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. **UT0024686**
Biosolids Permit No. **UTL0024686**

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

ST. GEORGE CITY

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

VIRGIN RIVER,

to dispose of biosolids,

and to distribute effluent for reuse,

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

This **modified** permit shall become effective on **August 1, 2020**.

This permit expires at midnight on **July 31, 2025**.

Signed this 28th day of July, 2020.

Erica Brown Gaddis, PhD
Director

DWQ-2020-015244

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I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. Description of Discharge Points. The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

Outfall	Description of Discharge Point
001	The 66 inch discharge pipe is located on the southeast side of the treatment plant, about 400 feet from the north bank of the Virgin River, approximately three (3) miles southwest of where the Virgin River crosses under the I-15 Interstate Highway, in Washington County, Utah at approximately latitude 37°02'20" and longitude 113°37'50".
001R	Located at latitude 37°02'19" and longitude 113°37'53". The Type I effluent is used by St. George irrigation to irrigate public parks and golf courses in the area.

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

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately, and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfalls 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:

Table 1					
Interim limits until January 1, 2025					
Parameter	**Outfall 001 Effluent Limitations [a]**				
	Maximum Monthly Avg	**Maximum Weekly Avg**	**Yearly Average**	**Daily Minimum**	**Daily Maximum**
Flow, MGD	17	--	--	--	--
BOD_5, mg/L	17	35	--	--	--
BOD_5 Min. % Removal	85	--	--	--	--
TSS, mg/L	25	35	--	--	--
TSS Min. % Removal	85	--	--	--	--
E. coli, No./100mL	126	157	--	--	--
Dissolved Oxygen, (DO) mg/L	--	--	--	5.5	--
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	2.77	--	--	--	17.2
Fall (Oct-Dec)	5.5	--	--	--	16.9
Winter (Jan-Mar)	10.3	--	--	--	27.8
Spring (Apr-Jun)	8.4	--	--	--	23.2
WET, Chronic Biomonitoring	--	--	--	--	IC_{25}> 43.4% effluent
Oil & Grease, mg/L	--	--	--	--	10.0
TDS, mg/L [e, i]					2360
pH, Standard Units	--	--	--	6.5	9.0
Total Phosphorus, mg/L	--	--	2.5	--	--

The permit limitations for Outfall (001R) (Reuse) are:

Table 2					
Parameter	**Outfall 001R Effluent Limitations [a, n]**				
	Max Monthly Average	**Max Weekly Median**	**Max Daily Average**	**Minimum**	**Maximum**
Turbidity, NTU [o]	--	--	2	--	5
TRC, mg/L [o]	--	--	--	1	--
BOD_5, mg/L	10	--	--	--	--
E. coli, No/100mL [m]	--	ND	--	--	9
pH, Standard Units	--	--	--	6.0	9.0

Table 3					
Interim limits beginning January 1, 2025					
Parameter	**Outfall 001 Effluent Limitations [a]**				
	Maximum Monthly Avg	**Maximum Weekly Avg**	**Yearly Average**	**Daily Minimum**	**Daily Maximum**
Flow, MGD	25.2	--	--	--	--
BOD_5, mg/L					
Summer (Jul-Sep)	9	--	--	--	--
Fall – Spring (Oct-Jun)	15	--	--	--	--
BOD_5 Min. % Removal	85	--	--	--	--
TSS, mg/L	25	35	--	--	--
TSS Min. % Removal	85	--	--	--	--
E. coli, No./100mL	126	157	--	--	--
Dissolved Oxygen, (DO) mg/L	--	--	--	6	--
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	1.0	--	--	--	14.7
Fall (Oct-Dec)	3.0	--	--	--	14.2
Winter (Jan-Mar)	3.0	--	--	--	13.5
Spring (Apr-Jun)	2.0	--	--	--	12.3
WET, Chronic Biomonitoring	--	--	--	--	IC_{25}> 43.4% effluent
Oil & Grease, mg/L	--	--	--	--	10.0
TDS, mg/L [e, i]					2360
pH, Standard Units	--	--	--	6.5	9.0
Total Phosphorus, mg/L	--	--	1	--	--

Table 4			
Parameter	**Self-Monitoring and Reporting Requirements [a]**		
	Frequency	**Sample Type**	**Units**
Total Flow [b], [c]	Continuous	Recorder	MGD
BOD_5			
Influent [d]	5 X Weekly	Composite	mg/L
Effluent	5 X Weekly	Composite	mg/L
TSS			
Influent [d]	5 X Weekly	Composite	mg/L
Effluent	5 X Weekly	Composite	mg/L
E. coli	5 X Weekly	Grab	No./100mL
DO	5 X Weekly	Grab	mg/L
Total Ammonia (as N)	4 X Weekly	Composite	mg/L
WET – Biomonitoring [h]			
Ceriodaphnia - Chronic	2nd & 4th Quarters	Composite	Pass/Fail
Fathead Minnows - Chronic	1st & 3rd Quarters	Composite	Pass/Fail
Oil & Grease [f]	Monthly	Grab	mg/L
TDS, mg/L [e]	Weekly	Composite	mg/L
pH	5 X Weekly	Grab	SU
Boron [g]	Quarterly	Composite	mg/L
Temperature [k]	3 X Weekly	Grab	°C
Orthophosphate, (as P) [i] Effluent	Monthly	Composite	mg/L
Phosphorus, Total [j], [k]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Total Kjeldahl Nitrogen, TKN (as N) [j], [k]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrate + Nitrite [j], [k]	Monthly	Composite	mg/L
Metals			
Influent [g], [i]	Quarterly	Composite/Grab	mg/L
Effluent	Quarterly	Composite/Grab	mg/L
Organic Toxics [i]			
Influent [i]	Yearly	Grab	mg/L
Effluent	Yearly	Grab	mg/L

The following is a summary of the Type I reuse self-monitoring and reporting requirements.

Table 5			
Parameter	**Reuse Outfall 001R Self-Monitoring and Reporting Requirements [a], [l]**		
	Frequency	**Sample Type**	**Units**
Total Flow [b], [c]	Continuous	Recorder	MGD
Turbidity	Continuous	Recorder	mg/L
BOD_5	Weekly	Composite	mg/L
E.coli [m]	Daily	Grab	No./100mL
pH	Daily	Grab	SU

Table References

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

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

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

d. 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.

e. SGWRF is required to comply with the Colorado River Basin Salinity Forum (Forum) policies, as per UAC R317-2-4. On October 29, 1996 SGWRF submitted to DWQ a TDS demonstration which stated that it was not practicable to meet the 400 mg/L incremental increase requirement of the Forum and were subsequently given a variance. Although SGWRF must:

1. Continue monitoring and reporting both the influent and effluent TDS on a weekly basis.
2. Continue to minimize the groundwater entering into your collection system as practicable through appropriate operation and maintenance procedures,
3. Through written communication, encourage those systems discharging into your system to undertake to minimize the groundwater entering their systems and report to you on the same
4. Through written communication, and any other suitable means, encourage appropriate dischargers to your system to minimize their TDS loadings through good housekeeping procedures.
5. Submit, with your next renewal application, a report summarizing efforts taken to undertake item 2, 3 and 4 above stating the average TDS level each year, and discuss the reasons for any increase in the average TDS level.

f. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report 9 under NODI in NetDMR.

g. Metals results were reviewed for the last 36 months. Reasonable Potential was calculated for Boron, a limit is not required but quarterly monitoring will be required.

h. The chronic Ceriodaphnia will be tested during the 2nd and 4th quarters of the calendar year, and the chronic fathead minnows will be tested during the 1st and 3rd quarters.

i. See Part II of this permit for additional requirements regarding sampling for metals and organic toxics.

j. These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

k. Temperature and boron are being sampled in response to 303(d) listing of the receiving segment of the Virgin River. TMDL development may take place in the future but it is not currently a priority for DWQ. The Pollutants Of Concern (POC) will be monitored and reported (on a monthly basis by the facility on Discharge Monitoring Report, but will not have a limit associated with them /or at the end of each Calendar year of sampling for these POC's), SGWRF will report the results of all sampling done for the POC. If SGWRF decides to sample more frequently for these POC's, the additional data will be welcome.

l. Reuse monitoring results obtained during the previous month for reuse discharges shall be summarized for each month and reported on a Monthly Operational Report, post-marked no later than the 28th day of the month following the completed reporting period.

m. The weekly median *E. coli* concentration shall be non-detect.

n. An alternative disposal option or diversion to storage must be automatically activated if turbidity exceeds the maximum instantaneous limit for more than 5 minutes, or chlorine residual drops below the instantaneous required value for more than 5 minutes, where chlorine disinfection is used.

- A 1 mg/l total chlorine residual is recommended after disinfection and before the treated effluent goes into the distribution system.

o. Effective January 1, 2020, SGRWRF shall report the calculated TBPEL Reuse Average Annual Discharge Concentration for the annual average concentration for total phosphorus.

i. SGRWRF shall comply with the effluent limitations for the annual average total phosphorus concentrations based on the calculated TBPEL Reuse Average Annual Discharge Concentration.

ii. Definitions

1. "Monthly Average Mass Loading" in lbs/d means the pounds per day of a pollutant discharged on average during a calendar month, calculated as the average monthly discharge concentration (mg/L) times the average monthly surface water discharge flow rate to (mgd) times 8.34 conversion factor.
2. "Monthly Average Plant Flow" in mgd means the average of daily plant flows over a calendar month, calculated as the sum of all surface water and reuse outfalls daily discharges measured during a calendar month divided by the number of daily discharges measured during the month.
3. "Annual Average Mass Loading" in lbs/d means the average of monthly mass loading per day over calendar year, calculated as the sum of monthly average mass loadings measured during a calendar year divided by the number of monthly average plant flows measured during the year.
4. "Annual Average Plant Flow" in mgd means the average of monthly average plant flows per day over a calendar year, calculated as the sum of monthly average plant flows measured during a calendar year divided by the number of monthly average plant flows measured during the year.
5. "TBPEL Historic Average Annual Reuse Flow" in mgd means the annual average reuse flow when the TBPEL variance request was filed. St. George's TBPEL Historic Average Annual Reuse Flow Rate is 1.5 mgd.
6. "TBPEL Reuse Average Annual Discharge Concentration" in mg/L means the equivalent concentration if the load discharged to the receiving water were carried by the full plant flow without the historic

reuse flows over a calendar year, calculated as the annual average mass loading (lbs/d) divided by 8.34 conversion factor divided by the expression of the annual average plant flows (mgd) minus the TBPEL historic annual average reuse flows (mgd).

p. Equation for TBPEL Reuse Average Annual Discharge Concentration:

1. $C_r = \frac{\frac{\sum_n^i \dot{m}_m}{n}}{8.34 * (Q_a - Q_h)}$
2. C_r = TBPEL Reuse Alternative Average Annual Discharge for facility (mg/L).
3. $\dot{m}_m$ = Monthly average mass loading (lbs/d)
4. n = Number of monthly average plant flows measured during the year
5. Q_a = Annual Average Plant Flow - discharge rate of effluent to surface waters and reuse (mgd).
6. Q_h = TBPEL Historic Annual Average Reuse Flow (mgd). St. George's TBPEL Historic Annual Average Reuse Flow Rate is 1.5 mgd.

q. Management Practices for Land Application of Treated Effluent:

i. The application of treated effluent to frozen, ice-covered, or snow covered land is prohibited.
ii. No person shall apply treated effluent where the slope of the site exceeds 6 percent.
iii. The use should not result in a surface water runoff.
iv. The use must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.
v. Any irrigation with treated effluent must be at least 300 feet from a potable well.
vi. For Type I reuse, any irrigation must be at least 50 feet from any potable water well.
vii. For Type II reuse, any irrigation must be at least 300 feet from any potable water well.
viii. For Type II reuse, spray irrigation must be at least 100 feet from areas intended for public access. This distance may be reduced or increased by the Director.
ix. Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable well.
x. Public access to effluent storage and irrigation or disposal sites shall be restricted by a stock-tight fence or other comparable means which shall be posted and controlled to exclude the public (Compliance Schedule for a Particular Parameter if necessary).

End Table References

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 grab/composite sample of the final effluent at Outfall 001. The

sample shall be collected at the point of compliance before mixing with the receiving water.

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

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

A multi dilution test consisting of at least five concentrations and a control is required at two dilutions below and two above the RWC, if possible. If test acceptability criteria are not met for control survival, growth, or reproduction, the test shall be considered invalid. A valid replacement test is required within the specified sampling period to remain in compliance with this permit. Chronic toxicity occurs when, during a chronic toxicity test, the 25% inhibition concentration (IC25) calculated on the basis of test organism survival and growth or survival and reproduction, is less than or equal to 43.4% 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 1.C.3.b Accelerated Testing). (the Director may enter acceptable variations in the test procedure here as documented in the Fact Sheet Statement of Basis and based on the test acceptability criteria as contained in Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control January, 2017). 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 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 five effluent dilutions for chronic (five plus the control), on the species found to be more sensitive, 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 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 every two weeks (chronic) (note that only one test should be run at a time), for up to 5 tests, until either:

1) 2 consecutive tests fail, or 3 out of 5 tests fail, at which point a pattern of toxicity will have been identified, or

2) 2 consecutive tests pass, or 3 out of 5 tests pass, in which case no pattern of toxicity is identified.

d. *Preliminary Toxicity Investigation*.

(1) When a pattern of toxicity is detected the permittee will notify the Director in writing within 5 days and begin an evaluation of the possible causes of the toxicity. The permittee will have 15 working days from demonstration of the pattern of toxicity to complete an optional Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Director. The PTI may include, but is not limited to: additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if any spill may have occurred.

(2) If the PTI identifies a probable toxicant and/or a probable source of toxicity, the permittee shall submit, as part of its final results, written notification of that

effect to the Director. Within thirty days of completing the PTI the permittee shall submit to the Director for approval a control program to control effluent toxicity and shall proceed to implement such plan in accordance with the Director's approval. The control program, as submitted to or revised by the Director, will be incorporated into the permit. After final implementation, the permittee must demonstrate successful removal of toxicity by passing a two species WET test as outlined in this permit. With adequate justification, the Director may extend these deadlines.

(3) If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Director as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (see Part I.C.3.e Toxicity Reduction Evaluation).

(4) If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Director, with supporting testing evidence.

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

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

(1) Phase I – Toxicity Characterization

(2) Phase II – Toxicity Identification Procedures

(3) Phase III – Toxicity Control Procedures

(4) Any other appropriate procedures for toxicity source elimination and control.

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

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

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

(a) An alternative control program for compliance with the numerical requirements.

(b) If necessary, as determined by the Director, provide a modified biomonitoring protocol which compensates for the pollutant(s) being controlled numerically.

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

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

D. Reporting of Monitoring Results.

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

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

2. Reporting of Reuse Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported in NetDMR no later than the 28th day of the month following the completed reporting period. If no reuse occurs during the reporting period, "no reuse" shall be reported for those applicable effluent parameters. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements* (*see Part VII.G*), and submitted to the Division of Water Quality at the following address:

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

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 and the General Pretreatment Regulations *40 CFR Part 403*. Such program requires the permittee to do the following:

1. Carry out inspection, surveillance, and monitoring procedures, which will determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the pretreatment standards. At a minimum, all significant industrial users shall be inspected and sampled by the permittee at least once per year;

2. Control through permit, order, or similar means, the contribution to the POTW by each industrial user to ensure compliance with applicable pretreatment standards and requirements;

3. Require development, as necessary, of compliance schedules by each industrial user for the installation of control technologies to meet applicable pretreatment standards;

4. Maintain and update industrial user information as necessary, to ensure that all IUs are properly permitted and/or controlled at all times;

5. Enforce all applicable pretreatment standards and requirements and obtain appropriate remedies for noncompliance by any industrial user;

6. Annually publish a list of industrial users that were determined to be in significant noncompliance during the previous year. The notice must be published before March 28 of the following year;

7. Maintain an adequate revenue structure and staffing level for continued implementation of the Pretreatment Program.

8. Evaluate all significant industrial users at least once every two years to determine if they need to develop a slug prevention plan. If a slug prevention plan is required, the permittee shall insure that the plan contains at least the minimum elements required in *40 CFR 403.8(f)(2)(v);*

9. Notify all significant industrial users of their obligation to comply with applicable requirements under *Subtitles C and D* of the *Resource* Conservation and Recovery Act (RCRA); and

10. Develop, implement, and maintain an enforcement response plan as required by *40 CFR 403.8(f)(5)* which shall, at a minimum,

    a. Describe how the POTW will investigate instances of noncompliance;

b. Describe the types of escalating enforcement responses the POTW will take in response to all anticipated type of industrial user violations; and

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)*.

12. Ensure industrial users are reporting per *40 CFR 403.12.*

13. Ensure industrial user permits and files meet the requirements of *40 CFR 403.12*.

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.

C. Program Modifications. 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 or are major modifications as stated in *40 CFR 403.18* shall not be effective until after approval has been granted by the Director.

D. 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.I.*

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.

E. General and Specific Prohibitions. Pretreatment standards (*40 CFR 403.5*) specifically prohibit the introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:

1. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, waste-streams with a closed cup flashpoint of less than 140°F (60°C);
2. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;

3. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;

4. Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge at such volume or strength as to cause interference in the POTW;

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)*.

F. 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.

G. Enforcement Notice. *UCA 19-5-104* provides that the State may issue a notice to the POTW stating that a determination has been made that appropriate enforcement action must be taken against an industrial user for noncompliance with any pretreatment requirements within 30 days. The issuance of such notice shall not be construed to limit the authority of the Director.

H. Formal Action. The Director retains the right to take legal action against any industrial user and/or POTW for those cases where a permit violation has occurred because of the failure of an industrial user to meet an applicable pretreatment standard.

I. Funding. The permittee must have sufficient resources and qualified personnel to carry out the authorities and procedures of the pretreatment program.

J. 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 following parameters:

Monitoring for Pretreatment Program				
Parameter	**MDL [a]**	**Frequency**	**Sample Type**	**Units**
Total Arsenic	0.149	Quarterly	Composite	mg/L
Total Cadmium	0.0011			
Total Chromium	0.020			
Total Copper	0.044			
Total Lead	0.0275			
Total Molybdenum	NA			
Total Nickel	0.248			
Total Selenium	0.0063			
Total Silver	0.0509			
Total Zinc	0.4791			
Total Cyanide	0.0077		Composite/Grab	
Total Mercury	0.000018			
TTOs, [b]	NA	Yearly		

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.

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 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.

2. 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 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. The solids are stabilized in the oxidation ditches with mean cell residence time of approximately 45 days. They solids are separated from the wastes water in the final clarifiers where the waste activated sludge is sent off to the sludge thickeners. From here they are sent to the centrifuges for dewatering to 15% to 20% solids. The dewatered sludge is then sent off to the local landfill for disposal

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.

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.

* CPLR -- Cumulative Pollutant Loading Rate
† APLR – Annual Pollutant Loading Rate

(5) Animals shall not be allowed to graze on the land for 30 days after application.
(6) Turf grown on land where biosolids is applied shall not be harvested for one year after application if the harvested turf is placed on either land with a high potential for public exposure or a lawn.

(7) Public access to land with a high potential for public exposure shall be restricted for one year after application.

(8) Public access to land with a low potential for public exposure shall be restricted for 30 days after application.

(9) The sludge or the application of the sludge shall not cause or contribute to the harm of a threatened or endangered species or result in the destruction or adverse modification of critical habitat of a threatened or endangered species after application.

Pathogen Control Class	
Class A	**Class B**
B Salmonella species –less than three (3) MPN‡ 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	

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 though the following methods.

(1) Saint George dewaters the biosolids then transfers them to a landfill for disposal where Saint George will need to ensure that the solids will be covered daily with soil or another approved material. If the solids are not covered daily, the solids cannot be disposed in the landfill.

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)*.

‡ MPN –Most Probable Number

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

b. Sample collection, preservation and analysis shall be performed in a manner consistent with the requirements of *40 CRF 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.

(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

[§] Permittee produced 3,197 Dry Metric Tons in 2017. Accordingly, they will sample at least Six times per year.

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.

         (b) The permittee may request the limits of *Part III.C(6)* be modified if different limits would be justified based on local conditions. The limits are required to be developed in cooperation with the local agricultural extension office or university.

         (c) Deep soil monitoring for nitrate-nitrogen is required for all land application sites (does not apply to sites where biosolids are applied less than once every five years). A minimum of six samples for each 320 (or

less) acre area is to be collected. These samples are to be collected down to either a 5 foot depth, or the confining layer, whichever is shallower (sample at 1 foot, 2 foot, 3 foot, 4 foot and 5 foot intervals). Each of these one-foot interval samples shall be analyzed for nitrate-nitrogen. In addition to the one-foot interval samples, a composite sample of the 5 foot intervals shall be taken, and analyzed for nitrate-nitrogen as well. Samples are required to be taken once every five years for non-irrigated sites that receive more than 18 inches of precipitation annually or for irrigated sites

(7) Biosolids shall not be applied to any site area with standing surface water. If the annual high groundwater level is known or suspected to be within five feet of the surface, additional deep soil monitoring for nitrate-nitrogen as described in *Part III.C.(6),(c).* is to be performed. At a minimum, this additional monitoring will involve a collection of more samples in the affected area and possibly more frequent sampling. The exact number of samples to be collected will be outlined in a deep soil monitoring plan to be submitted to the Director and the EPA within 90 days of the effective date of this permit. The plan is subject to approval by the Director.

(8) The specified cover crop shall be planted during the next available planting season. If this does not occur, the permittee shall notify the Director in writing. Additional restrictions may be placed on the application of the biosolids on that site on a case-by-case basis to control nitrate movement. Deep soil monitoring may be increased under the discretion of the Director.

(9) When weather and or soil conditions prevent adherence to the biosolids application procedure, biosolids shall not be applied on the site.

(10) For biosolids that are sold or given away, an information sheet shall be provided to the person who receives the biosolids. The label or information sheet shall contain:

(a) The name and address of the person who prepared the biosolids for sale or give away for application to the land.

(b) A statement that prohibits the application of the biosolids to the land except in accordance with the instructions on the label or information sheet.

(c) The annual whole biosolids application rate for the biosolids that do not cause the metals loading rates in Tables 1, 2, and 3 (*Part III.B.1.*) to be exceeded.

(11) Biosolids subject to the cumulative pollutant loading rates in Table 2 (*Part III.B.1.*) shall not be applied to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates in Table 2 have been reached.

(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** 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 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*).

** 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.

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

B. Construction Storm Water Permit. Any construction at the facility that disturbs an acre or more of land, including less than an acre if it is part of a common plan of development or sale, is required to obtain coverage under the UPDES Construction General Storm Water Permit (UTRC00000). Permit coverage must be obtained prior to land disturbance. If the site qualifies, a Low Erosivity Waiver (LEW) Certification may be submitted instead of permit coverage.

V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.

B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* and *40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

F. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The

report shall be made to the Division of Water Quality, (801) 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 maximum daily discharge limitation for any of the pollutants listed in the permit; or,

   e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.

3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected;

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,

   e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.

5. Reports shall be submitted to the addresses in *Part I.D, Reporting of Monitoring Results*.

I. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part I.D* are submitted. The reports shall contain the information listed in *Part V.H.3*

J. Inspection and Entry The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,

5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Director, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

VI. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions. The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding $50,000 per day. Except as provided at *Part VI.G, Bypass of Treatment Facilities* and *Part VI.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.

2. Prohibition of Bypass.

   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.

   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.

VII. GENERAL REQUIREMENTS

A. Planned Changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. Signatory Requirements. All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director, and,

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

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

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

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

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

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

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

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

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

M. Transfers. This permit may be automatically transferred to a new permittee if:

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

2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph *2* above.

N. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.

O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

3. Revisions to the current CWA § 208 area wide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.

P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.

Q. Toxicity Limitation - Reopener Provision. Use the following paragraph if WET testing is required at the facility:

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

1. Toxicity is detected, as per *Part I.C.* 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.

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

VIII. DEFINITIONS

A. Wastewater.

1. The “7-day (and weekly) average”, other than for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.

2. The "30-day (and monthly) average," other than for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

3. “Act,” means the *Utah Water Quality Act*.

4. “Acute toxicity” occurs when 50 percent or more mortality is observed for either test species at any effluent concentration (lethal concentration or “LC_{50}”).

5. “Bypass,” means the diversion of waste streams from any portion of a treatment facility.

6. “Chronic toxicity” occurs when the IC_{25}< 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_{25}" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.

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;

b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

d. Continuous sample volume, with sample collection rate proportional to flow rate.

9. "CWA," means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.

10. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.

11. "EPA," means the United States Environmental Protection Agency.

12. "Director," means Director of the Division of Water Quality.

13. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

14. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

15. "Severe Property Damage," means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

16. "Upset," means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

B. Biosolids.

1. "Biosolids," means any material or material derived from sewage solids that have been biologically treated.

2. "Dry Weight-Basis," means 100 percent solids (i.e. zero percent moisture).

3. "Land Application" is the spraying or spreading of biosolids onto the land surface; the injection of biosolids below the land surface; or the incorporation of biosolids into the land 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^{o} or 105^{o} 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.

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

16. "Cumulative Pollutant Loading Rate" or CPLR is the maximum amount of an inorganic pollutant (dry-weight basis) that can be applied to a unit area of land.

17. "Grit and Screenings" are sand, gravel, cinders, other materials with a high specific gravity and relatively large materials such as rags generated during preliminary treatment of domestic sewage at a treatment works and shall be disposed of according to *40 CFR 258*.

18. "High Potential for Public Contact Site" is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

19. "Low Potential for Public Contact Site" is the land with a low potential for contact by the public. This includes, but is not limited to, farms, ranches, reclamation areas, and other lands which are private lands, restricted public lands, or lands which are not generally accessible to or used by the public.

20. "Monthly Average" is the arithmetic mean of all measurements taken during the month.

21. "Volatile Solids" is the amount of the total solids in sewage sludge lost when the sludge is combusted at 550 degrees Celsius for 15-20 minutes in the presence of excess air.

FACT SHEET AND STATEMENT OF BASIS
ST. GEORGE REGIONAL WATER RECLAMATION FACILITY
RENEWAL PERMIT: DISCHARGE & BIOSOLIDS
UPDES PERMIT NUMBER: UT0024686
UPDES BIOSOLIDS PERMIT NUMBER: UTL-024686
MAJOR MUNICIPAL

FACILITY CONTACTS

Person Name:	Ben Ford	Person Name:	Daniel Morrison
Position:	General Manager	Position:	Pretreatment Coordinator
Phone Number:	(435) 627-4268	Phone Number:	(435) 627-4273
Person Name:	Eric Richins	Person Name:	Leslie Wentland
Position:	Plant Superintendent	Position:	Laboratory Director
Phone Number:	(435) 627-4272	Phone Number:	(435) 627-4269
Person Name:	Jason Jones		
Position:	Biosolids Coordinator		
Phone Number:	(435) 627-4266		

Facility Name:	City of St. George
Mailing Address:	3780 South 1550 West St. George, Utah 84790
Telephone:	(435) 627-4266
Actual Address:	2176 West 3780 South St. George Washington County

DESCRIPTION OF FACILITY

St. George Regional Water Reclamation Facility (SGWRF) is located at 2176 West 3780 South, St. George, Utah and serves St. George and the surrounding areas of Ivins, Santa Clara and Washington City. The facility began discharging in 1990 with a 5 MGD design capacity, was upgraded in 1994 to an 8.5 MGD capacity, and the latest upgrade was completed in 1999 bringing the plant design capacity to an average daily flow of 17 MGD. The plant is currently under Phase 2 of an upgrade to increase the capacity to 25 MGD.

The facility abandoned the original Outfall 001 and 002 during a plant Phase 1 in 2019. The current Outfall 001 discharge point is located directly south of the old outfalls at the southeast side of the treatment plant, the north bank of the Virgin River, approximately three miles (3 miles) southwest of where the Virgin River crosses under the I-15 Interstate Highway, in Washington County, Utah. Outfall 001 has a 66 inch discharge pipe at latitude 37°02'20" and longitude 113°37'50", with STORET Number 495006. Outfall 001R is Type I Reuse for irrigation of local parks and golf courses at latitude 37°02'19" and longitude 113°37'53".

The treatment facilities consist of four 88 inch influent screw pumps, three mechanical bar screens, two Vortex/stacked tray grit chambers, one bio selector, four oxidation ditches, six clarifiers, three low pressure ultraviolet disinfection systems, and one cascade aeration systems. Sludge is currently wasted from the clarifiers into two gravity thickeners. The sludge is then transferred to the post autho-thermal thermophilic aerobic digestion (ATAD) holding tank and then pumped into the solids building feeding three centrifuges for de-watering purposes. The sludge is transported to the County Landfill for burial.

Phase 1 and Phase 2 of the plant upgrades the Headworks to a design of a maximum daily average of 50 MGD, 4 screw pumps each rated at 16.7 MGD, 3 bar screens each rated at 25 MGD and a grit washer rated at 50 MGD. The UV disinfection will go from divided trains to a combined process with three UV channels each rated at 25 MGD and with one discharge point to the Virgin River with a maximum daily average of 50 MGD.

Phase 2 is an upgrade of the biological process with the addition of nutrient removal systems beginning fall 2020. The upgrade will have improvements to the Bio-Selector, train 1 and 2 RAS/WAS pump station, solids holding basin and electrical. The odor control biofilter will be replaced, all four oxidation ditches will be converted and there will be a new blower building and two new secondary clarifiers.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

An Antidegration Level II review was completed for the Phase 2 upgrade and limits have been determined for the upgraded facility. The 2018 Reasonable Potential analysis (RP) was used for this permit issuances. RP has been completed for metal parameters. Silver no longer has a limit but will be required to be monitored. Boron has been added as a parameter of concern from the Reasonable Potential evaluation and has been added as a monitoring parameter. No limit has been established at this time. Based on new information from the DWQ TMDL section the total dissolved solids have been relaxed.

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

The TBPEL requires that all non-lagoon wastewater treatment works discharging wastewater to surface waters of the state shall provide treatment processes which will product effluent less than or equal to an annual mean of 1.0 mg/L for total phosphorus. This TBPEL shall be achieved by January 1, 2020 unless a variance has been granted by DWQ. On January 18, 2019, DWQ approved the SGWRF variance request not to extend beyond **January 1, 2025** and with an interim total phosphorus annual average limit of **2.5** mg/L beginning January 1, 2020. This permit modification is incorporating the approved variance with the interim limits and dates that were previously public noticed in the local newspaper, in which no comments were received.

Industrial storm water provisions have been removed from the permit. The facility will be required to obtain coverage or an appropriate exclusion under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activities. Please see the Storm Water section of this Fact Sheet for more information.

DISCHARGE

DESCRIPTION OF DISCHARGE

The City of St. George has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. There were no significant violations reported on the DMRs in the last five years.

Outfall	Description of Discharge Point
001	The 66 inch discharge pipe is located on the southeast side of the treatment plant, about 400 feet from the north bank of the Virgin River, approximately three (3) miles southwest of where the Virgin River crosses under the I-15 Interstate Highway, in Washington County, Utah at approximately latitude 37°02'20" and longitude 113°37'50".
001R	Located at latitude 37°02'19" and longitude 113°37'53". The Type I effluent is used by St. George irrigation to irrigate public parks and golf courses in the area.

RECEIVING WATERS AND STREAM CLASSIFICATION

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

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

BASIS FOR EFFLUENT LIMITATIONS

Limitations on Total Suspended Solids (TSS), E-coli, pH and percent removal for BOD_5 and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. The oil and grease is based on best professional judgment (BPJ).

Parameters of Concern

The potential parameters of concern are total suspended solids, dissolved oxygen, BOD5, total phosphorus, total nitrogen, total ammonia, dissolved metals and pH.

Colorado River Basin Salinity Forum

SGWRF is required to comply with the Colorado River Basin Salinity Forum (Forum) policies, as per UAC R317-2-4, to further control TDS loading within the Colorado River Basin of Utah. In accordance with Forum policy, on October 29, 1996 SGWRF submitted to DWQ a TDS demonstration which stated that it was not practicable to meet the 400 mg/L incremental increase requirement of the Forum policy and were subsequently given a variance. Although SGWRF must continue to implement the following TDS practices as stated in the permit:

1. Continue monitoring and reporting both the influent and effluent TDS on a weekly basis.

2. Continue to minimize the groundwater entering into your collection system as practicable through appropriate operation and maintenance procedures.
3. Through written communication, encourage those systems discharging into your system to undertake to minimize the groundwater entering their systems and report to your on the same way.
4. Through written communication, and any other suitable means, encourage appropriate dischargers to your system to minimize their TDS loadings through good housekeeping procedures.

Type I reuse limitations for Outfall OO1R are based upon UAC R317-3-11.

Reasonable Potential Analysis
Since January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. RP for this permit renewal was conducted following DWQ's September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance). There are four outcomes defined in the RP Guidance: Outcome A, B, C, or D. These Outcomes provide a frame work for what routine monitoring or effluent limitations are required. The RP calculations were performed and determined there no RP parameters requiring limits or additional monitoring.

The permit limitations are:

Table 1					
Interim limits until January 1, 2025					
Parameter	**Outfall 001 Effluent Limitations [a]**				
	Maximum Monthly Avg	**Maximum Weekly Avg**	**Yearly Average**	**Daily Minimum**	**Daily Maximum**
Flow, MGD	17	--	--	--	--
BOD_5, mg/L	17	35	--	--	--
BOD_5 Min. % Removal	85	--	--	--	--
TSS, mg/L	25	35	--	--	--
TSS Min. % Removal	85	--	--	--	--
E. coli, No./100mL	126	157	--	--	--
Dissolved Oxygen, (DO) mg/L	--	--	--	5.5	--
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	2.77	--	--	--	17.2
Fall (Oct-Dec)	5.5	--	--	--	16.9
Winter (Jan-Mar)	10.3	--	--	--	27.8
Spring (Apr-Jun)	8.4	--	--	--	23.2
WET, Chronic Biomonitoring	--	--	--	--	IC_{25}> 43.4% effluent
Oil & Grease, mg/L	--	--	--	--	10.0
TDS, mg/L [e, i]					2360
pH, Standard Units	--	--	--	6.5	9.0
Total Phosphorus, mg/L	--	--	2.5	--	--

The permit limitations for Outfall (001R) (Reuse) are:

Table 2					
Parameter	**Outfall 001R Effluent Limitations [a], [n]**				
	Max Monthly Average	**Max Weekly Median**	**Max Daily Average**	**Minimum**	**Maximum**
Turbidity, NTU [o]	--	--	2	--	5
TRC, mg/L [o]	--	--	--	1	--
BOD_5, mg/L	10	--	--	--	--
E. coli, No/100mL [m]	--	ND	--	--	9
pH, Standard Units	--	--	--	6.0	9.0

Table 3					
Interim limits beginning January 1, 2025					
Parameter	**Outfall 001 Effluent Limitations [a]**				
	Maximum Monthly Avg	**Maximum Weekly Avg**	**Yearly Average**	**Daily Minimum**	**Daily Maximum**
Flow, MGD	25.2	--	--	--	--
BOD_5, mg/L					
Summer (Jul-Sep)	9	--	--	--	--
Fall – Spring (Oct-Jun)	15	--	--	--	--
BOD_5 Min. % Removal	85	--	--	--	--
TSS, mg/L	25	35	--	--	--
TSS Min. % Removal	85	--	--	--	--
E. coli, No./100mL	126	157	--	--	--
Dissolved Oxygen, (DO) mg/L	--	--	--	6	--
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	1.0	--	--	--	14.7
Fall (Oct-Dec)	3.0	--	--	--	14.2
Winter (Jan-Mar)	3.0	--	--	--	13.5
Spring (Apr-Jun)	2.0	--	--	--	12.3
WET, Chronic Biomonitoring	--	--	--	--	IC_{25}> 43.4% effluent
Oil & Grease, mg/L	--	--	--	--	10.0
TDS, mg/L [e], [i]					2360
pH, Standard Units	--	--	--	6.5	9.0
Total Phosphorus, mg/L	--	--	1	--	--

SELF-MONITORING AND REPORTING REQUIREMENTS

The permit will require reports to be submitted monthly and annually, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab sheets for biomonitoring must be attached to the biomonitoring DMR. Lab sheets for metals and toxic organics must be attached to the DMRs.

Table 4			
Parameter	**Self-Monitoring and Reporting Requirements** [a]		
	Frequency	**Sample Type**	**Units**
Total Flow [b, c]	Continuous	Recorder	MGD
BOD_5			
Influent [d]	5 X Weekly	Composite	mg/L
Effluent	5 X Weekly	Composite	mg/L
TSS			
Influent [d]	5 X Weekly	Composite	mg/L
Effluent	5 X Weekly	Composite	mg/L
E. coli	5 X Weekly	Grab	No./100mL
DO	5 X Weekly	Grab	mg/L
Total Ammonia (as N)	4 X Weekly	Composite	mg/L
WET – Biomonitoring [h]			
Ceriodaphnia - Chronic	2nd & 4th Quarters	Composite	Pass/Fail
Fathead Minnows - Chronic	1st & 3rd Quarters	Composite	Pass/Fail
Oil & Grease [f]	Monthly	Grab	mg/L
TDS, mg/L [e]	Weekly	Composite	mg/L
pH	5 X Weekly	Grab	SU
Boron [g]	Quarterly	Composite	mg/L
Temperature [k]	3 X Weekly	Grab	°C
Orthophosphate, (as P) [i] Effluent	Monthly	Composite	mg/L
Phosphorus, Total [j, k]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Total Kjeldahl Nitrogen, TKN (as N) [j, k]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrate + Nitrite [j, k]	Monthly	Composite	mg/L
Metals			
Influent [g, i]	Quarterly	Composite/Grab	mg/L
Effluent	Quarterly	Composite/Grab	mg/L
Organic Toxics [i]	Yearly	Grab	mg/L

The following is a summary of the Type I reuse self-monitoring and reporting requirements.

Table 5			
Parameter	**Reuse Outfall 001R Self-Monitoring and Reporting Requirements** [a, l]		
	Frequency	**Sample Type**	**Units**
Total Flow [b, c]	Continuous	Recorder	MGD
Turbidity	Continuous	Recorder	mg/L
BOD_5	Weekly	Composite	mg/L
E.coli [m]	Daily	Grab	No./100mL
pH	Daily	Grab	SU

Table References

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

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

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

d. 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.

e. SGWRF is required to comply with the Colorado River Basin Salinity Forum (Forum) policies, as per UAC R317-2-4. On October 29, 1996 SGWRF submitted to DWQ a TDS demonstration which stated that it was not practicable to meet the 400 mg/L incremental increase requirement of the Forum and were subsequently given a variance. Although SGWRF must:

1. Continue monitoring and reporting both the influent and effluent TDS on a weekly basis.
2. Continue to minimize the groundwater entering into your collection system as practicable through appropriate operation and maintenance procedures,
3. Through written communication, encourage those systems discharging into your system to undertake to minimize the groundwater entering their systems and report to you on the same
4. Through written communication, and any other suitable means, encourage appropriate dischargers to your system to minimize their TDS loadings through good housekeeping procedures.
5. Submit, with your next renewal application, a report summarizing efforts taken to undertake item 2, 3 and 4 above stating the average TDS level each year, and discuss the reasons for any increase in the average TDS level.

f. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report 9 under NODI in NetDMR.

g. Metals results were reviewed for the last 36 months. Reasonable Potential was calculated for Boron, a limit is not required but quarterly monitoring will be required.

h. The chronic Ceriodaphnia will be tested during the 2nd and 4th quarters of the calendar year, and the chronic fathead minnows will be tested during the 1st and 3rd quarters.

i. See Part II of this permit for additional requirements regarding sampling for metals and organic toxics.

j. These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

k. Temperature and boron are being sampled in response to 303(d) listing of the receiving segment of the Virgin River. TMDL development may take place in the future but it is not currently a priority for DWQ. The Pollutants Of Concern (POC) will be monitored and reported (on a monthly basis by the facility on Discharge Monitoring Report, but will not have a limit associated with them /or at the end of each Calendar year of sampling for these POC's), SGWRF will report the results of all sampling done for the POC. If SGWRF decides to sample more frequently for these POC's, the additional data will be welcome.

l. Reuse monitoring results obtained during the previous month for reuse discharges shall be summarized for each month and reported on a Monthly Operational Report, post-marked no later than the 28th day of the month following the completed reporting period.

m. The weekly median *E. coli* concentration shall be non-detect.

n. An alternative disposal option or diversion to storage must be automatically activated if turbidity exceeds the maximum instantaneous limit for more than 5 minutes, or chlorine residual drops below the instantaneous required value for more than 5 minutes, where chlorine disinfection is used.

- A 1 mg/l total chlorine residual is recommended after disinfection and before the treated effluent goes into the distribution system.

o. Effective January 1, 2020, SGRWRF shall report the calculated TBPEL Reuse Average Annual Discharge Concentration for the annual average concentration for total phosphorus.

i. SGRWRF shall comply with the effluent limitations for the annual average total phosphorus concentrations based on the calculated TBPEL Reuse Average Annual Discharge Concentration.

ii. Definitions

1. "Monthly Average Mass Loading" in lbs/d means the pounds per day of a pollutant discharged on average during a calendar month, calculated as the average monthly discharge concentration (mg/L) times the average monthly surface water discharge flow rate to (mgd) times 8.34 conversion factor.
2. "Monthly Average Plant Flow" in mgd means the average of daily plant flows over a calendar month, calculated as the sum of all surface water and reuse outfalls daily discharges measured during a calendar month divided by the number of daily discharges measured during the month.
3. "Annual Average Mass Loading" in lbs/d means the average of monthly mass loading per day over calendar year, calculated as the sum of monthly average mass loadings measured during a calendar year divided by the number of monthly average plant flows measured during the year.
4. "Annual Average Plant Flow" in mgd means the average of monthly average plant flows per day over a calendar year, calculated as the sum

of monthly average plant flows measured during a calendar year divided by the number of monthly average plant flows measured during the year.

5. "TBPEL Historic Average Annual Reuse Flow" in mgd means the annual average reuse flow when the TBPEL variance request was filed. St. George's TBPEL Historic Average Annual Reuse Flow Rate is 1.5 mgd.
6. "TBPEL Reuse Average Annual Discharge Concentration" in mg/L means the equivalent concentration if the load discharged to the receiving water were carried by the full plant flow without the historic reuse flows over a calendar year, calculated as the annual average mass loading (lbs/d) divided by 8.34 conversion factor divided by the expression of the annual average plant flows (mgd) minus the TBPEL historic annual average reuse flows (mgd).

p. Equation for TBPEL Reuse Average Annual Discharge Concentration:

1. $C_r = \frac{\frac{\sum_n^i \dot{m}_m}{n}}{8.34*(Q_a - Q_h)}$
2. C_r = TBPEL Reuse Alternative Average Annual Discharge for facility (mg/L).
3. $\dot{m}_m$ = Monthly average mass loading (lbs/d)
4. n = Number of monthly average plant flows measured during the year
5. Q_a = Annual Average Plant Flow - discharge rate of effluent to surface waters and reuse (mgd).
6. Q_h = TBPEL Historic Annual Average Reuse Flow (mgd). St. George's TBPEL Historic Annual Average Reuse Flow Rate is 1.5 mgd.

q. Management Practices for Land Application of Treated Effluent:

i. The application of treated effluent to frozen, ice-covered, or snow covered land is prohibited.
ii. No person shall apply treated effluent where the slope of the site exceeds 6 percent.
iii. The use should not result in a surface water runoff.
iv. The use must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.
v. Any irrigation with treated effluent must be at least 300 feet from a potable well.
vi. For Type I reuse, any irrigation must be at least 50 feet from any potable water well.
vii. For Type II reuse, any irrigation must be at least 300 feet from any potable water well.
viii. For Type II reuse, spray irrigation must be at least 100 feet from areas intended for public access. This distance may be reduced or increased by the Director.
ix. Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable well.
x. Public access to effluent storage and irrigation or disposal sites shall be restricted by a stock-tight fence or other comparable means which shall be posted and controlled to exclude the public (Compliance Schedule for a Particular Parameter if necessary).

End Table References

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 solids are stabilized in the oxidation ditches with mean cell residence time of approximately 45 days. They solids are separated from the wastes water in the final clarifiers where the waste activated sludge is sent off to the sludge thickeners. From here they are sent to the centrifuges for dewatering to 15% to 20% solids. The dewatered sludge is then sent off to the local landfill for disposal.

The 2017 Annual Biosolids Report was received on February 15, 2018. In 2017 Saint George produced 3197 dry metric tons (DMT) of biosolids. The biosolids met the heavy metals requirements to be considered Exceptional Quality but does not meet Class A or Class B pathogen reduction requirements for beneficial reuse. All of the biosolids were disposed of at the Washington County Landfill.

The last inspection conducted at the site was February 26, 2018. The inspection showed that Saint George 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

In 2017, Saint George disposed of 3197 DMT of biosolids, therefore they need to sample at least six times a year.

Landfill Monitoring

Under *40 CFR 258,* the landfill monitoring requirements include a paint filter test. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill *(40 CFR 258.28(c)(1).*
Saint George disposed of 3197 DMT of biosolids at the Washington County Landfill.

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[1], (mg/ha)	Pollutant Conc. Limits, (mg/kg)	APLR[2], (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[3] 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.

Saint George does not intend to give away biosolids for land application on home lawns or gardens, and will therefore not be required to meet PFRP. If the permittee changes their intentions in the future, they will need to meet a specific PFRP, 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.

[1] CPLR -- Cumulative Pollutant Loading Rate
[2] APLR – Annual Pollutant Loading Rate
[3] 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). Saint George does not intend to land apply the biosolids and will therefore not be required to meet PSRP. If the permittee intends to land apply in the future, they will need to meet a specific PSRP, 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.

Vector Attraction Reduction (VAR)

If the biosolids are land applied Saint George will be required to meet VAR through the use of a method of listed under *40 CFR 503.33.* Saint George does not intend to land apply the biosolids and will therefore not be required to meet VAR. If the permittee intends to land apply in the future, they need to meet 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.

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

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

Landfill Monitoring

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

Record Keeping

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

Reporting

Saint George 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.

STORM WATER

STORMWATER REQUIREMENTS

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

Permit coverage under the Multi Sector General Permit (MSGP) for Storm Water Discharges from Industrial Activities is required based on the Standard Industrial Classification (SIC) code for the facility and the types of industrial activities occurring. If the facility is not already covered, it has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP or exclusion documentation. Previously storm water discharge requirements and coverage were combined in this individual permit. These have been separated to provide consistency among permittees, electronic reporting for storm water discharge monitoring reports, and increase flexibility to changing site conditions.

Permit coverage under the Construction General Storm Water Permit (CGP) is required for any construction at the facility which disturb an acre or more, or is part of a common plan of development or sale that is an acre or greater. A Notice of Intent (NOI) is required to obtain a construction storm water permit prior to the period of construction.

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

PRETREATMENT REQUIREMENTS

The Pretreatment Requirements, Part II of the UPDES Permit, have been modified to add additional language to clarify requirements. The changes are consistent with requirements found in the *R317-8-8 and 40 CFR 403*.

The pretreatment requirements remain the same with the permittee administering an approved pretreatment program. Authority to require a pretreatment program is provided for in *19-5-108 UCA, 1953 ann.* and *UAC R317-8-8*.

All changes to the program must be submitted for approval to the Division of Water Quality. If the change is deemed a substantial change, then the Division of Water Quality must approve the change prior to the implementation of the change. The permittee may not implement a substantial modification prior to approval by the Director.

The sampling of metals will be required quarterly and the sampling of organic toxics will be required 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 for a parameter of concern is above the value calculated for the local limit development that additional monitoring and notification must occur. Notification must be to the pretreatment coordinator and can be via email.

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. As part of this evaluation, the permit requires quarterly influent and effluent monitoring for metals and yearly organic toxics listed in *R317-8-7.5* and sludge monitoring for potential pollutants listed in *40 CFR 503.*

BIOMONITORING REQUIREMENTS

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

Since the permittee is a major municipal discharger, with a significant pretreatment program the renewal permit will require whole effluent chronic limits with chronic toxicity testing. It is anticipated that the chronic testing will not only indicate chronic toxicity, but also screen for acute toxicity. The permit will contain toxicity reopener language. (Description of monitoring frequency, species being monitored and Numerical Toxicity Limit if necessary)

The permit will contain the standard requirements for additional testing if chronic toxicity is detected and a TRE (Toxicity Reduction Evaluation) as necessary.

PERMIT DURATION

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

Drafted by
Sarah Leavitt, Discharge
Daniel Griffin, Biosolids
Jennifer Robinson, Pretreatment
Lonnie Shull, WET
Lisa Stevens, Storm Water
Dave Wham, Wasteload Analysis
Utah Division of Water Quality, (801) 536-4300

PUBLIC NOTICE

Began: June 23, 2020
Ended: July 24, 2020

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

The Public Noticed of the draft permit was published on the Division of Water Quality's Public Notice website.

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 June 23, 2020.

DWQ-2020-015242

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ATTACHMENT 1

Wasteload Analysis

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Utah Division of Water Quality
Statement of Basis
ADDENDUM
Wasteload Analysis and Antidegradation Level I Review
Facility Upgrade and Expansion

Date: **June 23, 2020**

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

Facility: **St. George Regional Water Reclamation Facility (SGRWRF)**
UPDES No. UT-0024686

Receiving water: **Virgin River (2B, 3B, 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 discharges via a 66 inch pipe located on the southeast side of the treatment plant about 400 feet from the north bank of the Virgin River.

The design flow rate of the upgraded facility is 25.2 MGD maximum monthly average and 33.6 maximum daily.

Receiving Water
The receiving water for Outfall 001 is the Virgin River. Per UAC R317-2-13.2(a), the designated beneficial uses of the Virgin River and tributaries from the state line to Quail Creek diversion are 2B, 3B, and 4.

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

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). The seasonal 7Q10 was calculated based on daily average flow measurements from USGS monitoring station #09413200, Virgin River Near Bloomington for (2010-2019). The calculated critical low flow values are listed in Table 1.

Table 1.Critical Low Flow

Season	Critical Low Flow (cfs)
Summer (July-Sept)	18.9
Fall (Oct-Dec)	46.6
Winter (Jan-Mar)	46.0
Spring (Apr-June)	20.8

Virgin River water quality was characterized based on samples collected from DWQ monitoring site 4950120, Virgin River at Bloomington Crossing Above St George WWTP (2010-2019).

Impaired Waters and TMDL

According to *Utah's 2016 Integrated Report*, the Virgin River from state line to Santa Clara River confluence (Assessment Unit UT15010010-001_00) was listed as impaired for temperature, boron and total dissolved solids (TDS).

The *TMDL Water Quality Study of the Virgin River Watershed* (Tetra Tech Inc. 2004) was approved for TDS on the Virgin River on September 20, 2004. As a result of the approved TMDL, a site specific standard of 2,360 mg/L TDS for the Virgin River from the Utah/Arizona border to Pah Tempe Springs was included in the Utah Water Quality Standards at R317-2-14. Refer to the attached memorandum for interpretation of the TMDL and associated TDS limits.

Mixing Zone

Per UAC R317-2-5, the maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions. Water quality standards must be met at the end of the mixing zone. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge were total suspended solids (TSS), dissolved oxygen (DO), BOD5, total phosphorus (TP), total nitrogen (TN), total ammonia (TAN), dissolved metals, and pH, as determined in consultation with the UPDES Permit Writer.

Wasteload Allocation Methods

Effluent limits were determined for conservative constituents using a mass balance mixing analysis (UDWQ 2012).

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

The effluent limits for DO and BOD_5 in order to meet minimum DO criteria in the receiving water was evaluated using the Utah River Model.

Models and supporting documentation are available for review upon request.

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_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (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_{50} is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC_{25}

Season	Percent Effluent	Dilution Ratio
Summer	67.3%	0.5
Fall	45.6%	1.2
Winter	45.9%	1.2
Spring	65.2%	0.5

Ammonia Limits

The water quality criteria for ammonia toxicity are dependent on the temperature and pH of the effluent and the receiving water. The temperature and pH of the effluent after the proposed plant upgrade were assumed similar to current conditions. If the pH of the effluent is different under the plant upgrade than assumed, the ammonia limits calculated in this WLA will be modified in the future. The chronic ammonia criterion is also dependent on the presence or absence of fish early life stages (ELS). Presence of fish ELS was assumed for all seasons.

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. For planning purposes, ammonia limits were determined to meet both the current criteria and the most stringent potential future criteria with mussels present (Table 3). The proposed future criteria with mussels absent are higher than the current criteria with fish ELS present. Therefore, the limits to meet the current criteria are sufficient to meet the potential future criteria with mussels absent and are not repeated in the tables.

Table 3: Ammonia Limits (mg/L) to Meet Ammonia Toxicity Criteria (1 hour average)

Season	Acute (1 hr ave)		Chronic (30 day ave)	
	Current 1999 Criteria	2013 EPA Mussels Present	Current 1999 Criteria	2013 EPA Mussels Present
Summer (July-September)	14.7	4.4	1.8	0.7
Fall (October-December)	14.2	9.2	3.0	2.1
Winter (January-March)	13.5	12.0	3.5	2.8
Spring (April-June)	12.3	7.5	2.6	1.3

Effluent Limits

Select WQBELs are summarized in Table 4. The complete list of WQBELs is attached in the Wasteload Addendum. Ammonia limits were set in order to meet instream DO criteria.

Table 4: Water Quality Based Effluent Limits Summary

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow (MGD)		33.6	1 day		25.2	30 days
Ammonia (mg/L)						
Summer (Jul-Sep)		14.7			1.0	
Fall (Oct-Dec)	Varies	14.2	1 hour	Varies	3.0	30 days
Winter (Jan-Mar)		13.5			3.0	
Spring (Apr-Jun)		12.3			2.0	
Dissolved Oxygen (mg/L)	4.0	6.0	Minimum	5.5	6.0	30 days
BOD_5 (mg/L)						
Summer (Jul-Sep)					9.0	
Fall (Oct-Dec)				N/A	15.0	30 days
Winter (Jan-Mar)					15.0	
Spring (Apr-Jun)					15.0	

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is required for this facility upgrade, as an increase in flow or concentration of pollutants over those authorized in the current permit is being requested.

Documents:

WLA Document*: StGeorgeWLAUpgrade_2020-06-23.docx*
Wasteload Analysis and Addendum: *StGeorgeWLAUpgrade_2020.xlsm*

References:

- Tetra Tech Inc. 2004. *TMDL Water Quality Study of the Virgin River Watershed.* Utah Division of Water Quality.
- Utah Division of Water Quality. 2012. *Utah Wasteload Analysis Procedures Version 1.0*.
- Utah Division of Water Quality. 2016. *Utah's 2016 Integrated Report*.

WASTELOAD ANALYSIS [WLA] 6/4/2020
Addendum: Statement of Basis

Facilities: **St. George Regional Water Reclamation Facility (SGRWRF)**
UPDES No: **UT-0024686**
Discharging to: **Virgin River**

I. Introduction

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

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

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

II. Receiving Water and Stream Classification

Virgin River:	2B, 3B, 4
Antidegradation Review:	Level I review completed. Level II review required.

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards		
Chronic Total Residual Chlorine (TRC)	0.011	mg/l	(4 Day Average)
	0.019	mg/l	(1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.50	mg/l	(30 Day Average)
	6.00	mg/l	(7Day Average)
	5.00	mg/l	(1 Day Average
Maximum Total Dissolved Solids	2360.0	mg/l	Site Specific Standard

Acute and Chronic Heavy Metals (Dissolved)

Parameter	4 Day Average (Chronic) Standard Concentration		Load*		1 Hour Average (Acute) Standard Concentration		Load*	
Aluminum	87.00	ug/l**	18.281	lbs/day	750.00	ug/l	157.594	lbs/day
Arsenic	190.00	ug/l	39.924	lbs/day	340.00	ug/l	71.443	lbs/day
Cadmium	0.76	ug/l	0.159	lbs/day	8.73	ug/l	1.835	lbs/day
Chromium III	268.22	ug/l	56.360	lbs/day	5611.67	ug/l	1,179.157	lbs/day
ChromiumVI	11.00	ug/l	2.311	lbs/day	16.00	ug/l	3.362	lbs/day
Copper	30.50	ug/l	6.409	lbs/day	51.68	ug/l	10.860	lbs/day
Iron					1000.00	ug/l	210.126	lbs/day
Lead	18.58	ug/l	3.904	lbs/day	476.82	ug/l	100.191	lbs/day
Mercury	0.0120	ug/l	0.003	lbs/day	2.40	ug/l	0.504	lbs/day
Nickel	168.54	ug/l	35.415	lbs/day	1515.91	ug/l	318.533	lbs/day
Selenium	4.60	ug/l	0.967	lbs/day	20.00	ug/l	4.203	lbs/day
Silver	N/A	ug/l	N/A	lbs/day	41.07	ug/l	8.630	lbs/day
Zinc	387.83	ug/l	81.493	lbs/day	387.83	ug/l	81.493	lbs/day

* Allowed below discharge

**Chronic Aluminum standard applies only to waters with a pH < 7.0 and a Hardness < 50 mg/l as CaCO3

Metals Standards Based upon a Hardness of 400 mg/l as CaCO3

Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard Concentration		Load*		1 Hour Average (Acute) Standard Concentration		Load*	
Aldrin					1.500	ug/l	0.315	lbs/day
Chlordane	0.004	ug/l	1.342	lbs/day	1.200	ug/l	0.252	lbs/day
DDT, DDE	0.001	ug/l	0.312	lbs/day	0.550	ug/l	0.116	lbs/day
Dieldrin	0.002	ug/l	0.593	lbs/day	1.250	ug/l	0.263	lbs/day
Endosulfan	0.056	ug/l	17.472	lbs/day	0.110	ug/l	0.023	lbs/day
Endrin	0.002	ug/l	0.718	lbs/day	0.090	ug/l	0.019	lbs/day
Guthion					0.010	ug/l	0.002	lbs/day
Heptachlor	0.004	ug/l	1.186	lbs/day	0.260	ug/l	0.055	lbs/day
Lindane	0.080	ug/l	24.960	lbs/day	1.000	ug/l	0.210	lbs/day
Methoxychlor					0.030	ug/l	0.006	lbs/day
Mirex					0.010	ug/l	0.002	lbs/day
Parathion					0.040	ug/l	0.008	lbs/day
PCB's	0.014	ug/l	4.368	lbs/day	2.000	ug/l	0.420	lbs/day
Pentachlorophenol	13.00	ug/l	4055.960	lbs/day	20.000	ug/l	4.203	lbs/day
Toxephene	0.0002	ug/l	0.062	lbs/day	0.7300	ug/l	0.153	lbs/day

IV. Numeric Stream Standards for Protection of Agriculture

	4 Day Average (Chronic) Standard Concentration	Load*	1 Hour Average (Acute) Standard Concentration		Load*	
Arsenic			100.0	ug/l		lbs/day
Boron			750.0	ug/l		lbs/day
Cadmium			10.0	ug/l	1.05	lbs/day
Chromium			100.0	ug/l		lbs/day
Copper			200.0	ug/l		lbs/day
Lead			100.0	ug/l		lbs/day
Selenium			50.0	ug/l		lbs/day
TDS, Summer			2360.0	mg/l	247.95	tons/day

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

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

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

	Maximum Conc., ug/l - Acute Standards					
	Class 1C			**Class 3A, 3B**		
Toxic Organics	[2 Liters/Day for 70 Kg Person over 70 Yr.]			[6.5 g for 70 Kg Person over 70 Yr.]		
Acenaphthene	ug/l	lbs/day	2700.0	ug/l	842.39	lbs/day
Acrolein	ug/l	lbs/day	780.0	ug/l	243.36	lbs/day
Acrylonitrile	ug/l	lbs/day	0.7	ug/l	0.21	lbs/day
Benzene	ug/l	lbs/day	71.0	ug/l	22.15	lbs/day
Benzidine	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4	ug/l	1.37	lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0	ug/l	6551.94	lbs/day
1,2,4-Trichlorobenzene						
Hexachlorobenzene	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0	ug/l	30.89	lbs/day
1,1,1-Trichloroethane						
Hexachloroethane	ug/l	lbs/day	8.9	ug/l	2.78	lbs/day
1,1-Dichloroethane						
1,1,2-Trichloroethane	ug/l	lbs/day	42.0	ug/l	13.10	lbs/day
1,1,2,2-Tetrachloroetha	ug/l	lbs/day	11.0	ug/l	3.43	lbs/day
Chloroethane			0.0	ug/l	0.00	lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4	ug/l	0.44	lbs/day
2-Chloroethyl vinyl ethe	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0	ug/l	1341.59	lbs/day
2,4,6-Trichlorophenol	ug/l	lbs/day	6.5	ug/l	2.03	lbs/day
p-Chloro-m-cresol			0.0	ug/l	0.00	lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0	ug/l	146.64	lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0	ug/l	124.80	lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0	ug/l	5303.95	lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	811.19	lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0	ug/l	811.19	lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1	ug/l	0.02	lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2	ug/l	1.00	lbs/day
1,2-trans-Dichloroethyle	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0	ug/l	246.48	lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0	ug/l	12.17	lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0	ug/l	530.39	lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0	ug/l	717.59	lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1	ug/l	2.84	lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5	ug/l	0.17	lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0	ug/l	9047.91	lbs/day
Fluoranthene	ug/l	lbs/day	370.0	ug/l	115.44	lbs/day

4-Chlorophenyl phenyl ether						
4-Bromophenyl phenyl ether						
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0	ug/l	53039.48	lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Methylene chloride (HM	ug/l	lbs/day	1600.0	ug/l	499.20	lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0	ug/l	112.32	lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0	ug/l	6.86	lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0	ug/l	10.61	lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0	ug/l	15.60	lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0	ug/l	5303.95	lbs/day
Isophorone	ug/l	lbs/day	600.0	ug/l	187.20	lbs/day
Naphthalene						
Nitrobenzene	ug/l	lbs/day	1900.0	ug/l	592.79	lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0	ug/l	4367.96	lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0	ug/l	238.68	lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1	ug/l	2.53	lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0	ug/l	4.99	lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4	ug/l	0.44	lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2	ug/l	2.56	lbs/day
Phenol	ug/l	lbs/day	4.6E+06	ug/l	1.44E+06	lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9	ug/l	1.84	lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0	ug/l	1622.38	lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0	ug/l	3743.96	lbs/day
Di-n-octyl phthlate						
Diethyl phthalate	ug/l	lbs/day	120000.0	ug/l	37439.63	lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06	ug/l	9.05E+05	lbs/day
Benzo(a)anthracene (P/	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Acenaphthylene (PAH)						
Anthracene (PAH)	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0	ug/l	0.01	lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0	ug/l	3431.97	lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9	ug/l	2.78	lbs/day
Toluene	ug/l	lbs/day	200000	ug/l	62399.38	lbs/day
Trichloroethylene	ug/l	lbs/day	81.0	ug/l	25.27	lbs/day
Vinyl chloride	ug/l	lbs/day	525.0	ug/l	163.80	lbs/day
						lbs/day
Pesticides						lbs/day
Aldrin	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Dieldrin	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Chlordane	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
4,4'-DDT	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
4,4'-DDE	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
4,4'-DDD	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.62	lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0	ug/l	0.62	lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0	ug/l	0.62	lbs/day
Endrin	ug/l	lbs/day	0.8	ug/l	0.25	lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8	ug/l	0.25	lbs/day
Heptachlor	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
Heptachlor epoxide						
PCB's						
PCB 1242 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1254 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1221 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1232 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1248 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1260 (Arochlor 12	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day
PCB-1016 (Arochlor 10	ug/l	lbs/day	0.0	ug/l	0.00	lbs/day

Pesticide					
Toxaphene	ug/l		0.0	ug/l	0.00 lbs/day
Dioxin					
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day			
Metals					
Antimony	ug/l	lbs/day			
Arsenic	ug/l	lbs/day	4300.00	ug/l	1341.59 lbs/day
Asbestos	ug/l	lbs/day			
Beryllium					
Cadmium					
Chromium (III)					
Chromium (VI)					
Copper					
Cyanide	ug/l	lbs/day	2.2E+05	ug/l	68639.32 lbs/day
Lead	ug/l	lbs/day			
Mercury			0.15	ug/l	0.05 lbs/day
Nickel			4600.00	ug/l	1435.19 lbs/day
Selenium	ug/l	lbs/day			
Silver	ug/l	lbs/day			
Thallium			6.30	ug/l	1.97 lbs/day
Zinc					

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

VII. Mathematical Modeling of Stream Quality

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

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

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

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

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

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

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

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

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

VIII. Modeling Information

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

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

Other Conditions

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

Model Inputs

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

Current Upstream Information

	Stream Critical Low Flow cfs	Temp. Deg. C	pH	T-NH3 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
Summer (Irrig. Season)	18.90	29.2	7.9	0.10	1.00	6.16	0.00	2105.0
Fall	46.60	13.0	7.9	0.10	1.00	---	0.00	1883.0
Winter	46.00	9.7	7.9	0.10	1.00	---	0.00	2285.0
Spring	20.80	18.0	7.9	0.10	1.00	---	0.00	2684.0

Dissolved Metals	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
All Seasons	2.385*	10.00	0.10	2.40	2.40	2.70	31.0	0.24

Dissolved Metals	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l	
All Seasons	0.0000	5.10	1.00	0.50	11.30	750.0	* ~80% MDL

Projected Discharge Information

Season	Flow, MGD	Temp.
Summer	25.20000	29.1
Fall	25.20000	22.7
Winter	25.20000	17.5
Spring	25.20000	21.0

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

IX. Effluent Limitations

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

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

Effluent Limitation for Flow based upon Water Quality Standards

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

Season	Max. Monthly Average	Max. Daily
Summer	25.2 MGD	33.6 MGD
Fall	25.2 MGD	33.6 MGD
Winter	25.2 MGD	33.6 MGD
Spring	25.2 MGD	33.6 MGD

Flow Requirement or Loading Requirement

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 25.2 MGD. If the discharger is allowed to have a flow greater than 25.2 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occuring, the permit writers must include the discharge flow limititation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements LC50 > 100.0% Effluent [Acute]

IC25 [Chronic]

Season	Percent Effluent	Dilution Ratio
Summer	67.3%	0.5
Fall	45.6%	1.2
Winter	45.9%	1.2
Spring	65.2%	0.5

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

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

Season	Concentration			
Summer	30 Day Avg.	9.0	mg/l as BOD5	1630 lbs/day
Fall	30 Day Avg.	15.0	mg/l as BOD5	2717 lbs/day
Winter	30 Day Avg.	15.0	mg/l as BOD5	2717 lbs/day
Spring	30 Day Avg.	15.0	mg/l as BOD5	2717 lbs/day

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

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

Season	Concentration		
Summer	Minimum	6.00	mg/l
Fall	Minimum	6.00	mg/l
Winter	Minimum	6.00	mg/l
Spring	Minimum	6.00	mg/l

Effluent Limitation for Total Ammonia based upon Water Quality Standards

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

Season		Concentration		Load
Summer	4 Day Avg. - Chronic	1.0	mg/l as N	210 lbs/day
	1 Hour Avg. - Acute	14.7	mg/l as N	3,080 lbs/day
Fall	4 Day Avg. - Chronic	3.0	mg/l as N	630 lbs/day
	1 Hour Avg. - Acute	14.2	mg/l as N	2,978 lbs/day
Winter	4 Day Avg. - Chronic	3.0	mg/l as N	630 lbs/day
	1 Hour Avg. - Acute	13.5	mg/l as N	2,841 lbs/day
Spring	4 Day Avg. - Chronic	2.0	mg/l as N	420 lbs/day
	1 Hour Avg. - Acute	12.3	mg/l as N	2,575 lbs/day

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 50.%.

Effluent Limitation for Total Residual Chlorine based upon Water Quality Standards

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

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

Effluent Limitations for Total Dissolved Solids based upon Water Quality Standards

Season		Concentration		Load	
Summer	Maximum, Acute	2360.0	mg/l	247.95	tons/day
Fall	Maximum, Acute	2360.0	mg/l	247.95	tons/day
Winter	Maximum, Acute	2360.0	mg/l	247.95	tons/day
Spring	Maximum, Acute	2360.0	mg/l	247.95	tons/day

TMDL Limits	Determined by Watershed Protection Section
Colorado Salinity Forum Limits	Determined by Permitting Section

Effluent Limitations for Total Recoverable Metals based upon Water Quality Standards

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 400 mg/l):

	4 Day Average			1 Hour Average		
	Concentration		Load	Concentration		Load
Aluminum*	N/A		N/A	931.2	ug/l	195.7 lbs/day
Arsenic*	277.27	ug/l	37.7 lbs/day	420.0	ug/l	88.3 lbs/day
Cadmium	1.07	ug/l	0.1 lbs/day	10.8	ug/l	2.3 lbs/day
Chromium III	397.09	ug/l	53.9 lbs/day	6,971.4	ug/l	1464.9 lbs/day
Chromium VI*	15.17	ug/l	2.1 lbs/day	19.3	ug/l	4.1 lbs/day
Copper	43.98	ug/l	6.0 lbs/day	63.6	ug/l	13.4 lbs/day
Iron*	N/A		N/A	1,234.9	ug/l	259.5 lbs/day
Lead	27.47	ug/l	3.7 lbs/day	592.3	ug/l	124.5 lbs/day
Mercury*	0.018	ug/l	0.0 lbs/day	3.0	ug/l	0.6 lbs/day
Nickel	247.78	ug/l	33.7 lbs/day	1,882.1	ug/l	395.5 lbs/day
Selenium*	6.35	ug/l	0.9 lbs/day	24.6	ug/l	5.2 lbs/day
Silver	N/A	ug/l	N/A lbs/day	50.9	ug/l	10.7 lbs/day
Zinc	570.37	ug/l	77.5 lbs/day	479.1	ug/l	100.7 lbs/day
Cyanide*	7.72	ug/l	1.0 lbs/day	27.3	ug/l	5.7 lbs/day

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

Effluent Limitations for Heat/Temperature based upon Water Quality Standards

Summer	35.1 Deg. C.	95.2 Deg. F
Fall	21.7 Deg. C.	71.1 Deg. F
Winter	18.4 Deg. C.	65.1 Deg. F
Spring	24.1 Deg. C.	75.4 Deg. F

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

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

	4 Day Average			1 Hour Average		
	Concentration		Load	Concentration		Load
Aldrin				1.5E+00	ug/l	4.88E-01 lbs/day
Chlordane	4.30E-03	ug/l	9.04E-01 lbs/day	1.2E+00	ug/l	3.90E-01 lbs/day
DDT, DDE	1.00E-03	ug/l	2.10E-01 lbs/day	5.5E-01	ug/l	1.79E-01 lbs/day
Dieldrin	1.90E-03	ug/l	3.99E-01 lbs/day	1.3E+00	ug/l	4.06E-01 lbs/day
Endosulfan	5.60E-02	ug/l	1.18E+01 lbs/day	1.1E-01	ug/l	3.58E-02 lbs/day
Endrin	2.30E-03	ug/l	4.83E-01 lbs/day	9.0E-02	ug/l	2.93E-02 lbs/day
Guthion	0.00E+00	ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	3.25E-03 lbs/day
Heptachlor	3.80E-03	ug/l	7.98E-01 lbs/day	2.6E-01	ug/l	8.45E-02 lbs/day
Lindane	8.00E-02	ug/l	1.68E+01 lbs/day	1.0E+00	ug/l	3.25E-01 lbs/day
Methoxychlor	0.00E+00	ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	9.75E-03 lbs/day
Mirex	0.00E+00	ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	3.25E-03 lbs/day
Parathion	0.00E+00	ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.30E-02 lbs/day
PCB's	1.40E-02	ug/l	2.94E+00 lbs/day	2.0E+00	ug/l	6.50E-01 lbs/day
Pentachlorophenol	1.30E+01	ug/l	2.73E+03 lbs/day	2.0E+01	ug/l	6.50E+00 lbs/day
Toxephene	2.00E-04	ug/l	4.20E-02 lbs/day	7.3E-01	ug/l	2.37E-01 lbs/day

Effluent Targets for Pollution Indicators
Based upon Water Quality Standards

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

	1 Hour Average		
	Concentration		Load
Gross Beta (pCi/l)	50.0	pCi/L	
BOD (mg/l)	5.0	mg/l	1050.6 lbs/day
Nitrates as N	4.0	mg/l	840.5 lbs/day
Total Phosphorus as P	0.05	mg/l	10.5 lbs/day
Total Suspended Solids	90.0	mg/l	18911.3 lbs/day

Note: Pollution indicator targets are for information purposes only.

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

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

	Maximum Concentration			
Toxic Organics	**Concentration**		**Load**	
Acenaphthene	4.01E+03	ug/l	7.26E+02	lbs/day
Acrolein	1.16E+03	ug/l	2.10E+02	lbs/day
Acrylonitrile	9.80E-01	ug/l	1.77E-01	lbs/day
Benzene	1.05E+02	ug/l	1.91E+01	lbs/day
Benzidine		ug/l		lbs/day
Carbon tetrachloride	6.53E+00	ug/l	1.18E+00	lbs/day
Chlorobenzene	3.12E+04	ug/l	5.65E+03	lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	1.14E-03	ug/l	2.07E-04	lbs/day
1,2-Dichloroethane	1.47E+02	ug/l	2.66E+01	lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	1.32E+01	ug/l	2.39E+00	lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	6.24E+01	ug/l	1.13E+01	lbs/day
1,1,2,2-Tetrachloroethane	1.63E+01	ug/l	2.96E+00	lbs/day
Chloroethane				
Bis(2-chloroethyl) ether	2.08E+00	ug/l	3.76E-01	lbs/day
2-Chloroethyl vinyl ether				
2-Chloronaphthalene	6.38E+03	ug/l	1.16E+03	lbs/day
2,4,6-Trichlorophenol	9.65E+00	ug/l	1.75E+00	lbs/day
p-Chloro-m-cresol				
Chloroform (HM)	6.98E+02	ug/l	1.26E+02	lbs/day
2-Chlorophenol	5.94E+02	ug/l	1.08E+02	lbs/day
1,2-Dichlorobenzene	2.52E+04	ug/l	4.57E+03	lbs/day
1,3-Dichlorobenzene	3.86E+03	ug/l	6.99E+02	lbs/day
1,4-Dichlorobenzene	3.86E+03	ug/l	6.99E+02	lbs/day
3,3'-Dichlorobenzidine	1.14E-01	ug/l	2.07E-02	lbs/day
1,1-Dichloroethylene	4.75E+00	ug/l	8.60E-01	lbs/day
1,2-trans-Dichloroethylene1				
2,4-Dichlorophenol	1.17E+03	ug/l	2.12E+02	lbs/day
1,2-Dichloropropane	5.79E+01	ug/l	1.05E+01	lbs/day
1,3-Dichloropropylene	2.52E+03	ug/l	4.57E+02	lbs/day
2,4-Dimethylphenol	3.42E+03	ug/l	6.18E+02	lbs/day
2,4-Dinitrotoluene	1.35E+01	ug/l	2.45E+00	lbs/day
2,6-Dinitrotoluene				
1,2-Diphenylhydrazine	8.02E-01	ug/l	1.45E-01	lbs/day
Ethylbenzene	4.31E+04	ug/l	7.80E+03	lbs/day
Fluoranthene	5.49E+02	ug/l	9.95E+01	lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) ether	2.52E+05	ug/l	4.57E+04	lbs/day
Bis(2-chloroethoxy) methane				
Methylene chloride (HM)	2.38E+03	ug/l	4.30E+02	lbs/day
Methyl chloride (HM)				
Methyl bromide (HM)				
Bromoform (HM)	5.35E+02	ug/l	9.68E+01	lbs/day
Dichlorobromomethane(HM)	3.27E+01	ug/l	5.92E+00	lbs/day
Chlorodibromomethane (HM)	5.05E+01	ug/l	9.14E+00	lbs/day
Hexachlorocyclopentadiene	2.52E+04	ug/l	4.57E+03	lbs/day
Isophorone	8.91E+02	ug/l	1.61E+02	lbs/day
Naphthalene				
Nitrobenzene	2.82E+03	ug/l	5.11E+02	lbs/day
2-Nitrophenol				
4-Nitrophenol				
2,4-Dinitrophenol	2.08E+04	ug/l	3.76E+03	lbs/day
4,6-Dinitro-o-cresol	1.14E+03	ug/l	2.06E+02	lbs/day
N-Nitrosodimethylamine	1.20E+01	ug/l	2.18E+00	lbs/day
N-Nitrosodiphenylamine	2.38E+01	ug/l	4.30E+00	lbs/day
N-Nitrosodi-n-propylamine	2.08E+00	ug/l	3.76E-01	lbs/day
Pentachlorophenol	1.22E+01	ug/l	2.21E+00	lbs/day
Phenol	6.83E+06	ug/l	1.24E+06	lbs/day

Bis(2-ethylhexyl)phthalate	8.76E+00	ug/l	1.59E+00	lbs/day
Butyl benzyl phthalate	7.72E+03	ug/l	1.40E+03	lbs/day
Di-n-butyl phthalate	1.78E+04	ug/l	3.23E+03	lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	1.78E+05	ug/l	3.23E+04	lbs/day
Dimethyl phthlate	4.31E+06	ug/l	7.80E+05	lbs/day
Benzo(a)anthracene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Benzo(a)pyrene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Benzo(b)fluoranthene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Benzo(k)fluoranthene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Chrysene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)				
Dibenzo(a,h)anthracene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	4.60E-02	ug/l	8.34E-03	lbs/day
Pyrene (PAH)	1.63E+04	ug/l	2.96E+03	lbs/day
Tetrachloroethylene	1.32E+01	ug/l	2.39E+00	lbs/day
Toluene	2.97E+05	ug/l	5.38E+04	lbs/day
Trichloroethylene	1.20E+02	ug/l	2.18E+01	lbs/day
Vinyl chloride	7.80E+02	ug/l	1.41E+02	lbs/day
Pesticides				
Aldrin	2.08E-04	ug/l	3.76E-05	lbs/day
Dieldrin	2.08E-04	ug/l	3.76E-05	lbs/day
Chlordane	8.76E-04	ug/l	1.59E-04	lbs/day
4,4'-DDT	8.76E-04	ug/l	1.59E-04	lbs/day
4,4'-DDE	8.76E-04	ug/l	1.59E-04	lbs/day
4,4'-DDD	1.25E-03	ug/l	2.26E-04	lbs/day
alpha-Endosulfan	2.97E+00	ug/l	5.38E-01	lbs/day
beta-Endosulfan	2.97E+00	ug/l	5.38E-01	lbs/day
Endosulfan sulfate	2.97E+00	ug/l	5.38E-01	lbs/day
Endrin	1.20E+00	ug/l	2.18E-01	lbs/day
Endrin aldehyde	1.20E+00	ug/l	2.18E-01	lbs/day
Heptachlor	3.12E-04	ug/l	5.65E-05	lbs/day
Heptachlor epoxide				
PCB's				
PCB 1242 (Arochlor 1242)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1254 (Arochlor 1254)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1221 (Arochlor 1221)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1232 (Arochlor 1232)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1248 (Arochlor 1248)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1260 (Arochlor 1260)	6.68E-05	ug/l	1.21E-05	lbs/day
PCB-1016 (Arochlor 1016)	6.68E-05	ug/l	1.21E-05	lbs/day
Pesticide				
Toxaphene	1.11E-03	ug/l	2.02E-04	lbs/day
Metals				
Antimony		ug/l		lbs/day
Arsenic		ug/l		lbs/day
Asbestos		ug/l		lbs/day
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper		ug/l		lbs/day
Cyanide		ug/l		lbs/day
Lead				
Mercury		ug/l		lbs/day
Nickel		ug/l		lbs/day
Selenium				
Silver				
Thallium		ug/l		lbs/day
Zinc				
Dioxin				
Dioxin (2,3,7,8-TCDD)	2.08E-08	ug/l	3.76E-09	lbs/day

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

	Class 4 Acute Agricultural ug/l	Class 3 Acute Aquatic Wildlife ug/l	Acute Toxics Drinking Water Source ug/l	Acute Toxics Wildlife ug/l	1C Acute Health Criteria ug/l	Acute Most Stringent ug/l	Class 3 Chronic Aquatic Wildlife ug/l
Aluminum		931.2				931.2	N/A
Antimony				6384.7		6384.7	
Arsenic	148.5	420.0				148.5	277.3
Barium							
Beryllium						0.0	
Cadmium	14.8	10.8				10.8	1.1
Chromium (III)		6971.4				6971.4	397.1
Chromium (VI)	147.3	19.3				19.30	15.17
Copper	295.7	63.6				63.6	44.0
Cyanide		27.3	326658.0			27.3	7.7
Iron		1234.9				1234.9	
Lead	148.4	592.3				148.4	27.5
Mercury		2.98		0.22		0.22	0.018
Nickel		1882.1		6830.1		1882.1	247.8
Selenium	73.8	24.6				24.6	6.3
Silver		50.9				50.9	
Thallium				9.4		9.4	
Zinc		479.1				479.1	570.4
Boron	750.0					750.0	
Sulfate	2969.6					2969.6	

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

	WLA Acute ug/l	WLA Chronic ug/l	
Aluminum	931.2	N/A	
Antimony	6384.68		
Arsenic	148.5	277.3	Acute Controls
Asbestos			
Barium			
Beryllium			
Cadmium	10.8	1.1	
Chromium (III)	6971.4	397	
Chromium (VI)	19.3	15.2	
Copper	63.6	44.0	
Cyanide	27.3	7.7	
Iron	1234.9		
Lead	148.4	27.5	
Mercury	0.223	0.018	
Nickel	1882.1	248	
Selenium	24.6	6.3	
Silver	50.9	N/A	
Thallium	9.4		
Zinc	479.1	570.4	Acute Controls
Boron	750.00		
Sulfate	2969.6		N/A at this Waterbody

Other Effluent Limitations are based upon R317-1.

E. coli	126.0	organisms per 100 ml

X. Antidegradation Considerations

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

An Antidegradation Level I Review was conducted on this discharge and its effect on the receiving water.

XI. Colorado River Salinity Forum Considerations

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

XII. Summary Comments

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

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

L. Scott Baird
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

M E M O R A N D U M

TO: Sarah Ward, UPDES Permit Writer

FROM: Amy Dickey, Lower Colorado River Watershed Coordinator

DATE: June 4, 2020

SUBJECT: Total dissolved solids wasteload allocation for St. George Regional Water Reclamation Facility

Staff Recommendation

As part of the Lower Virgin River Total Maximum Daily Load (TMDL), the wasteload allocation assigned to the St. George Regional Water Reclamation Facility was performed on a Total Dissolved Solids (TDS) Water Quality Standard that no longer applies. Staff recommendation is to include a concentration based TDS limit in the UPDES permit based on the TDS site specific standard of 2,360 mg/L if there is a reasonable potential to exceed the standard. The facility upgrade is essential to support the significant population growth and community expansion in and around St. George. Ideally the TMDL could be revised to reflect the changes in land use and management that have taken place over the last 16 years. However, that is not likely to be of urgency for DWQ as TDS is not a priority parameter for future TMDL development.

Background

A TMDL study for the Lower Virgin River was approved by EPA on September 20, 2004. The pollutant of concern was TDS and the approved TMDL recommended a 5% load reduction from sources in the watershed. A numeric target waste load allocation was included in the TMDL for the St. George Regional Water Reclamation Facility (SGRWRF). A TDS site specific criterion (SSC) of 2,360 mg/L was also recommended and was subsequently included in the standards (UAC R317-2-14).

DWQ is currently reviewing the Level II Antidegradation Form that was submitted on behalf of the SGRWRF. The facility is proposing upgrades and improvements that will increase treatment capacity and enable the facility to more reliably meet current and future wastewater treatment needs for the City and surrounding areas.

The 2004 TMDL included a mass-based TDS wasteload allocation of 20,087 tons/year. That number was based on the design flow capacity of the facility at the time of TMDL development and the 1,200 mg/L TDS standard. The expansion would increase the design flow capacity of the facility from the current 17 MGD to 25 MGD. Based on Discharge Monitoring Reports from 2010 to 2020, the average TDS concentration of the SGRWRF is 1,148 mg/L, well below the SSC of 2,360 mg/L . Increased facility discharge at that concentration would likely result in a decrease in TDS concentration in the Virgin River.

A Margin of Safety was included in the TMDL analysis. It was explicit at 5% of the Loading Allocation at 8,640,720 kg/year (9,525 tons/year). The estimated TDS loading from the facility using the new design flow of 25 MGD and the average effluent concentration of 1,148 mg/L is 39,649,767 kg/yr. Therefore use of the entire MOS would still not be sufficient to cover the difference.

WLA from 2004 TMDL	20,087 tons/year (18,222,620 kg/year)
Current permit loading limit	None assigned
Current TDS site specific standard for receiving waterbody	2,360 mg/L
Current permit concentration limit	1,937 mg/L
Estimated TDS loading with expansion increased flow (25MGD) and average facility effluent concentration (2010-2020 DMRs) of 1,148 mg/L	43,706 tons/year 39,649,767 kg/year

ATTACHMENT 2

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[4]. They are;

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

(REASONABLE POTENTIAL LANGUAGE)

Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is needed. A copy of the initial screening is included in the "Effluent Metals and RP Screening Results" table in this attachment. The initial screening check for metals showed that the full model needed to be run on Boron.

The RP model was run on Boron using the most recent data back through 2015. This resulted in 14 data points and that there is a Reasonable Potential for an acute limit for Boron. Reviewing the data showed that there could be at least one outlier in the data. The EPA ProUCL model was used to evaluate the data.

[4] See Reasonable Potential Analysis Guidance for definitions of terms

Reasonable Potential Outputs Table

RP Procedure Output	Outfall Number:
Parameter	Boron
Distribution	Delta-Lognormal
Reporting Limit	(0.0002)
Significant Figures	2
Maximum Reported Effluent Conc.	0.53
Coefficient of Variation (CV)	0.097
Acute Criterion	0.5782
Chronic Criterion	NA
Confidence Interval	95
Projected Maximum Effluent Conc. (MEC)	0.56
RP Multiplier	1.1
RP for Acute?	NO
RP for Chronic?	NO
Outcome	C

Metals Monitoring and RP Check

Effluent

date		Aluminum [Al]	Arsenic [As]	Cadmium [Cd]	Chromium [Cr]	Copper [Cu]	Cyanide [CN]	Lead [Pd]	Molybdenum [Mo]	Nickel [Ni]	Silver [Ag]	Zinc [Zn]	Selenium [Se]	Mercury [Hg]	Boron [B]	Antimony [Sb]	Thallium [Tl]	Iron
ARP Val		**1.2375**	**0.2304**	**0.0144**	**0.0238**	**0.0836**	**0.0363**	**0.2301**	**1**	**2.5024**	**0.0677**	**0.6337**	**0.0322**	**0.000346**	**0.5782**	**9.9082**	**0.0145**	**43.166**
CRP Val		**NA**	**0.4237**	**0.0017**	**0.0202**	**0.0667**	**0.012**	**0.0425**	**1**	**0.384**	**NA**	**0.8795**	**0.0089**	**NA**	**NA**	**NA**	**NA**	**NA**
mg/L	6/30/15	0.05	0.0049	0.0002	0.0005	0.0018	0.002	0.0005	0.0043	0.0096	0.0005	0.04	0.0015	0.00000111				
	9/30/15	0.07	0.0046	0.0002	0.0007	0.0022	0.003	0.0005	0.0039	0.0086	0.0005	0.04	0.0018	0.00000173				
	12/31/15	0.05	0.0049	0.0002	0.001	0.0022	0.003	0.0005	0.0048	0.008	0.0005	0.03	0.0024	0.00000155				
	3/31/16	0.05	0.0063	0.0002	0.0008	0.0019	0.005	0.00005	0.0038	0.0063	0.0005	0.05	0.0021	0.00000177				
	6/30/16	0.05	0.0039	0.0002	0.0005	0.0012	0.005	0.0005	0.0033	0.0065	0.0005	0.03	0.0016	0.000001				
	9/30/16	0.05	0.005	0.0002	0.0008	0.0025	0.002	0.0005	0.0037	0.0114	0.0005	0.05	0.0023	0.00000265				
	12/31/16	0.05	0.0045	0.0002	0.0006	0.0019	0.002	0.0005	0.0032	0.0082	0.0005	0.05	0.0018	0.00000105				
	3/31/17	0.05	0.0068	0.0002	0.0007	0.0026	0.002	0.0005	0.0033	0.0076	0.0005	0.05	0.0031	0.000001				
	6/30/17	0.05	0.0048	0.0002	0.0006	0.0014	0.005	0.0005	0.0024	0.0063	0.0005	0.03	0.0027	0.000001				
	9/30/17	0.05	0.0042	0.0002	0.0005	0.0022	0.002	0.0005	0.0033	0.0057	0.0005	0.03	0.0019	0.000001				
	12/31/17	0.05	0.0049	0.0002	0.0005	0.0016	0.003	0.0005	0.0039	0.0058	0.0005	0.04	0.0027	0.000001				
	3/31/18	0.05	0.0047	0.0002	0.0005	0.0017	0.002	0.0005	0.0032	0.0048	0.0005	0.05	0.0017	0.000001				
	6/30/18	0.08	0.004	0.0002	0.0009	0.0032	0.002	0.0005	0.003	0.0095	0.0005	0.03	0.0015	0.000001				
	7/25/18														0.51	0.001	0.0002	0.03
	4/11/18														0.45	0.0014	0.0002	0.04
	1/17/18														0.45	0.0013	0.0002	0.02
	10/11/17														0.5	0.001	0.0002	0.02
	7/12/17														0.44	0.0011	0.0002	0.04
	4/12/17														0.45	0.0016	0.0002	0.04
	1/18/17														0.48	0.0015	0.0002	0.03
	10/12/16														0.5	0.001	0.0002	0.02
	7/22/16														0.45	0.0012	0.0002	0.02
	4/13/16														0.46	0.0017	0.0002	0.02
	1/27/16														0.38	0.0016	0.0002	0.02
	10/13/15														0.53	0.0012	0.0002	0.03
	7/7/15														0.47	0.0008	0.0002	0.02
	4/21/15														0.43	0.0014	0.0002	0.02
ND Value		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max		**0.08**	**0.0068**	**0.0002**	**0.001**	**0.0032**	**0.005**	**0.0005**	**0.0048**	**0.0114**	**0.0005**	**0.05**	**0.0031**	**0.00000265**	**0.53**	**0.0017**	**0.0002**	**0.04**
A RP?		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**YES**	**No**	**No**	**No**
C RP?		**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

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