), total nitrogen (TN), total ammonia (NH<sub>4</sub>), E. coli, pH and dissolved metals, as determined in consultation with the UPDES Permit Writer.

WET Limits

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

**Table 2: WET Limits for IC<sub>25</sub>**

Season	Percent Effluent
Summer	100%
Fall	100%
Winter	100%
Spring	100%

Water Quality Modeling

A QUAL2Kw model of the receiving water was built and calibrated to synoptic survey data collected by DWQ staff in August of 2012 and is documented in the *QUAL2Kw Model Calibration Report for Silver Creek* (UDWQ 2019). The QUAL2Kw calibration model extends 1.9 kilometers along Silver Creek downstream from the treatment facility outfall to between the eastbound and westbound lanes of I-80.

The calibrated QUAL2Kw model was modified for the wasteload analysis. Since there is no flow in Silver Creek during critical low flow conditions, the WRF was made the headwaters of the wasteload model. The outlet channel from the WRF outfall to the confluence with Silver Creek was added to the wasteload model.

The QUAL2Kw model was used for determining the WQBELs for parameters related to eutrophication and in-stream DO criteria, as well as ammonia toxicity. Effluent concentrations were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards, the concentration in the model was set at the secondary standard.

In order to determine compliance with dissolved oxygen criteria in Silver Creek during the critical summer season, water quality modeling was conducted by SWCA Environmental Consultants using the QUAL2Kw model. SWCA coordinated with Snyderville Basin Sewer Improvement District (SBSID) to develop effluent limit combinations of CBOD, NH<sub>4</sub>, TN, TP, and DO that would meet the instream DO criteria. The results of the modeling analysis are summarized in *Silver Creek Water Quality Study Final Technical Report* (SWCA Environmental

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Consultants, 2013). An additional effluent limit combination was run by UDWQ at the request of SBSID and was selected as the preferred scenario by SBSID. The effluent limits for CBOD, NH4, TN, TP and DO from the selected scenario are listed below in Table 4 and summarized in Appendix A.

Effluent limits for conservative constituents were determined using a mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in Appendix B.

The wasteload files are available for review by request.

Ammonia

The QUAL2Kw model was also utilized to determine seasonal limits for ammonia. Ammonia exerts an oxygen demand on the water column through nitrification to nitrate and is toxic to aquatic life above certain thresholds that are pH and temperature dependent. Seasonal limits were determined for meeting in-stream DO criteria and for meeting in-stream toxicity criteria.

The treatment process proposed for the Silver Creek WRF is very similar to the process at the East Canyon WRF; therefore, the pH and temperature values for the discharge were based on monitoring data from the East Canyon WRF for 2013. Seasonal average pH and temperature were used for determining chronic limits (30-day average) and maximum pH was used for determining acute limits (1-hour).

In 2013, EPA adopted new criteria for ammonia that are lower than current criteria based on the presence of unionid mussels and nonpulmonate snails. States are required to adopt the criteria or establish alternative, scientifically defensible criteria. Utah is initiating studies to support adoption of new ammonia criteria. For planning purposes, ammonia limits to meet the new criteria were calculated (Table 3). The limits were determined by calculating the criteria based on the pH and temperature of the discharge and did not consider in-stream processes that affect ammonia, pH and temperature. The analysis assumed presence of the most sensitive species and is summarized in Appendix C.

**Table 3: Ammonia Limits to Meet EPA 2013 Ammonia Criteria**

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Ammonia (mg/l) [Toxicity]			1 hour			30 days
Summer (Jul-Aug)	12.1	12.1		2.1	2.1	
Fall (Sep-Oct)	15.2	15.2		2.7	2.7	
Winter (Dec-Mar)	9.6	9.6		3.5	3.5	
Spring (Apr-Jun)	12.6	12.6		3.0	3.0	

Metals

Water quality standards for the protection of aquatic life are based on dissolved metals, as the dissolved fraction is a better representation of the biologically active portion of the metal than is the total recoverable fraction. Dissolved metals standards for cadmium, chromium (III), copper, lead, nickel and zinc are hardness dependent. In waters with hardness greater than 400 mg/l as

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CaCO<sub>3</sub>, calculations are to assume a hardness of 400 mg/l as CaCO<sub>3</sub>. The maximum hardness of 400 mg/l was used for the receiving water and the effluent.

By regulation (40 CFR 122.45(c)), the permit limit must be expressed as total recoverable metal. This regulation exists because chemical differences between the effluent discharge and the receiving water body are expected to result in changes in the partitioning between dissolved and adsorbed forms of metal. A metals translator is required to calculate a total recoverable permit limit to meet a dissolved metal water quality standard. The translator is the fraction of total recoverable metal in the downstream water that is dissolved. Per *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA, 1996), the translator may be estimated in three ways. (1) It may be assumed to be equivalent to the criteria conversion factors (Table 2.14.3a and 2.14.3b under UAC R317-2-14). (2) It may be developed directly as the ratio of dissolved to total recoverable metal. (3) Or it may be developed through the use of a partition coefficient that is functionally related to the number of metal binding sites on the adsorbent in the water column (i.e., concentrations of TSS, TOC, or humic substances). For this wasteload allocation, the criteria conversion factors were used for metals translators.

Effluent Limits

Water quality based effluent limits are summarized in Table 4. Detailed list of effluent limits can be found in the appendices.

The load limit for zinc, total phosphorus and total nitrogen from the TMDLs is based on both current and future load allocations based on facility expansion.

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**Table 4: Water Quality Based Effluent Limits Summary**

Effluent Constituent	Acute			Chronic			Source
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period	
Flow (MGD)		8.0	1 day		4.0	30 days	SBWRD
Dissolved Oxygen (mg/L)	4.0	5.5 <sup>c</sup>	Max	6.5	6.5 <sup>e</sup>	30 days	Appendix A
CBOD <sub>5</sub> (mg/L)					10 <sup>e</sup>	30 days	Appendix A
Ammonia (mg/l)	Varies	13.0 <sup>d</sup>	1 hour	Varies	1.0 <sup>e</sup>	30 days	Appendix A
Summer (Jul-Aug)							
Fall (Sep-Nov)							
Winter (Dec-Mar)							
Spring (Apr-Jun)							
Nitrate (mg/L)	10.0 <sup>b</sup>	10.0	Max				Appendix A
Total Nitrogen (mg/L)							Appendix A
Summer (Jul-Aug)					10 <sup>e</sup>	30-days	
Fall (Sep-Nov)					10.5 <sup>e</sup>		
Winter (Dec-Mar)					11 <sup>e</sup>		
Spring (Apr-Jun)					10.5 <sup>e</sup>		
Total Nitrogen (kg)							
Summer Load: April – Sept.					20,782		
Annual Load					48,585		
Total Phosphorus (mg/L)					1.0 <sup>e,f</sup>	30 days	TBPEL, Append A
Total Phosphorus (kg)							Echo Reservoir TMDL
Summer Load: April – Sept.					2,078		
Annual Load					4,849		
Total Dissolved Solids (mg/L)	1,900 <sup>g</sup>	1,900	Max				Appendix A
Metals, Total Recoverable (µg/l)							Appendix B
Aluminum	750	750	1 hr	N/A	N/A	N/A	
Antimony	5.6 <sup>b</sup>	5.6	Max				
Arsenic	10 <sup>b</sup>	10	Max	150	150	4 day	
Barium	1,000 <sup>b</sup>	1,000	Max				
Cadmium	8.7	8.7	1 hr	0.8	0.8 <sup>a</sup>	4 day	
Chromium (Total)	50 <sup>b</sup>	50	Max				
Chromium (III)	5,612	5,612	1 hr	268	268	4 day	
Chromium (VI)	16	16	1 hr	11	11	4 day	
Copper	52	52	1 hr	30	30	4 day	
Cyanide	22	22	1 hr	5.2	5.2	4 day	
Iron	1,000	1,000	Max				
Lead	25.5 <sup>b</sup>	25.5	Max	19	19	4 day	
Mercury	2.4 <sup>b</sup>	2.4	Max	0.012	0.012	4 day	
Nickel	100 <sup>b</sup>	100	1 hr	168.5	168.5	4 day	
Selenium	18	18	1 hr	4.6	4.6	4 day	
Silver	41	41	1 hr				
Zinc	388	388	1 hr	388	300	4 day	
Zinc Annual Load (kg)					321.1 <sup>h</sup>		Silver Creek TMDL

a: Effluent limit per *Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium* (Michael Baker Jr. Inc. and Psomas, 2004). Load limit is for combined current and future allocation.  
b: Standard based on human health criterion.  
c: Based on previous permit limit.  
d: Based on meeting in-stream ammonia toxicity criteria in Silver Creek.  
e: Based on meeting in-stream DO criteria in Silver Creek.  
f: Based on Technology Based Effluent Limit, meets WQBEL.  
g: Site specific standard for TDS for Silver Creek from Tollgate Canyon to headwaters.  
h: Effluent limit per *Rockport Reservoir and Echo Reservoir Total Maximum Daily Loads* (SWCA Inc. 2014). Load limit is for combined current and future allocation.

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Antidegradation Level I Review

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

The pollutant concentration and load from the facility is being increased under the proposed treatment plant upgrade; therefore, a Level II Antidegradation Review (ADR) is required for this discharge.

**Prepared by: Nicholas von Stackelberg, P.E.**  
**Watershed Protection Section**

Documents:

WLA Document: *silver\_creek\_potw\_wla\_2020-03-11.docx*

QUAL2Kw Calibration Model: *silver\_q2k\_cal\_2012\_v4.xlsm*

QUAL2Kw Wasteload Model: *silver\_potw\_q2kw\_wla\_2019\_v4\_altseason.xlsm*

References:

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

*QUAL2Kw Model Calibration Report for Silver Creek.* 2019. Utah Division of Water Quality.

*Rockport Reservoir and Echo Reservoir Total Maximum Daily Loads Final Report.* 2014. SWCA Environmental Consultants, Inc.

*Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium.* 2004. Michael Baker Jr. Inc. and Psomas.

*Silver Creek Water Quality Study Final Technical Report.* 2013. SWCA Environmental Consultants, Inc.

*Utah's 2016 Integrated Report.* 2016. Utah Division of Water Quality.

*Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah.* 2012. Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller.

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

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**WASTELOAD ANALYSIS [WLA]**

Date: 3/11/2020

**Appendix A: QUAL2Kw Analysis for Eutrophication**

Discharging Facility: Silver Creek WRF  
 UPDES No: UT-0021911  
 Permit Flow [MGD]: 4.00 Maximum Monthly Flow  
 8.00 Maximum Daily Flow

Receiving Water: Silver Creek  
 Stream Classification: 1C, 2B, 3A, 4  
 Stream Flows [cfs]: 0.0 Summer (July-Aug) Critical Low Flow  
 0.0 Fall (Sep-Nov)  
 0.0 Winter (Dec-Mar)  
 0.0 Spring (Apr-June)

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

**Modeling Information**

A QUAL2Kw model was used to determine these effluent limits.

**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.

<b>Headwater/Upstream Information</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (cfs)		No Flow		

**Discharge Information - Silver Creek WRF**

<b>Chronic</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	4.0	4.0	4.0	4.0
Temperature (deg C)	17.2	13.0	9.7	12.2
Specific Conductance (µmhos)	1800	1800	1800	1800
Inorganic Suspended Solids (mg/L)	6.0	6.0	6.0	6.0
Dissolved Oxygen (mg/L)	6.5	6.5	6.5	6.5
CBOD <sub>5</sub> (mg/L)	10.0	10.0	10.0	10.0
Organic Nitrogen (mg/L)	1.00	1.00	1.00	1.00
NH <sub>4</sub> -Nitrogen (mg/L)	1.00	2.50	3.00	2.50
NO <sub>3</sub> -Nitrogen (mg/L)	8.00	7.00	7.00	7.00
Organic Phosphorus (mg/L)	0.50	0.50	0.50	0.50
Inorganic Ortho-Phosphorus (mg/L)	0.50	0.50	0.50	0.50
Phytoplankton (µg/L)	0.00	0.00	0.00	0.00
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	200	200	200	200
pH	7.2	7.2	7.1	7.1

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	<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)		8.0	8.0	8.0	8.0
Temperature (deg C)		18.4	17.3	11.6	16.3
Specific Conductance (µmhos)		1800	1800	1800	1800
Inorganic Suspended Solids (mg/L)		6.0	6.0	6.0	6.0
Dissolved Oxygen (mg/L)		5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)		10.0	10.0	10.0	10.0
Organic Nitrogen (mg/L)		1.00	1.00	1.00	1.00
NH <sub>4</sub> -Nitrogen (mg/L)		13.00	15.00	8.00	11.00
NO <sub>3</sub> -Nitrogen (mg/L)		8.00	8.00	8.00	8.00
Organic Phosphorus (mg/L)		0.50	0.50	0.50	0.50
Inorganic Ortho-Phosphorus (mg/L)		0.50	0.50	0.50	0.50
Phytoplankton (µg/L)		0.00	0.00	0.00	0.00
Detritus [POM] (mg/L)		0.0	0.0	0.0	0.0
Alkalinity (mg/L)		200	200	200	200
pH		7.4	7.3	7.7	7.5

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

### 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 reflect the environmental conditions expected at low stream flows.

### Effluent Limitations based upon Water Quality Standards for DO

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

<b>Constituent</b>	<b>Standard</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	N/A	4.0	4.0	4.0	4.0
CBOD <sub>5</sub> (mg/L)	N/A	10.0	10.0	10.0	10.0
Dissolved Oxygen [30-day Ave] (mg/L)	6.5	6.5	6.5	6.5	6.5
Dissolved Oxygen [7-day Ave] (mg/L)	5.0	5.0	5.0	5.0	5.0
Dissolved Oxygen [Minimum] (mg/L)	4.0	4.0	4.0	4.0	4.0
NH <sub>4</sub> -Nitrogen (mg/L)	Varies	1.0	2.5	3.0	2.5
Total Nitrogen (mg/L)	N/A	10.0	10.5	11.0	10.5
Total Phosphorus (mg/L)	N/A	1.0	1.0	1.0	1.0

### 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>NH<sub>4</sub>-Nitrogen (mg/L)</b>	<b>Standard</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Acute [1-hour average]	Varies	13.0	15.0	8.0	11.0
Chronic [30-day average]	Varies	3.7	4.6	5.0	5.0

### 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.

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**Coefficients and Other Model Information**

<i>Parameter</i>	<i>Value</i>	<i>Units</i>
<b><i>Stoichiometry:</i></b>		
Carbon		40 gC
Nitrogen		7.2 gN
Phosphorus		1 gP
Dry weight		100 gD
Chlorophyll		1 gA
<b><i>Inorganic suspended solids:</i></b>		
Settling velocity		2 m/d
<b><i>Oxygen:</i></b>		
Reaeration model	Tsivoglou-Neal	
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><i>Slow CBOD:</i></b>		
Hydrolysis rate		0 /d
Temp correction		1.047
Oxidation rate		0.103 /d
Temp correction		1.047
<b><i>Fast CBOD:</i></b>		
Oxidation rate		10 /d
Temp correction		1.047
<b><i>Organic N:</i></b>		
Hydrolysis		0.0557 /d
Temp correction		1.07
Settling velocity		0.19837 m/d
<b><i>Ammonium:</i></b>		
Nitrification		3 /d
Temp correction		1.07
<b><i>Nitrate:</i></b>		
Denitrification		0.7560365 /d
Temp correction		1.07
Sed denitrification transfer coeff		0.3346 m/d
Temp correction		1.07
<b><i>Organic P:</i></b>		
Hydrolysis		0.148895 /d
Temp correction		1.07
Settling velocity		0.150074 m/d
<b><i>Inorganic P:</i></b>		
Settling velocity		0.2742 m/d
Sed P oxygen attenuation half sat constant		0.51586 mgO2/L

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**Phytoplankton:**

Max Growth rate	2.60985 /d
Temp correction	1.07
Respiration rate	0.206492 /d
Temp correction	1.07
Death rate	0.36118 /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	27.53835 ugN/L
Settling velocity	0.4930385 m/d

**Bottom Plants:**

Growth model	Zero-order
Max Growth rate	8.3462 gD/m2/d or /d
Temp correction	1.07
First-order model carrying capacity	100 gD/m2
Basal respiration rate	0.0291854 /d
Photo-respiration rate parameter	0.01 unitless
Temp correction	1.07
Excretion rate	0.42997 /d
Temp correction	1.07
Death rate	4.14 /d
Temp correction	1.07
External nitrogen half sat constant	455.924 ugN/L
External phosphorus half sat constant	62.8735 ugP/L
Inorganic carbon half sat constant	9.78E-05 moles/L
Bottom algae use HCO3- as substrate	Yes
Light model	Smith
Light constant	96.0028 mgO <sup>2</sup> /L
Ammonia preference	25.4271 ugN/L
Subsistence quota for nitrogen	0.4378356 mgN/gD
Subsistence quota for phosphorus	0.0509885 mgP/gD
Maximum uptake rate for nitrogen	408.673 mgN/gD/d
Maximum uptake rate for phosphorus	62.4695 mgP/gD/d
Internal nitrogen half sat ratio	3.26674
Internal phosphorus half sat ratio	1.730743
Nitrogen uptake water column fraction	1
Phosphorus uptake water column fraction	1

**Detritus (POM):**

Dissolution rate	4.396892 /d
Temp correction	1.07
Settling velocity	0.4995725 m/d

**pH:**

Partial pressure of carbon dioxide	370 ppm
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**TRC:**

Decay rate	0.8 /d
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Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	43.2	25.3	9.4	33.5
Max. Air Temperature, F	79.8	57.0	33.4	62.4
Dew Point, Temp., F	55.7	30.9	22.4	46.2
Wind, ft./sec. @ 21 ft.	5.2	3.5	3.2	5.6
Cloud Cover, %	10%	10%	10%	10%

**Other Inputs:**

Bottom Algae Coverage	N/A
Bottom SOD Coverage	N/A
Prescribed SOD, gO <sub>2</sub> /m <sup>2</sup> /day	N/A

**WASTELOAD ANALYSIS [WLA]**  
**Appendix B: Mass Balance Mixing Analysis for Conservative Constituents**

Date: 3/11/2020

Discharger:	Silver Creek WRF	
Receiving Stream:	Silver Creek	
Stream Classification:	1C, 2B, 3A, 4	
Aquatic Life Class 3:	3A	
Agriculture Class 4:	Yes	
Direct Drinking Water Source:	Yes	
Important Fishery for Human Consumption:	Yes	
Season:	Annual	
Stream Flow:	0.00 cfs	
Stream Flow [Acute]:	0.00 cfs	
Stream Flow [Chronic]:	0.00 cfs	
Stream Hardness:	400 mg/l as CaCO3	
Effluent Flow:	4.00 MGD	
	6.19 cfs	
Effluent Hardness:	400 mg/l as CaCO3	
Mixed Flow:	6.19 cfs	Dilution Fact. 0.00
Mixed Flow [Acute]	6.19 cfs	
Mixed Flow [Chronic]	6.19 cfs	
Mixed Hardness:	400 mg/l as CaCO3	

**Human Health Criteria (Class 1C Waters) - Maximum**

	Units	Standard	Upstream Concentration	Effluent Limit
<b>Dissolved Metals</b>				
Arsenic	µg/L	10.0	N/A	10.0
Barium	µg/L	1000.0	N/A	1000.0
Beryllium	µg/L	4.0	N/A	4.0
Cadmium	µg/L	10.0	N/A	10.0
Chromium	µg/L	50.0	N/A	50.0
Lead	µg/L	15.0	N/A	15.0
Mercury	µg/L	2.0	N/A	2.0
Selenium	µg/L	50.0	N/A	50.0
Silver	µg/L	50.0	N/A	50.0
<b>Inorganics</b>				
Bromate	µg/L	10.0	N/A	10.0
Chlorite	mg/l	1000.0	N/A	1000.0
Fluoride Min. (varies with air temperature)	mg/l	1.4	N/A	1.4
Fluoride Max. (varies with air temperature)	mg/l	2.4	N/A	2.4
Nitrates as N	mg/l	10.0	N/A	10.0
<b>Organics</b>				
<b>Chlorophenoxy Herbicides</b>				
2,4-D	µg/L	70.0	N/A	70.0
2,4,5-TP	µg/L	10.0	N/A	10.0
Methoxychlor	µg/L	40.0	N/A	40.0

**Aquatic Wildlife Criteria (Class 3 Waters)**

Chronic Metals, µg/L	Total Recoverable Standard	Conversion Factor	Dissolved Standard	Upstream Concentration	Dissolved Effluent Limit	Total Recoverable Effluent Limit
Aluminum*	N/A	1.000	N/A	N/A	N/A	N/A
Arsenic	150.0	1.000	150.0	N/A	150.0	150.0
Cadmium	0.76	0.851	0.64	N/A	0.64	0.76
Chromium III	268.2	0.860	230.7	N/A	230.7	268.2
Chromium VI	11.0	1.000	11.0	N/A	11.0	11.0
Copper	30.5	0.960	29.3	N/A	29.3	30.5
Cyanide	5.2	1.000	5.2	N/A	5.2	5.2
Iron						
Lead	18.6	0.589	10.9	N/A	10.9	18.6
Mercury	0.012	1.000	0.012	N/A	0.012	0.012
Nickel	168.5	0.997	168.0	N/A	168.0	168.5
Selenium	4.6	1.000	4.6	N/A	4.6	4.6
Silver						
Tributyltin	0.072	1.000	0.072	N/A	0.072	0.072
Zinc	387.8	0.986	382.4	N/A	382.4	387.8

\* Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaCO3 in the receiving water after mixing, the 87 µg/l chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 µg/l acute aluminum criterion (expressed as total recoverable).

Acute Metals, µg/L	Total Recoverable		Conversion Factor	Dissolved		Upstream Concentration	Dissolved		Total Recoverable
	Standard			Standard	Effluent Limit		Effluent Limit		
Aluminum	750.0		1.000	750.0		N/A	750.0		750.0
Arsenic	340.0		1.000	340.0		N/A	340.0		340.0
Cadmium	8.7		0.886	7.7		N/A	7.7		8.7
Chromium III	5611.7		0.316	1773.3		N/A	1773.3		5611.7
Chromium VI	16.0		1.000	16.0		N/A	16.0		16.0
Copper	51.7		0.960	49.6		N/A	49.6		51.7
Cyanide	22.0		1.000	22.0		N/A	22.0		22.0
Iron	1000.0		1.000	1000.0		N/A	1000.0		1000.0
Lead	476.8		0.589	280.8		N/A	280.8		476.8
Mercury	2.4		1.000	2.4		N/A	2.4		2.4
Nickel	1515.9		0.998	1512.9		N/A	1512.9		1515.9
Selenium	18.4		1.000	18.4		N/A	18.4		18.4
Silver	41.1		0.850	34.9		N/A	34.9		41.1
Tributyltin	0.46		1.000	0.46		N/A	0.46		0.46
Zinc	387.8		0.978	379.3		N/A	379.3		387.8

Physical	Upstream	
	Standard	Effluent Limit
Temperature (deg C) [Maximum]	20.0	N/A
pH [Minimum]	6.5	N/A
pH [Maximum]	9.0	N/A

Inorganics, µg/L		
Hydrogen Sulfide (un-dissociated)	2.0	N/A
Phenol (Maximum)	0.10	N/A

Radiological pCi/l		
Gross Alpha	15.00	N/A

Organics (µg/L)	Chronic	Acute	Upstream	Chronic	Acute
	Standard	Standard	Concentration	Effluent Limit	Effluent Limit
Acrolein	3.0	3.0	N/A	3.0	3.0
Aldrin		1.5	N/A		1.5
Chlordane	0.0043	1.2	N/A	0.0043	1.2
Chlorpyrifos	0.041	0.083	N/A		0.083
DDT, DDE	0.0010	0.55	N/A	0.0010	0.55
Diazinon	0.17	0.17	N/A		0.17
Dieldrin	0.056	0.24	N/A	0.056	0.24
Alpha-Endosulfan	0.056	0.11	N/A	0.056	0.11
Beta-Endosulfan	0.056	0.11	N/A	0.056	0.11
Endrin	0.036	0.086	N/A	0.036	0.086
Heptachlor	0.0038	0.26	N/A	0.0038	0.26
Heptachlor epoxide	0.0038	0.26	N/A	0.0038	0.26
Lindane	0.08	1.0	N/A	0.08	1.0
Methoxychlor		0.03	N/A		0.03
Mirex		0.001	N/A		0.001
Nonylphenol	6.6	28.0	N/A		28.0
Parathion	0.013	0.066	N/A		0.066
PCB's	0.014		N/A	0.014	
Pentachlorophenol (varies with pH)	15.0	19.0	N/A	15.0	19.0
Toxaphene	0.0002	0.73	N/A	0.0002	0.73

**Agricultural Criteria (Class 4 Waters) - Maximum**

Units	Upstream	
	Standard	Effluent Limit
Total Dissolved Solids	mg/l	1900.0
Arsenic	µg/L	100.0
Boron	µg/L	750.0
Cadmium	µg/L	10.0
Chromium	µg/L	100.0
Copper	µg/L	200.0
Lead	µg/L	100.0
Selenium	µg/L	50.0

**Numeric Criteria for the Protection of Human Health from Consumption of Water and Fish**

Parameter	Class 1C (Water and Organism)			Class 3 (Organism Only)		Most Stringent Limitation	
	Maximum Conc., µg/l	Standard	Upstream Concentration	Effluent Limitation	Standard		Effluent Limitation
<b>Toxic Organics</b>							
Antimony	5.6	5.6	N/A	5.6	640	640	5.6
Copper	1300	1300	N/A	1300			1300
Nickel	610	610	N/A	610	4600	4600	610
Selenium	170	170	N/A	170	4200	4200	170
Thallium	0.24	0.24	N/A	0.24	0.47	0.47	0.24
Zinc	7400	7400	N/A	7400	26000	26000	7400
Cyanide	4	4	N/A	4	400	400	4
Asbestos (million fibers/L)	7	7	N/A	7			7
2,3,7,8-TCDD Dioxin	5.00E-09	5.00E-09	N/A	5.00E-09	5.1E-09	5.1E-09	5.00E-09
Acrolein	3	3	N/A	3	400	400	3
Acrylonitrile	0.061	0.061	N/A	0.061	7	7	0.061
Benzene	2.1	2.1	N/A	2.1	51	51	2.1
Bromoform	7	7	N/A	7	120	120	7
Carbon Tetrachloride	0.4	0.4	N/A	0.4	5	5	0.4
Chlorobenzene	100	100	N/A	100	800	800	100
Chlorodibromomethane	0.8	0.8	N/A	0.8	21	21	0.8
Chloroform	60	60	N/A	60	2000	2000	60
Dichlorobromomethane	0.95	0.95	N/A	0.95	27	27	0.95
1,2-Dichloroethane	9.9	9.9	N/A	9.9	2000	2000	9.9
1,1-Dichloroethylene	300	300	N/A	300	20000	20000	300
1,2-Dichloropropane	0.9	0.9	N/A	0.9	31	31	0.9
1,3-Dichloropropene	0.27	0.27	N/A	0.27	12	12	0.27
Ethylbenzene	68	68	N/A	68	130	130	68
Methyl Bromide	100	100	N/A	100	10000	10000	100
Methylene Chloride	20	20	N/A	20	1000	1000	20
1,1,2,2-Tetrachloroethane	0.2	0.2	N/A	0.2	3	3	0.2
Tetrachloroethylene	10	10	N/A	10	29	29	10
Toluene	57	57	N/A	57	520	520	57
1,2 -Trans-Dichloroethyle	100	100	N/A	100	4000	4000	100
1,1,1-Trichloroethane	10000	10000	N/A	10000	200000	200000	10000
1,1,2-Trichloroethane	0.55	0.55	N/A	0.55	8.9	8.9	0.55
Trichloroethylene	0.6	0.6	N/A	0.6	7	7	0.6
Vinyl Chloride	0.022	0.022	N/A	0.022	1.6	1.6	0.022
2-Chlorophenol	30	30	N/A	30	800	800	30
2,4-Dichlorophenol	10	10	N/A	10	60	60	10
2,4-Dimethylphenol	100	100	N/A	100	3000	3000	100
2-Methyl-4,6-Dinitrophenol	2	2	N/A	2	30	30	2
2,4-Dinitrophenol	10	10	N/A	10	300	300	10
3-Methyl-4-Chlorophenol	500	500	N/A	500	2000	2000	500
Penetachlorophenol	0.03	0.03	N/A	0.03	0.04	0.04	0.03
Phenol	4000	4000	N/A	4000	300000	300000	4000
2,4,5-Trichlorophenol	300	300	N/A	300	600	600	300
2,4,6-Trichlorophenol	1.5	1.5	N/A	1.5	2.8	2.8	1.5

Parameter	Maximum Conc., µg/l	Class 1C (Water and Organism)			Class 3 (Organism Only)		Most Stringent Limitation
		Standard	Upstream Concentration	Effluent Limitation	Standard	Effluent Limitation	
<b>Toxic Organics</b>							
Acenaphthene	70	N/A	70	90	90	70	
Anthracene	300	N/A	300	400	400	300	
Benzidine	0.00014	N/A	0.00014	0.011	0.011	0.00014	
Benzo(a)Anthracene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Benzo(a)Pyrene	0.00012	N/A	0.00012	0.00013	0.00013	0.00012	
Benzo(b)Fluoranthene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Bis(2-Chloro)1-methylether	0.00015	N/A	0.00015	0.017	0.017		
Bis(2-Chloro)1-methylethylether	200	N/A	200	4000	4000		
Bis(2-Chloro)ethyl Ether	0.03	N/A	0.03	2.2	2.2		
Bis(2-Chloroisopropyl) Ether	1400	N/A	1400	65000	65000		
Bis(2-Ethylhexyl) Phthalate	0.32	N/A	0.32	0.37	0.37		
Butylbenzyl Phthalate	0.1	N/A	0.1	0.1	0.1	0.1	
2-Chloronaphthalene	800	N/A	800	1000	1000		
Chrysene	0.12	N/A	0.12	0.13	0.13	0.12	
Dibenz(a,h)Anthracene	0.00012	N/A	0.00012	0.00013	0.00013	0.00012	
1,2-Dichlorobenzene	1000	N/A	1000	3000	3000	1000	
1,3-Dichlorobenzene	7	N/A	7	10	10	7	
1,4-Dichlorobenzene	300	N/A	300	900	900	300	
3,3-Dichlorobenzidine	0.049	N/A	0.049	0.15	0.15	0.049	
Diethyl Phthalate	600	N/A	600	600	600	600	
Dimethyl Phthalate	2000	N/A	2000	2000	2000	2000	
Di-n-Butyl Phthalate	20	N/A	20	30	30	20	
2,4-Dinitrotoluene	0.049	N/A	0.049	1.7	1.7	0.049	
Dinitrophenols	10	N/A	10	1000	1000	10	
1,2-Diphenylhydrazine	0.03	N/A	0.03	0.2	0.2	0.03	
Fluoranthene	20	N/A	20	20	20	20	
Fluorene	50	N/A	50	70	70	50	
Hexachlorobenzene	0.000079	N/A	0.000079	0.000079	0.000079	0.000079	
Hexachlorobutadiene	0.01	N/A	0.01	0.01	0.01	0.01	
Hexachloroethane	0.1	N/A	0.1	0.1	0.1	0.1	
Hexachlorocyclopentadiene	4	N/A	4	4	4	4	
Ideno 1,2,3-cdPyrene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Isophorone	34	N/A	34	1800	1800	34	
Nitrobenzene	10	N/A	10	600	600	10	
N-Nitrosodiethylamine	0.0008	N/A	0.0008	1.24	1.24	0.0008	
N-Nitrosodimethylamine	0.00069	N/A	0.00069	3	3	0.00069	
N-Nitrosodi-n-Propylamine	0.005	N/A	0.005	0.51	0.51	0.005	
N-Nitrosodiphenylamine	3.3	N/A	3.3	6	6	3.3	
Pentachlorobenzene	0.1	N/A	0.1	0.1	0.1	0.1	
Pyrene	20	N/A	20	30	30	20	
1,2,4-Trichlorobenzene	0.071	N/A	0.071	0.076	0.076	0.071	
Aldrin	0.00000077	N/A	0.00000077	0.00000077	0.00000077	0.00000077	
alpha-BHC	0.00036	N/A	0.00036	0.00039	0.00039	0.00036	
beta-BHC	0.008	N/A	0.008	0.014	0.014	0.008	
gamma-BHC (Lindane)	4.2	N/A	4.2	4.4	4.4	4.2	
Hexachlorocyclohexane (HCH)	0.0066	N/A	0.0066	0.01	0.01	0.0066	
Chlordane	0.00031	N/A	0.00031	0.00032	0.00032	0.00031	
4,4-DDT	0.00003	N/A	0.00003	0.00003	0.00003	0.00003	
4,4-DDE	0.000018	N/A	0.000018	0.000018	0.000018	0.000018	
4,4-DDD	0.00012	N/A	0.00012	0.00012	0.00012	0.00012	
Dieldrin	0.0000012	N/A	0.0000012	0.0000012	0.0000012	0.0000012	
alpha-Endosulfan	20	N/A	20	30	30	20	
beta-Endosulfan	20	N/A	20	40	40	20	
Endosulfan Sulfate	20	N/A	20	40	40	20	
Endrin	0.03	N/A	0.03	0.03	0.03	0.03	
Endrin Aldehyde	1	N/A	1	1	1	1	
Heptachlor	0.0000059	N/A	0.0000059	0.0000059	0.0000059	0.0000059	
Heptachlor Epoxide	0.000032	N/A	0.000032	0.000032	0.000032	0.000032	
Methoxychlor	0.02	N/A	0.02	0.02	0.02	0.02	
Polychlorinated Biphenyls (PCB)	0.000064	N/A	0.000064	0.000064	0.000064	0.000064	
Toxaphene	0.0007	N/A	0.0007	0.00071	0.00071	0.0007	

**Summary - Dissolved Metals (µg/l)**

	<b>Class 1C Human Health (Drinking Water Only)</b>	<b>Class 1C Human Health (Drinking Water + Organism)</b>	<b>Class 3 Human Health (Organism Only)</b>	<b>Class 3 Acute Aquatic Wildlife</b>	<b>Class 4 Agricultural</b>	<b>Acute Most Stringent</b>
Aluminum				750		750
Antimony		5.6	640			5.6
Arsenic	10.0			340	100	10.0
Barium	1000					1000
Beryllium	4.0					4.0
Cadmium	10.0			7.7	10.0	7.7
Chromium (Total)	50.0				100	50.0
Chromium (III)				1,773		1773
Chromium (VI)				16.0		16.0
Copper		1,300		49.6	200	49.6
Cyanide		4.0	4.0	22.0		4.0
Iron				1,000		1000
Lead	15.0			281	100	15.0
Mercury	2.0			2.4		2.0
Nickel		610	4,600	1,513		610
Selenium	50.0		4,200	18.4	50.0	18.4
Silver	50.0			34.9		34.9
Thallium		0.24	0.47			0.24
Tributyltin				0.5		0.46
Zinc		7,400	26,000	379		379

**Summary - Total Recoverable Metals (µg/l)**

	<b>Chronic Total Recoverable Limits</b>	<b>Acute Most Stringent Dissolved Limits</b>	<b>Acute Most Stringent Total Recoverable Limits</b>
Aluminum	N/A	750	750
Antimony		5.6	5.6
Arsenic	150	10	10
Barium		1000	1,000
Beryllium		4.0	4.0
Cadmium	0.8	7.7	7.7
Chromium (Total)		50	50
Chromium (III)	268	1773	1,773
Chromium (VI)	11	16	16
Copper	30	50	50
Cyanide	5.2	4	4
Iron		1000	1,000
Lead	19	15	15.0
Mercury	0.012	2.0	2.0
Nickel	168.5	610	610
Selenium	4.6	18	18
Silver		35	35
Thallium		0.24	0.2
Tributyltin	0.07	0.46	0.5
Zinc	388	379	379

**Total Recoverable to  
Dissolved Fraction  
Conversion Factor  
[Laboratory Correction  
Factor] EPA 823-B 96-007  
June 1996**

	<b>ACUTE FACTOR</b>	<b>CHRONIC FACTOR</b>
Aluminum	1.000	1.000
Antimony		
Arsenic	1.000	1.000
Barium	1.000	1.000
Beryllium		
Cadmium	0.886	0.851
Chromium III	0.316	0.860
Chromium VI	1.000	1.000
Copper	0.960	0.960
Cyanide		
Iron	1.000	1.000
Lead	0.589	0.589
Mercury	0.850	1.000
Nickel	0.998	0.997
Selenium	1.000	1.000
Silver	0.850	1.000
Thallium		
Tributyltin		
Zinc	0.978	0.986

Appendix C  
Freshwater total ammonia criteria based on EPA 2013 Ammonia Criteria

<b>INPUT</b>				
	Summer	Fall	Winter	Spring
Temperature (deg C):				
Maximum:	18.4	17.3	11.6	16.3
Monthly Average:	17.2	13.0	9.7	12.2
pH:				
Maximum:	7.40	7.30	7.70	7.50
Monthly Average:	7.20	7.20	7.10	7.10
Are unionid mussels present?	Present	Present	Present	Present
Are salmonid present? [Beneficial use 3A]	Present	Present	Present	Present
Are fish early life stages present?	Present	Present	Present	Present
<b>OUTPUT</b>				
Total ammonia nitrogen criteria (mg N/L):				
Acute (1-hour):	12.14	15.18	9.64	12.55
Chronic (30-day average):	2.06	2.70	3.51	2.99



State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

Department of  
Environmental Quality

Amanda Smith  
Executive Director

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
Director

**MEMORANDUM**

TO: File, Silver Creek WRF UPDES Permit UT0024414

FROM: Nicholas von Stackelberg, P.E.

DATE: March 28, 2013

SUBJECT: Determination for Classification of the Silver Creek Water Reclamation Facility Outlet Channel

The discharge from the Silver Creek Water Reclamation Facility (SCWRF) is to an unnamed open channel, referred to as the "SCWRF outlet channel," that drains to Silver Creek. It is the determination of the Division of Water Quality (DWQ) that the SCWRF outlet channel is a tributary of Silver Creek that should be classified under R317-2-13.4 with beneficial uses 1C, 2B, 3A, and 4. This determination was made based on the following findings:

- Based on an evaluation of aerial photography, the SCWRF outlet channel clearly originates above the treatment plant, flows along the southern and eastern property boundary, and then combines with the treatment plant effluent prior to draining to Silver Creek.
- The source of background flow in the channel appears to be seeps and springs that originate in upslope areas upstream of the plant.
- The SCWRF outlet channel appears to have been realigned during construction of the treatment plant and the access road that continues on to the Promontory area. Evidence of this is the presence of a legacy channel north of the road that drains to Silver Creek and that appears to have been disconnected from the upstream portion of the channel.
- Tributaries to Silver Creek are classified under *Weber River and tributaries, from Stoddard diversion to headwaters: 1C, 2B, 3A, 4.*

silverwrf\_channel\_classification\_memo.docx

DWQ-2020-016408

**ATTACHMENT 3**

*Reasonable Potential Analysis*

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## **REASONABLE POTENTIAL ANALYSIS**

Water Quality has worked to improve our reasonable potential analysis (RP) for the inclusion of limits for parameters in the permit by using an EPA provided model. As a result of the model, more parameters may be included in the renewal permit. A Copy of the Reasonable Potential Analysis Guidance (RP Guide) is available at water Quality. There are four outcomes for the RP Analysis<sup>4</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.

In order to complete a RP analysis, more than 10 data points per parameter are needed. SCWRF upgraded was completed April 2019. At the time of renewing the UPDES permit only two data sets were available for RP analysis. This limited data set was not sufficient to complete a full run of RP. Therefore, SCWRF will be required to perform, at a minimum, quarterly metal sampling. If additional sampling is performed, it shall be reported to DWQ. Less than 10 data points may affect the RP outcomes which may require additional monitoring in the future.

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<sup>4</sup> See Reasonable Potential Analysis Guidance for definitions of terms

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

**Date:** March 11, 2020

**Facility:** Silver Creek Water Reclamation Facility  
Snyderville Basin Water Reclamation District  
UPDES No. UT0024414

**Receiving water:** Silver Creek (1C, 2B, 3A, 4)

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

Discharge

Outfall 001: Silver Creek

The maximum monthly mean discharge is 4.0 MGD and the maximum daily design discharge is 8.0 MGD. These discharge rates were provided by Snyderville Basin Water Reclamation District.

Receiving Water

The receiving water for Outfall 001 is an open channel that drains to Silver Creek, which is tributary to the Weber River and Echo Reservoir. The outlet channel was determined to be a natural tributary of Silver Creek, with the same classification as Silver Creek. A technical memo regarding the determination is included in Appendix D.

Per UAC R317-2-13.4.a, the designated beneficial uses for Weber River and tributaries, from Stoddard diversion to headwaters, is 1C, 2B, 3A, and 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.*
- *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.*

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Protection of Downstream Uses

Per UAC R317-2-8, *all actions to control waste discharges under these rules shall be modified as necessary to protect downstream designated uses.*

Receiving Water Critical Flow/Water Quality

Typically, the critical flow for the wasteload analysis is considered the lowest average stream flow for seven consecutive days with a ten year return frequency (7Q10). For Silver Creek, flow records from USGS stream gage # 10129900 Silver Creek Near Silver Creek Junction, UT for the active period 10/1/2001 to 12/31/2012 were obtained. The gage is located immediately downstream of the discharge from the treatment plant. Average daily discharge records were obtained from the treatment plant for the same time period. The upstream flow in Silver Creek was calculated by subtracting the treatment plant discharge from the flow gage records. The 7Q10 was calculated using the EPA computer software DFLOW V3.1b. (Table 1).

**Table 1: Seasonal critical low flow**

Season	Flow (cfs)	
	Outlet Channel	Silver Creek
Summer	0	0
Fall	0	0
Winter	0	0
Spring	0	0

Receiving water quality data was obtained from monitoring site 4926800 Silver Creek above Silver Creek WWTP. The average seasonal value was calculated for each constituent with available data in the receiving water.

Impairment/TMDL

Silver Creek was listed as impaired for arsenic, cadmium, zinc, dissolved oxygen, pH, nitrate, total dissolved solids, and benthic macroinvertebrates on the 303(d) list in *Utah's 2016 Integrated Report (DWQ)*.

The *Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium* (Michael Baker Jr. Inc. and Psomas, 2004) was approved by EPA in 2004.

Echo Reservoir was listed as impaired for dissolved oxygen, temperature, and total phosphorus. The *Rockport Reservoir and Echo Reservoir TMDL Final Report* (SWCA Environmental Consultants, 2014) has allocations for total phosphorus and total nitrogen loads.

Mixing Zone

The discharge is considered instantaneously fully mixed since there is no background flow in the receiving water during the critical condition. Therefore, no mixing zone is allowed.

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Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total suspended solids (TSS), dissolved oxygen (DO), BOD<sub>5</sub>, total phosphorus (TP), total nitrogen (TN), total ammonia (NH<sub>4</sub>), E. coli, pH and dissolved metals, as determined in consultation with the UPDES Permit Writer.

WET Limits

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

**Table 2: WET Limits for IC<sub>25</sub>**

Season	Percent Effluent
Summer	100%
Fall	100%
Winter	100%
Spring	100%

Water Quality Modeling

A QUAL2Kw model of the receiving water was built and calibrated to synoptic survey data collected by DWQ staff in August of 2012 and is documented in the *QUAL2Kw Model Calibration Report for Silver Creek* (UDWQ 2019). The QUAL2Kw calibration model extends 1.9 kilometers along Silver Creek downstream from the treatment facility outfall to between the eastbound and westbound lanes of I-80.

The calibrated QUAL2Kw model was modified for the wasteload analysis. Since there is no flow in Silver Creek during critical low flow conditions, the WRF was made the headwaters of the wasteload model. The outlet channel from the WRF outfall to the confluence with Silver Creek was added to the wasteload model.

The QUAL2Kw model was used for determining the WQBELs for parameters related to eutrophication and in-stream DO criteria, as well as ammonia toxicity. Effluent concentrations were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards, the concentration in the model was set at the secondary standard.

In order to determine compliance with dissolved oxygen criteria in Silver Creek during the critical summer season, water quality modeling was conducted by SWCA Environmental Consultants using the QUAL2Kw model. SWCA coordinated with Snyderville Basin Sewer Improvement District (SBSID) to develop effluent limit combinations of CBOD, NH<sub>4</sub>, TN, TP, and DO that would meet the instream DO criteria. The results of the modeling analysis are summarized in *Silver Creek Water Quality Study Final Technical Report* (SWCA Environmental

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Consultants, 2013). An additional effluent limit combination was run by UDWQ at the request of SBSID and was selected as the preferred scenario by SBSID. The effluent limits for CBOD, NH4, TN, TP and DO from the selected scenario are listed below in Table 4 and summarized in Appendix A.

Effluent limits for conservative constituents were determined using a mass balance mixing analysis (UDWQ 2012). The mass balance analysis is summarized in Appendix B.

The wasteload files are available for review by request.

Ammonia

The QUAL2Kw model was also utilized to determine seasonal limits for ammonia. Ammonia exerts an oxygen demand on the water column through nitrification to nitrate and is toxic to aquatic life above certain thresholds that are pH and temperature dependent. Seasonal limits were determined for meeting in-stream DO criteria and for meeting in-stream toxicity criteria.

The treatment process proposed for the Silver Creek WRF is very similar to the process at the East Canyon WRF; therefore, the pH and temperature values for the discharge were based on monitoring data from the East Canyon WRF for 2013. Seasonal average pH and temperature were used for determining chronic limits (30-day average) and maximum pH was used for determining acute limits (1-hour).

In 2013, EPA adopted new criteria for ammonia that are lower than current criteria based on the presence of unionid mussels and nonpulmonate snails. States are required to adopt the criteria or establish alternative, scientifically defensible criteria. Utah is initiating studies to support adoption of new ammonia criteria. For planning purposes, ammonia limits to meet the new criteria were calculated (Table 3). The limits were determined by calculating the criteria based on the pH and temperature of the discharge and did not consider in-stream processes that affect ammonia, pH and temperature. The analysis assumed presence of the most sensitive species and is summarized in Appendix C.

**Table 3: Ammonia Limits to Meet EPA 2013 Ammonia Criteria**

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Ammonia (mg/l) [Toxicity]			1 hour			30 days
Summer (Jul-Aug)	12.1	12.1		2.1	2.1	
Fall (Sep-Oct)	15.2	15.2		2.7	2.7	
Winter (Dec-Mar)	9.6	9.6		3.5	3.5	
Spring (Apr-Jun)	12.6	12.6		3.0	3.0	

Metals

Water quality standards for the protection of aquatic life are based on dissolved metals, as the dissolved fraction is a better representation of the biologically active portion of the metal than is the total recoverable fraction. Dissolved metals standards for cadmium, chromium (III), copper, lead, nickel and zinc are hardness dependent. In waters with hardness greater than 400 mg/l as

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CaCO<sub>3</sub>, calculations are to assume a hardness of 400 mg/l as CaCO<sub>3</sub>. The maximum hardness of 400 mg/l was used for the receiving water and the effluent.

By regulation (40 CFR 122.45(c)), the permit limit must be expressed as total recoverable metal. This regulation exists because chemical differences between the effluent discharge and the receiving water body are expected to result in changes in the partitioning between dissolved and adsorbed forms of metal. A metals translator is required to calculate a total recoverable permit limit to meet a dissolved metal water quality standard. The translator is the fraction of total recoverable metal in the downstream water that is dissolved. Per *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (EPA, 1996), the translator may be estimated in three ways. (1) It may be assumed to be equivalent to the criteria conversion factors (Table 2.14.3a and 2.14.3b under UAC R317-2-14). (2) It may be developed directly as the ratio of dissolved to total recoverable metal. (3) Or it may be developed through the use of a partition coefficient that is functionally related to the number of metal binding sites on the adsorbent in the water column (i.e., concentrations of TSS, TOC, or humic substances). For this wasteload allocation, the criteria conversion factors were used for metals translators.

Effluent Limits

Water quality based effluent limits are summarized in Table 4. Detailed list of effluent limits can be found in the appendices.

The load limit for zinc, total phosphorus and total nitrogen from the TMDLs is based on both current and future load allocations based on facility expansion.

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**Table 4: Water Quality Based Effluent Limits Summary**

Effluent Constituent	Acute			Chronic			Source
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period	
Flow (MGD)		8.0	1 day		4.0	30 days	SBWRD
Dissolved Oxygen (mg/L)	4.0	5.5 <sup>c</sup>	Max	6.5	6.5 <sup>e</sup>	30 days	Appendix A
CBOD <sub>5</sub> (mg/L)					10 <sup>e</sup>	30 days	Appendix A
Ammonia (mg/l)	Varies	13.0 <sup>d</sup>	1 hour	Varies	1.0 <sup>e</sup>	30 days	Appendix A
Summer (Jul-Aug)							
Fall (Sep-Nov)							
Winter (Dec-Mar)							
Spring (Apr-Jun)							
Nitrate (mg/L)	10.0 <sup>b</sup>	10.0	Max				Appendix A
Total Nitrogen (mg/L)							Appendix A
Summer (Jul-Aug)					10 <sup>e</sup>	30-days	
Fall (Sep-Nov)					10.5 <sup>e</sup>		
Winter (Dec-Mar)					11 <sup>e</sup>		
Spring (Apr-Jun)					10.5 <sup>e</sup>		
Total Nitrogen (kg)							Echo Reservoir TMDL
Summer Load: April – Sept.					20,782		
Annual Load					48,585		
Total Phosphorus (mg/L)					1.0 <sup>e,f</sup>	30 days	TBPEL, Append A
Total Phosphorus (kg)							Echo Reservoir TMDL
Summer Load: April – Sept.					2,078		
Annual Load					4,849		
Total Dissolved Solids (mg/L)	1,900 <sup>g</sup>	1,900	Max				Appendix A
Metals, Total Recoverable (µg/l)							Appendix B
Aluminum	750	750	1 hr	N/A	N/A	N/A	
Antimony	5.6 <sup>b</sup>	5.6	Max				
Arsenic	10 <sup>b</sup>	10	Max	150	150	4 day	
Barium	1,000 <sup>b</sup>	1,000	Max				
Cadmium	8.7	8.7	1 hr	0.8	0.8 <sup>a</sup>	4 day	
Chromium (Total)	50 <sup>b</sup>	50	Max				
Chromium (III)	5,612	5,612	1 hr	268	268	4 day	
Chromium (VI)	16	16	1 hr	11	11	4 day	
Copper	52	52	1 hr	30	30	4 day	
Cyanide	22	22	1 hr	5.2	5.2	4 day	
Iron	1,000	1,000	Max				
Lead	25.5 <sup>b</sup>	25.5	Max	19	19	4 day	
Mercury	2.4 <sup>b</sup>	2.4	Max	0.012	0.012	4 day	
Nickel	100 <sup>b</sup>	100	1 hr	168.5	168.5	4 day	
Selenium	18	18	1 hr	4.6	4.6	4 day	
Silver	41	41	1 hr				
Zinc	388	388	1 hr	388	300	4 day	
Zinc Annual Load (kg)					321.1 <sup>h</sup>		Silver Creek TMDL

a: Effluent limit per *Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium* (Michael Baker Jr. Inc. and Psomas, 2004). Load limit is for combined current and future allocation.  
b: Standard based on human health criterion.  
c: Based on previous permit limit.  
d: Based on meeting in-stream ammonia toxicity criteria in Silver Creek.  
e: Based on meeting in-stream DO criteria in Silver Creek.  
f: Based on Technology Based Effluent Limit, meets WQBEL.  
g: Site specific standard for TDS for Silver Creek from Tollgate Canyon to headwaters.  
h: Effluent limit per *Rockport Reservoir and Echo Reservoir Total Maximum Daily Loads* (SWCA Inc. 2014). Load limit is for combined current and future allocation.

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Antidegradation Level I Review

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

The pollutant concentration and load from the facility is being increased under the proposed treatment plant upgrade; therefore, a Level II Antidegradation Review (ADR) is required for this discharge.

**Prepared by: Nicholas von Stackelberg, P.E.**  
**Watershed Protection Section**

Documents:

WLA Document: *silver\_creek\_potw\_wla\_2020-03-11.docx*

QUAL2Kw Calibration Model: *silver\_q2k\_cal\_2012\_v4.xlsm*

QUAL2Kw Wasteload Model: *silver\_potw\_q2kw\_wla\_2019\_v4\_altseason.xlsm*

References:

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

*QUAL2Kw Model Calibration Report for Silver Creek.* 2019. Utah Division of Water Quality.

*Rockport Reservoir and Echo Reservoir Total Maximum Daily Loads Final Report.* 2014. SWCA Environmental Consultants, Inc.

*Silver Creek Total Maximum Daily Load for Dissolved Zinc and Cadmium.* 2004. Michael Baker Jr. Inc. and Psomas.

*Silver Creek Water Quality Study Final Technical Report.* 2013. SWCA Environmental Consultants, Inc.

*Utah's 2016 Integrated Report.* 2016. Utah Division of Water Quality.

*Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah.* 2012. Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller.

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

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**WASTELOAD ANALYSIS [WLA]**

Date: 3/11/2020

**Appendix A: QUAL2Kw Analysis for Eutrophication**

Discharging Facility: Silver Creek WRF  
 UPDES No: UT-0021911  
 Permit Flow [MGD]: 4.00 Maximum Monthly Flow  
 8.00 Maximum Daily Flow

Receiving Water: Silver Creek  
 Stream Classification: 1C, 2B, 3A, 4  
 Stream Flows [cfs]: 0.0 Summer (July-Aug) Critical Low Flow  
 0.0 Fall (Sep-Nov)  
 0.0 Winter (Dec-Mar)  
 0.0 Spring (Apr-June)

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

**Modeling Information**

A QUAL2Kw model was used to determine these effluent limits.

**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.

Headwater/Upstream Information	Summer	Fall	Winter	Spring
Flow (cfs)		No Flow		

**Discharge Information - Silver Creek WRF**

Chronic	Summer	Fall	Winter	Spring
Flow (MGD)	4.0	4.0	4.0	4.0
Temperature (deg C)	17.2	13.0	9.7	12.2
Specific Conductance (µmhos)	1800	1800	1800	1800
Inorganic Suspended Solids (mg/L)	6.0	6.0	6.0	6.0
Dissolved Oxygen (mg/L)	6.5	6.5	6.5	6.5
CBOD <sub>5</sub> (mg/L)	10.0	10.0	10.0	10.0
Organic Nitrogen (mg/L)	1.00	1.00	1.00	1.00
NH <sub>4</sub> -Nitrogen (mg/L)	1.00	2.50	3.00	2.50
NO <sub>3</sub> -Nitrogen (mg/L)	8.00	7.00	7.00	7.00
Organic Phosphorus (mg/L)	0.50	0.50	0.50	0.50
Inorganic Ortho-Phosphorus (mg/L)	0.50	0.50	0.50	0.50
Phytoplankton (µg/L)	0.00	0.00	0.00	0.00
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	200	200	200	200
pH	7.2	7.2	7.1	7.1

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	<b>Acute</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)		8.0	8.0	8.0	8.0
Temperature (deg C)		18.4	17.3	11.6	16.3
Specific Conductance (µmhos)		1800	1800	1800	1800
Inorganic Suspended Solids (mg/L)		6.0	6.0	6.0	6.0
Dissolved Oxygen (mg/L)		5.0	5.0	5.0	5.0
CBOD <sub>5</sub> (mg/L)		10.0	10.0	10.0	10.0
Organic Nitrogen (mg/L)		1.00	1.00	1.00	1.00
NH <sub>4</sub> -Nitrogen (mg/L)		13.00	15.00	8.00	11.00
NO <sub>3</sub> -Nitrogen (mg/L)		8.00	8.00	8.00	8.00
Organic Phosphorus (mg/L)		0.50	0.50	0.50	0.50
Inorganic Ortho-Phosphorus (mg/L)		0.50	0.50	0.50	0.50
Phytoplankton (µg/L)		0.00	0.00	0.00	0.00
Detritus [POM] (mg/L)		0.0	0.0	0.0	0.0
Alkalinity (mg/L)		200	200	200	200
pH		7.4	7.3	7.7	7.5

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

### 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 reflect the environmental conditions expected at low stream flows.

### Effluent Limitations based upon Water Quality Standards for DO

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

<b>Constituent</b>	<b>Standard</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Flow (MGD)	N/A	4.0	4.0	4.0	4.0
CBOD <sub>5</sub> (mg/L)	N/A	10.0	10.0	10.0	10.0
Dissolved Oxygen [30-day Ave] (mg/L)	6.5	6.5	6.5	6.5	6.5
Dissolved Oxygen [7-day Ave] (mg/L)	5.0	5.0	5.0	5.0	5.0
Dissolved Oxygen [Minimum] (mg/L)	4.0	4.0	4.0	4.0	4.0
NH <sub>4</sub> -Nitrogen (mg/L)	Varies	1.0	2.5	3.0	2.5
Total Nitrogen (mg/L)	N/A	10.0	10.5	11.0	10.5
Total Phosphorus (mg/L)	N/A	1.0	1.0	1.0	1.0

### 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>NH<sub>4</sub>-Nitrogen (mg/L)</b>	<b>Standard</b>	<b>Summer</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
Acute [1-hour average]	Varies	13.0	15.0	8.0	11.0
Chronic [30-day average]	Varies	3.7	4.6	5.0	5.0

### 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.

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**Coefficients and Other Model Information**

<i>Parameter</i>	<i>Value</i>	<i>Units</i>
<b><i>Stoichiometry:</i></b>		
Carbon		40 gC
Nitrogen		7.2 gN
Phosphorus		1 gP
Dry weight		100 gD
Chlorophyll		1 gA
<b><i>Inorganic suspended solids:</i></b>		
Settling velocity		2 m/d
<b><i>Oxygen:</i></b>		
Reaeration model	Tsivoglou-Neal	
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><i>Slow CBOD:</i></b>		
Hydrolysis rate		0 /d
Temp correction		1.047
Oxidation rate		0.103 /d
Temp correction		1.047
<b><i>Fast CBOD:</i></b>		
Oxidation rate		10 /d
Temp correction		1.047
<b><i>Organic N:</i></b>		
Hydrolysis		0.0557 /d
Temp correction		1.07
Settling velocity		0.19837 m/d
<b><i>Ammonium:</i></b>		
Nitrification		3 /d
Temp correction		1.07
<b><i>Nitrate:</i></b>		
Denitrification		0.7560365 /d
Temp correction		1.07
Sed denitrification transfer coeff		0.3346 m/d
Temp correction		1.07
<b><i>Organic P:</i></b>		
Hydrolysis		0.148895 /d
Temp correction		1.07
Settling velocity		0.150074 m/d
<b><i>Inorganic P:</i></b>		
Settling velocity		0.2742 m/d
Sed P oxygen attenuation half sat constant		0.51586 mgO2/L

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**Phytoplankton:**

Max Growth rate	2.60985 /d
Temp correction	1.07
Respiration rate	0.206492 /d
Temp correction	1.07
Death rate	0.36118 /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	27.53835 ugN/L
Settling velocity	0.4930385 m/d

**Bottom Plants:**

Growth model	Zero-order
Max Growth rate	8.3462 gD/m2/d or /d
Temp correction	1.07
First-order model carrying capacity	100 gD/m2
Basal respiration rate	0.0291854 /d
Photo-respiration rate parameter	0.01 unitless
Temp correction	1.07
Excretion rate	0.42997 /d
Temp correction	1.07
Death rate	4.14 /d
Temp correction	1.07
External nitrogen half sat constant	455.924 ugN/L
External phosphorus half sat constant	62.8735 ugP/L
Inorganic carbon half sat constant	9.78E-05 moles/L
Bottom algae use HCO3- as substrate	Yes
Light model	Smith
Light constant	96.0028 mgO <sup>2</sup> /L
Ammonia preference	25.4271 ugN/L
Subsistence quota for nitrogen	0.4378356 mgN/gD
Subsistence quota for phosphorus	0.0509885 mgP/gD
Maximum uptake rate for nitrogen	408.673 mgN/gD/d
Maximum uptake rate for phosphorus	62.4695 mgP/gD/d
Internal nitrogen half sat ratio	3.26674
Internal phosphorus half sat ratio	1.730743
Nitrogen uptake water column fraction	1
Phosphorus uptake water column fraction	1

**Detritus (POM):**

Dissolution rate	4.396892 /d
Temp correction	1.07
Settling velocity	0.4995725 m/d

**pH:**

Partial pressure of carbon dioxide	370 ppm
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**TRC:**

Decay rate	0.8 /d
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Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	43.2	25.3	9.4	33.5
Max. Air Temperature, F	79.8	57.0	33.4	62.4
Dew Point, Temp., F	55.7	30.9	22.4	46.2
Wind, ft./sec. @ 21 ft.	5.2	3.5	3.2	5.6
Cloud Cover, %	10%	10%	10%	10%

**Other Inputs:**

Bottom Algae Coverage	N/A
Bottom SOD Coverage	N/A
Prescribed SOD, gO <sub>2</sub> /m <sup>2</sup> /day	N/A

**WASTELOAD ANALYSIS [WLA]**  
**Appendix B: Mass Balance Mixing Analysis for Conservative Constituents**

Date: 3/11/2020

Discharger:	Silver Creek WRF	
Receiving Stream:	Silver Creek	
Stream Classification:	1C, 2B, 3A, 4	
Aquatic Life Class 3:	3A	
Agriculture Class 4:	Yes	
Direct Drinking Water Source:	Yes	
Important Fishery for Human Consumption:	Yes	
Season:	Annual	
Stream Flow:	0.00 cfs	
Stream Flow [Acute]:	0.00 cfs	
Stream Flow [Chronic]:	0.00 cfs	
Stream Hardness:	400 mg/l as CaCO <sub>3</sub>	
Effluent Flow:	4.00 MGD	
	6.19 cfs	
Effluent Hardness:	400 mg/l as CaCO <sub>3</sub>	
Mixed Flow:	6.19 cfs	Dilution Fact. 0.00
Mixed Flow [Acute]	6.19 cfs	
Mixed Flow [Chronic]	6.19 cfs	
Mixed Hardness:	400 mg/l as CaCO <sub>3</sub>	

**Human Health Criteria (Class 1C Waters) - Maximum**

	Units	Standard	Upstream Concentration	Effluent Limit
<b>Dissolved Metals</b>				
Arsenic	µg/L	10.0	N/A	10.0
Barium	µg/L	1000.0	N/A	1000.0
Beryllium	µg/L	4.0	N/A	4.0
Cadmium	µg/L	10.0	N/A	10.0
Chromium	µg/L	50.0	N/A	50.0
Lead	µg/L	15.0	N/A	15.0
Mercury	µg/L	2.0	N/A	2.0
Selenium	µg/L	50.0	N/A	50.0
Silver	µg/L	50.0	N/A	50.0
<b>Inorganics</b>				
Bromate	µg/L	10.0	N/A	10.0
Chlorite	mg/l	1000.0	N/A	1000.0
Fluoride Min. (varies with air temperature)	mg/l	1.4	N/A	1.4
Fluoride Max. (varies with air temperature)	mg/l	2.4	N/A	2.4
Nitrates as N	mg/l	10.0	N/A	10.0
<b>Organics</b>				
<b>Chlorophenoxy Herbicides</b>				
2,4-D	µg/L	70.0	N/A	70.0
2,4,5-TP	µg/L	10.0	N/A	10.0
Methoxychlor	µg/L	40.0	N/A	40.0

**Aquatic Wildlife Criteria (Class 3 Waters)**

	Total Recoverable Standard	Conversion Factor	Dissolved Standard	Upstream Concentration	Dissolved Effluent Limit	Total Recoverable Effluent Limit
<b>Chronic Metals, µg/L</b>						
Aluminum*	N/A	1.000	N/A	N/A	N/A	N/A
Arsenic	150.0	1.000	150.0	N/A	150.0	150.0
Cadmium	0.76	0.851	0.64	N/A	0.64	0.76
Chromium III	268.2	0.860	230.7	N/A	230.7	268.2
Chromium VI	11.0	1.000	11.0	N/A	11.0	11.0
Copper	30.5	0.960	29.3	N/A	29.3	30.5
Cyanide	5.2	1.000	5.2	N/A	5.2	5.2
Iron						
Lead	18.6	0.589	10.9	N/A	10.9	18.6
Mercury	0.012	1.000	0.012	N/A	0.012	0.012
Nickel	168.5	0.997	168.0	N/A	168.0	168.5
Selenium	4.6	1.000	4.6	N/A	4.6	4.6
Silver						
Tributyltin	0.072	1.000	0.072	N/A	0.072	0.072
Zinc	387.8	0.986	382.4	N/A	382.4	387.8

\* Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaCO<sub>3</sub> in the receiving water after mixing, the 87 µg/l chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 µg/l acute aluminum criterion (expressed as total recoverable).

Acute Metals, µg/L	Total Recoverable		Conversion Factor	Dissolved		Upstream Concentration	Dissolved		Total Recoverable
	Standard			Standard			Effluent Limit	Effluent Limit	
Aluminum	750.0		1.000	750.0		N/A	750.0		750.0
Arsenic	340.0		1.000	340.0		N/A	340.0		340.0
Cadmium	8.7		0.886	7.7		N/A	7.7		8.7
Chromium III	5611.7		0.316	1773.3		N/A	1773.3		5611.7
Chromium VI	16.0		1.000	16.0		N/A	16.0		16.0
Copper	51.7		0.960	49.6		N/A	49.6		51.7
Cyanide	22.0		1.000	22.0		N/A	22.0		22.0
Iron	1000.0		1.000	1000.0		N/A	1000.0		1000.0
Lead	476.8		0.589	280.8		N/A	280.8		476.8
Mercury	2.4		1.000	2.4		N/A	2.4		2.4
Nickel	1515.9		0.998	1512.9		N/A	1512.9		1515.9
Selenium	18.4		1.000	18.4		N/A	18.4		18.4
Silver	41.1		0.850	34.9		N/A	34.9		41.1
Tributyltin	0.46		1.000	0.46		N/A	0.46		0.46
Zinc	387.8		0.978	379.3		N/A	379.3		387.8

Physical	Upstream	
	Standard	Effluent Limit
Temperature (deg C) [Maximum]	20.0	N/A
pH [Minimum]	6.5	N/A
pH [Maximum]	9.0	N/A

Inorganics, µg/L		
Hydrogen Sulfide (un-dissociated)	2.0	N/A
Phenol (Maximum)	0.10	N/A

Radiological pCi/l		
Gross Alpha	15.00	N/A

Organics (µg/L)	Chronic	Acute	Upstream	Chronic	Acute
	Standard	Standard	Concentration	Effluent Limit	Effluent Limit
Acrolein	3.0	3.0	N/A	3.0	3.0
Aldrin		1.5	N/A		1.5
Chlordane	0.0043	1.2	N/A	0.0043	1.2
Chlorpyrifos	0.041	0.083	N/A		0.083
DDT, DDE	0.0010	0.55	N/A	0.0010	0.55
Diazinon	0.17	0.17	N/A		0.17
Dieldrin	0.056	0.24	N/A	0.056	0.24
Alpha-Endosulfan	0.056	0.11	N/A	0.056	0.11
Beta-Endosulfan	0.056	0.11	N/A	0.056	0.11
Endrin	0.036	0.086	N/A	0.036	0.086
Heptachlor	0.0038	0.26	N/A	0.0038	0.26
Heptachlor epoxide	0.0038	0.26	N/A	0.0038	0.26
Lindane	0.08	1.0	N/A	0.08	1.0
Methoxychlor		0.03	N/A		0.03
Mirex		0.001	N/A		0.001
Nonylphenol	6.6	28.0	N/A		28.0
Parathion	0.013	0.066	N/A		0.066
PCB's	0.014		N/A	0.014	
Pentachlorophenol (varies with pH)	15.0	19.0	N/A	15.0	19.0
Toxaphene	0.0002	0.73	N/A	0.0002	0.73

**Agricultural Criteria (Class 4 Waters) - Maximum**

Units	Upstream	
	Standard	Effluent Limit
Total Dissolved Solids	mg/l	1900.0
Arsenic	µg/L	100.0
Boron	µg/L	750.0
Cadmium	µg/L	10.0
Chromium	µg/L	100.0
Copper	µg/L	200.0
Lead	µg/L	100.0
Selenium	µg/L	50.0

**Numeric Criteria for the Protection of Human Health from Consumption of Water and Fish**

Parameter	Class 1C (Water and Organism)			Class 3 (Organism Only)		Most Stringent Limitation
	Maximum Conc., µg/l	Standard	Upstream Concentration	Effluent Limitation	Standard	
<b>Toxic Organics</b>						
Antimony	5.6	N/A	5.6	640	640	5.6
Copper	1300	N/A	1300			1300
Nickel	610	N/A	610	4600	4600	610
Selenium	170	N/A	170	4200	4200	170
Thallium	0.24	N/A	0.24	0.47	0.47	0.24
Zinc	7400	N/A	7400	26000	26000	7400
Cyanide	4	N/A	4	400	400	4
Asbestos (million fibers/L)	7	N/A	7			7
2,3,7,8-TCDD Dioxin	5.00E-09	N/A	5.00E-09	5.1E-09	5.1E-09	5.00E-09
Acrolein	3	N/A	3	400	400	3
Acrylonitrile	0.061	N/A	0.061	7	7	0.061
Benzene	2.1	N/A	2.1	51	51	2.1
Bromoform	7	N/A	7	120	120	7
Carbon Tetrachloride	0.4	N/A	0.4	5	5	0.4
Chlorobenzene	100	N/A	100	800	800	100
Chlorodibromomethane	0.8	N/A	0.8	21	21	0.8
Chloroform	60	N/A	60	2000	2000	60
Dichlorobromomethane	0.95	N/A	0.95	27	27	0.95
1,2-Dichloroethane	9.9	N/A	9.9	2000	2000	9.9
1,1-Dichloroethylene	300	N/A	300	20000	20000	300
1,2-Dichloropropane	0.9	N/A	0.9	31	31	0.9
1,3-Dichloropropene	0.27	N/A	0.27	12	12	0.27
Ethylbenzene	68	N/A	68	130	130	68
Methyl Bromide	100	N/A	100	10000	10000	100
Methylene Chloride	20	N/A	20	1000	1000	20
1,1,2,2-Tetrachloroethane	0.2	N/A	0.2	3	3	0.2
Tetrachloroethylene	10	N/A	10	29	29	10
Toluene	57	N/A	57	520	520	57
1,2 -Trans-Dichloroethyle	100	N/A	100	4000	4000	100
1,1,1-Trichloroethane	10000	N/A	10000	200000	200000	10000
1,1,2-Trichloroethane	0.55	N/A	0.55	8.9	8.9	0.55
Trichloroethylene	0.6	N/A	0.6	7	7	0.6
Vinyl Chloride	0.022	N/A	0.022	1.6	1.6	0.022
2-Chlorophenol	30	N/A	30	800	800	30
2,4-Dichlorophenol	10	N/A	10	60	60	10
2,4-Dimethylphenol	100	N/A	100	3000	3000	100
2-Methyl-4,6-Dinitrophenol	2	N/A	2	30	30	2
2,4-Dinitrophenol	10	N/A	10	300	300	10
3-Methyl-4-Chlorophenol	500	N/A	500	2000	2000	500
Penetachlorophenol	0.03	N/A	0.03	0.04	0.04	0.03
Phenol	4000	N/A	4000	300000	300000	4000
2,4,5-Trichlorophenol	300	N/A	300	600	600	300
2,4,6-Trichlorophenol	1.5	N/A	1.5	2.8	2.8	1.5

Parameter	Maximum Conc., µg/l	Class 1C (Water and Organism)			Class 3 (Organism Only)		Most Stringent Limitation
		Standard	Upstream Concentration	Effluent Limitation	Standard	Effluent Limitation	
<b>Toxic Organics</b>							
Acenaphthene	70	N/A	70	90	90	70	
Anthracene	300	N/A	300	400	400	300	
Benzidine	0.00014	N/A	0.00014	0.011	0.011	0.00014	
Benzo(a)Anthracene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Benzo(a)Pyrene	0.00012	N/A	0.00012	0.00013	0.00013	0.00012	
Benzo(b)Fluoranthene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Bis(2-Chloro)1-methylether	0.00015	N/A	0.00015	0.017	0.017		
Bis(2-Chloro)1-methylethylether	200	N/A	200	4000	4000		
Bis(2-Chloro)ethyl Ether	0.03	N/A	0.03	2.2	2.2		
Bis(2-Chloroisopropyl) Ether	1400	N/A	1400	65000	65000		
Bis(2-Ethylhexyl) Phthalate	0.32	N/A	0.32	0.37	0.37		
Butylbenzyl Phthalate	0.1	N/A	0.1	0.1	0.1	0.1	
2-Chloronaphthalene	800	N/A	800	1000	1000		
Chrysene	0.12	N/A	0.12	0.13	0.13	0.12	
Dibenz(a,h)Anthracene	0.00012	N/A	0.00012	0.00013	0.00013	0.00012	
1,2-Dichlorobenzene	1000	N/A	1000	3000	3000	1000	
1,3-Dichlorobenzene	7	N/A	7	10	10	7	
1,4-Dichlorobenzene	300	N/A	300	900	900	300	
3,3-Dichlorobenzidine	0.049	N/A	0.049	0.15	0.15	0.049	
Diethyl Phthalate	600	N/A	600	600	600	600	
Dimethyl Phthalate	2000	N/A	2000	2000	2000	2000	
Di-n-Butyl Phthalate	20	N/A	20	30	30	20	
2,4-Dinitrotoluene	0.049	N/A	0.049	1.7	1.7	0.049	
Dinitrophenols	10	N/A	10	1000	1000	10	
1,2-Diphenylhydrazine	0.03	N/A	0.03	0.2	0.2	0.03	
Fluoranthene	20	N/A	20	20	20	20	
Fluorene	50	N/A	50	70	70	50	
Hexachlorobenzene	0.000079	N/A	0.000079	0.000079	0.000079	0.000079	
Hexachlorobutadiene	0.01	N/A	0.01	0.01	0.01	0.01	
Hexachloroethane	0.1	N/A	0.1	0.1	0.1	0.1	
Hexachlorocyclopentadiene	4	N/A	4	4	4	4	
Ideno 1,2,3-cdPyrene	0.0012	N/A	0.0012	0.0013	0.0013	0.0012	
Isophorone	34	N/A	34	1800	1800	34	
Nitrobenzene	10	N/A	10	600	600	10	
N-Nitrosodiethylamine	0.0008	N/A	0.0008	1.24	1.24	0.0008	
N-Nitrosodimethylamine	0.00069	N/A	0.00069	3	3	0.00069	
N-Nitrosodi-n-Propylamine	0.005	N/A	0.005	0.51	0.51	0.005	
N-Nitrosodiphenylamine	3.3	N/A	3.3	6	6	3.3	
Pentachlorobenzene	0.1	N/A	0.1	0.1	0.1	0.1	
Pyrene	20	N/A	20	30	30	20	
1,2,4-Trichlorobenzene	0.071	N/A	0.071	0.076	0.076	0.071	
Aldrin	0.00000077	N/A	0.00000077	0.00000077	0.00000077	0.00000077	
alpha-BHC	0.00036	N/A	0.00036	0.00039	0.00039	0.00036	
beta-BHC	0.008	N/A	0.008	0.014	0.014	0.008	
gamma-BHC (Lindane)	4.2	N/A	4.2	4.4	4.4	4.2	
Hexachlorocyclohexane (HCH)	0.0066	N/A	0.0066	0.01	0.01	0.0066	
Chlordane	0.00031	N/A	0.00031	0.00032	0.00032	0.00031	
4,4-DDT	0.00003	N/A	0.00003	0.00003	0.00003	0.00003	
4,4-DDE	0.000018	N/A	0.000018	0.000018	0.000018	0.000018	
4,4-DDD	0.00012	N/A	0.00012	0.00012	0.00012	0.00012	
Dieldrin	0.0000012	N/A	0.0000012	0.0000012	0.0000012	0.0000012	
alpha-Endosulfan	20	N/A	20	30	30	20	
beta-Endosulfan	20	N/A	20	40	40	20	
Endosulfan Sulfate	20	N/A	20	40	40	20	
Endrin	0.03	N/A	0.03	0.03	0.03	0.03	
Endrin Aldehyde	1	N/A	1	1	1	1	
Heptachlor	0.0000059	N/A	0.0000059	0.0000059	0.0000059	0.0000059	
Heptachlor Epoxide	0.000032	N/A	0.000032	0.000032	0.000032	0.000032	
Methoxychlor	0.02	N/A	0.02	0.02	0.02	0.02	
Polychlorinated Biphenyls (PCB)	0.000064	N/A	0.000064	0.000064	0.000064	0.000064	
Toxaphene	0.0007	N/A	0.0007	0.00071	0.00071	0.0007	

**Summary - Dissolved Metals (µg/l)**

	<b>Class 1C Human Health (Drinking Water Only)</b>	<b>Class 1C Human Health (Drinking Water + Organism)</b>	<b>Class 3 Human Health (Organism Only)</b>	<b>Class 3 Acute Aquatic Wildlife</b>	<b>Class 4 Agricultural</b>	<b>Acute Most Stringent</b>
Aluminum				750		750
Antimony		5.6	640			5.6
Arsenic	10.0			340	100	10.0
Barium	1000					1000
Beryllium	4.0					4.0
Cadmium	10.0			7.7	10.0	7.7
Chromium (Total)	50.0				100	50.0
Chromium (III)				1,773		1773
Chromium (VI)				16.0		16.0
Copper		1,300		49.6	200	49.6
Cyanide		4.0	4.0	22.0		4.0
Iron				1,000		1000
Lead	15.0			281	100	15.0
Mercury	2.0			2.4		2.0
Nickel		610	4,600	1,513		610
Selenium	50.0		4,200	18.4	50.0	18.4
Silver	50.0			34.9		34.9
Thallium		0.24	0.47			0.24
Tributyltin				0.5		0.46
Zinc		7,400	26,000	379		379

**Summary - Total Recoverable Metals (µg/l)**

	<b>Chronic Total Recoverable Limits</b>	<b>Acute Most Stringent Dissolved Limits</b>	<b>Acute Most Stringent Total Recoverable Limits</b>
Aluminum	N/A	750	750
Antimony		5.6	5.6
Arsenic	150	10	10
Barium		1000	1,000
Beryllium		4.0	4.0
Cadmium	0.8	7.7	7.7
Chromium (Total)		50	50
Chromium (III)	268	1773	1,773
Chromium (VI)	11	16	16
Copper	30	50	50
Cyanide	5.2	4	4
Iron		1000	1,000
Lead	19	15	15.0
Mercury	0.012	2.0	2.0
Nickel	168.5	610	610
Selenium	4.6	18	18
Silver		35	35
Thallium		0.24	0.2
Tributyltin	0.07	0.46	0.5
Zinc	388	379	379

**Total Recoverable to  
Dissolved Fraction  
Conversion Factor  
[Laboratory Correction  
Factor] EPA 823-B 96-007  
June 1996**

	<b>ACUTE FACTOR</b>	<b>CHRONIC FACTOR</b>
Aluminum	1.000	1.000
Antimony		
Arsenic	1.000	1.000
Barium	1.000	1.000
Beryllium		
Cadmium	0.886	0.851
Chromium III	0.316	0.860
Chromium VI	1.000	1.000
Copper	0.960	0.960
Cyanide		
Iron	1.000	1.000
Lead	0.589	0.589
Mercury	0.850	1.000
Nickel	0.998	0.997
Selenium	1.000	1.000
Silver	0.850	1.000
Thallium		
Tributyltin		
Zinc	0.978	0.986

Appendix C  
Freshwater total ammonia criteria based on EPA 2013 Ammonia Criteria

<b>INPUT</b>				
	Summer	Fall	Winter	Spring
Temperature (deg C):				
Maximum:	18.4	17.3	11.6	16.3
Monthly Average:	17.2	13.0	9.7	12.2
pH:				
Maximum:	7.40	7.30	7.70	7.50
Monthly Average:	7.20	7.20	7.10	7.10
Are unionid mussels present?	Present	Present	Present	Present
Are salmonid present? [Beneficial use 3A]	Present	Present	Present	Present
Are fish early life stages present?	Present	Present	Present	Present
<b>OUTPUT</b>				
Total ammonia nitrogen criteria (mg N/L):				
Acute (1-hour):	12.14	15.18	9.64	12.55
Chronic (30-day average):	2.06	2.70	3.51	2.99



State of Utah

GARY R. HERBERT  
Governor

GREG BELL  
Lieutenant Governor

Department of  
Environmental Quality

Amanda Smith  
Executive Director

DIVISION OF WATER QUALITY  
Walter L. Baker, P.E.  
Director

**MEMORANDUM**

TO: File, Silver Creek WRF UPDES Permit UT0024414

FROM: Nicholas von Stackelberg, P.E.

DATE: March 28, 2013

SUBJECT: Determination for Classification of the Silver Creek Water Reclamation Facility Outlet Channel

The discharge from the Silver Creek Water Reclamation Facility (SCWRF) is to an unnamed open channel, referred to as the "SCWRF outlet channel," that drains to Silver Creek. It is the determination of the Division of Water Quality (DWQ) that the SCWRF outlet channel is a tributary of Silver Creek that should be classified under R317-2-13.4 with beneficial uses 1C, 2B, 3A, and 4. This determination was made based on the following findings:

- Based on an evaluation of aerial photography, the SCWRF outlet channel clearly originates above the treatment plant, flows along the southern and eastern property boundary, and then combines with the treatment plant effluent prior to draining to Silver Creek.
- The source of background flow in the channel appears to be seeps and springs that originate in upslope areas upstream of the plant.
- The SCWRF outlet channel appears to have been realigned during construction of the treatment plant and the access road that continues on to the Promontory area. Evidence of this is the presence of a legacy channel north of the road that drains to Silver Creek and that appears to have been disconnected from the upstream portion of the channel.
- Tributaries to Silver Creek are classified under *Weber River and tributaries, from Stoddard diversion to headwaters: 1C, 2B, 3A, 4.*

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DWQ-2020-016408