

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Industrial Permit No. **UT0000281**  
Biosolids Permit No. **UTL000281**  
Storm Water Permit No. **UTR000000**

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

**SWIFT BEEF COMPANY**

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

**IRRIGATION DITCH THENCE TO SOUTH FORK OF SPRING CREEK**

to dispose of biosolids,

and to discharge storm water,

and to distribute effluent for reuse,

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

This permit shall become effective on April 1, 2019.

This permit expires at midnight on March 31, 2024.

Signed this 1st day of April, 2019.

  
\_\_\_\_\_  
Kim Shelley  
Acting Director

DWQ-2018-004230

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**I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS**

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

Outfall Number  
001

Location of Discharge Outfall

The discharge pipe is located in the northwest corner of the wastewater treatment plant property between 200 West and 500 West in Hyrum City, Cache County at latitude 49°39'21" and longitude 111°52'05". The water is discharged inside the fenced area and flows under the chain-link fence to the receiving irrigation ditch.

Outfall Number  
001R

Location of Effluent Reuse Discharge Outfall

Treated effluent for reuse will be stored in Pond 4 and Pond 5 at the wastewater treatment plant until it is needed in the irrigation distribution system.

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

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C. Specific Limitations and Self-Monitoring Requirements.

- a. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001 and 001R. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Effluent Limitations <sup>a</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow	2.0	--	--	--	--
BOD <sub>5</sub> , mg/L	25	35	--	--	--
BOD <sub>5</sub> , lbs/day	615	--	--	--	1230
TSS, mg/L	25	35	--	--	--
TSS Min. lbs/day	732	--	--	--	1464
Dissolved Oxygen, mg/L	--	--	--	4.0	--
Total Ammonia (as N), mg/L					
October-June	4.0	--	--	--	8.0
July -September	3.0	--	--	--	8.0
TRC, mg/L					
October-March	--	--	--	--	0.15
April-September					0.25
Nitrogen as N, mg/L	134				194
<i>E. coli</i> , No./100mL	126	157	--	--	--
Total Phosphorous, mg/L	1	--	--	--	--
WET, Chronic Biomonitoring					IC <sub>25</sub> > effluent (from WLA)
1 <sup>st</sup> & 4 <sup>th</sup> Quarter	--	--	--	--	73%
2 <sup>nd</sup> & 3 <sup>rd</sup> Quarter	--	--	--	--	58.4%
Oil & Grease, mg/L	--	--	--	--	10.0
Oil & Grease lbs/Day	234	--	--	--	469
pH, Standard Units	--	--	--	6.5	9
TDS, mg/L	--	--	--	--	3,000

- a. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001R. Such discharges shall be limited and monitored by the permittee as specified below:

Parameter	Type II Reuse Outfall 001R Effluent Limitations <sup>a</sup>				
	Max Monthly Average	Max Weekly Average	Max Daily Average	Minimum	Maximum
BOD <sub>5</sub> , mg/L	25	--	--	--	--
TSS, mg/L	25	35			
<i>E. coli</i> , No/100mL	--	126	--	--	500
pH, Standard Units	--	--	--	6.0	9.0

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<b>Self-Monitoring and Reporting Requirements <sup>a</sup></b>			
<b>Parameter</b>	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>Total Flow <sup>b, c</sup></b>	Continuous	Recorder	MGD
<b>BOD<sub>5</sub></b>	Weekly	Composite	mg/L
<b>TSS</b>	Weekly	Composite	mg/L
<b><i>E. coli</i></b>	Weekly	Grab	No./100mL
<b>pH</b>	Weekly	Grab	SU
<b>Total Ammonia (as N)</b>	Twice Weekly	Grab	mg/L
<b>DO</b>	Weekly	Grab	mg/L
<b>WET – Biomonitoring <sup>d</sup></b>			
<b>Ceriodaphnia - Chronic</b>	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
<b>Fathead Minnows - Chronic</b>	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail
<b>TRC, mg/L</b>	Weekly	Grab	mg/L
<b>Oil &amp; Grease</b>	Weekly	Grab	mg/L
<b>Nitrogen as N, mg/L</b>	Monthly	Composite	mg/L
<b>TDS, mg/L</b>	Weekly	Grab	mg/L
<b>Total Kjeldahl Nitrogen, TKN (as N) <sup>e</sup></b>			
<b>Influent</b>	Monthly	Composite	mg/L
<b>Effluent</b>	Monthly	Composite	mg/L
<b>Orthophosphate, (as P) <sup>e</sup></b>			
<b>Effluent</b>	Monthly	Composite	mg/L
<b>Phosphorus, Total <sup>e</sup></b>			
<b>Influent</b>	Monthly	Composite	mg/L
<b>Effluent</b>	Monthly	Composite	mg/L
<b>Nitrite, NO<sub>2</sub> <sup>e</sup></b>	Monthly	Composite	mg/L
<b>Nitrate, NO<sub>3</sub> <sup>e</sup></b>	Monthly	Composite	mg/L

<b>Type II Reuse Outfall 001R Self-Monitoring and Reporting Requirements <sup>a, f</sup></b>			
<b>Parameter</b>	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>Total Flow <sup>b, c</sup></b>	Continuous	Recorder	MGD
<b>TSS</b>	4 x weekly	Composite	mg/L
<b>BOD<sub>5</sub></b>	Weekly	Composite	mg/L
<b><i>E. coli</i></b>	4 x weekly	Grab	No./100mL
<b>pH</b>	4 x weekly	Grab	SU

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

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

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

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- d Chronic Ceriodaphnia will be tested during the 1<sup>st</sup> and 3<sup>rd</sup> quarters and chronic fathead minnows will be tested during the 2<sup>nd</sup> and 4<sup>th</sup> quarters.
- e These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
- f These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
  - b. Management Practices for Land Application of Treated Effluent:
    - (1) The application of treated effluent to frozen, ice-covered, or snow covered land is prohibited.
    - (2) No person shall apply treated effluent where the slope of the site exceeds 6 percent.
    - (3) The use should not result in a surface water runoff.
    - (4) The use must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.
    - (5) Any irrigation with treated effluent must be at least 300 feet from a potable well.
    - (6) For Type I reuse, any irrigation must be at least 50 feet from any potable water well.
    - (7) For Type II reuse, any irrigation must be at least 300 feet from any potable water well.
    - (8) 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.
    - (9) Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable well.
    - (10) 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)

2. Chronic Whole Effluent Toxicity (WET) Testing.

- a. Whole Effluent Testing – Chronic Toxicity. Starting upon permit issuance, the permittee shall quarterly, conduct chronic static renewal toxicity tests on a 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).

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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 73% effluent concentration for the 1<sup>st</sup> and 4<sup>th</sup> quarter and 58.4% effluent concentration for the 2<sup>nd</sup> and 3<sup>rd</sup> quarter (equivalent to the RWC). If a sample is found to be chronically toxic during a routine test, the monitoring frequency shall become biweekly (see Part I.C.2.b Accelerated Testing). If possible, dilution water should be obtained from the receiving stream.

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

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

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

- b. *Accelerated Testing.* When whole effluent toxicity is indicated during routine WET testing as specified in this permit, the permittee shall notify the Director in writing within 5 days after becoming aware of the test result. The permittee shall perform an accelerated schedule of WET testing to establish whether a pattern of toxicity exists unless the permittee notifies the Director and commences a PTI, TIE, or a TRE. Accelerated testing or the PTI, TIE, or TRE will begin within fourteen days after the permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under Part I. Pattern of Toxicity. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.
- c. *Pattern of Toxicity.* A pattern of toxicity is defined by the results of a series of up to five biomonitoring tests pursuant to the accelerated testing requirements using a full set of dilutions for acute (five plus the control) and five effluent dilutions for chronic (five plus the control), on the species found to be more sensitive, once every week for



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up to five consecutive weeks for acute and once every two weeks up to ten consecutive weeks for chronic.

If two (2) consecutive tests (not including the scheduled quarterly or monthly test which triggered the search for a pattern of toxicity) do not result in acute toxicity, 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 five (5) days, and resume routine monitoring.

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

- (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.2.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.

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- 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 may:

- (a) Submit 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 on a Discharge

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Monitoring Report Form (EPA No. 3320-1)\* or by NetDMR, post-marked or entered into NetDMR no later than the 28<sup>th</sup> day of the month following the completed reporting period. 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

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\* Starting January 1, 2017 monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception.

**PART II**  
**DISCHARGE PERMIT NO. UT0000281**  
**PRETREATMENT**

**II. INDUSTRIAL PRETREATMENT PROGRAM**

**A. Discharges to a POTW.**

1. Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR section 403, the State Pretreatment Requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.
2. The permittee must notify the Division of Water Quality 30 days prior if the discharge is to a POTW without an approved pretreatment program. Notification must be in writing to the following address:

Pretreatment Coordinator  
Utah Division of Water Quality  
PO Box 144870  
Salt Lake City Utah, 84114-4870

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

### 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

Solids in the waste water are first digested in the anaerobic pond then discharged to the anoxic basins, then to the aeration basin. Solids are settled out in the clarifiers then sent to Huber screw presses where they are dewatered and augured into a dump truck. The dump trucks transport the biosolids to Miller Companies for further treatment and sold as compost.

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 further processing..

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, given away to the public or transferred to another facility shall meet the requirements of *Part III.B.1, 2, 3 and 4* listed below.

**PART III**  
**BIOSOLIDS PERMIT NO. UTL-000281**

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.

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

<sup>†</sup> CPLR -- Cumulative Pollutant Loading Rate  
<sup>‡</sup> APLR -- Annual Pollutant Loading Rate



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- (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). or	Fecal Coliforms – less than 2,000,000 MPN per gram total solids. or
Fecal Coliforms – less than 1,000 MPN per gram total solids.	Fecal Coliforms – less than 2,000,000 CFU** per gram total solids.
And - Enteric viruses –less than one (1) MPN (or plaque forming unit) per four (4) grams total solids	
And - 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*. Swift Beef is meeting the requirements through the following method.

- (1) Swift Beef dewateres the solids and then transfers the solids to Miller Companies for windrow composting.

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.

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§ MPN – Most Probable Number  
\*\* CFU – Colony Forming Units

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).

<b>Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26, and 503.46)</b>		
<b>Amount of Biosolids Disposed Per Year</b>		<b>Monitoring Frequency</b>
<b>Dry US Tons</b>	<b>Dry Metric Tons</b>	<b>Per Year or Batch</b>
> 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 <sup>††</sup>	Bi-Monthly or Six Times
> 16,500	> 15,000	Monthly or Twelve Times

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

C. Management Practices of Biosolids.

1. Biosolids Distribution Information

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

<sup>††</sup> Swift Beef produced and transferred 1,300 Dry Metric Tons to Miller Companies in 2017. Accordingly, they will sample at least 4 times per year.

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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

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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

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human health. The permittee must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment. The permittee shall keep an inspection log or summary including at least the date and time of inspection, the printed name and the handwritten signature of the inspector, a notation of observations made and the date and nature of any repairs or corrective action.

- D. Special Conditions on Biosolids Storage. Permanent storage of biosolids is prohibited. Biosolids shall not be temporarily stored for more than two (2) years. Written permission to store biosolids for more than two years must be obtained from the Director. Storage of biosolids for more than two years will be allowed only if it is determined that significant treatment is occurring.
- E. Representative Sampling. Biosolids samples used to measure compliance with Part III of this Permit shall be collected at locations representative of the quality of biosolids generated at the treatment works and immediately prior to land application.
- F. Reporting of Monitoring Results.

1. Biosolids. The permittee shall provide the results of all monitoring performed in accordance with Part III.B, and information on management practices, biosolids treatment, site restrictions and certifications shall be provided no later than February 19 of each year. Each report is for the previous calendar year. If no biosolids were sold or given away during the reporting period, "no biosolids were sold or given away" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the *Signatory Requirements* (see Part VII.G), and submitted to the Utah Division of Water Quality by NetDMR<sup>††</sup> or at the following address:

Original to:    Biosolids Coordinator  
                     Utah Division of Water Quality  
                     PO Box 144870  
                     Salt Lake City Utah, 84114-4870

G. Additional Record Keeping Requirements Specific to Biosolids.

1. Unless otherwise required by the Director, **the permittee is not required to keep records** on compost products if the permittee prepared them from biosolids that meet the limits in Table 3 (Part III.B.1), the Class A pathogen requirements in Part III.B.2 and the vector attraction reduction requirements in Part III.B.3. The Director may notify the permittee that additional record keeping is required if it is determined to be significant to protecting public health and the environment.
2. **The permittee is required** to keep the following information for at least 5 years:
- a. Concentration of each heavy metal in Table 3 (Part III.B.1).
  - b. A description of how the pathogen reduction requirements in Part III.B.2 were met.
  - c. A description of how the vector attraction reduction requirements in Part III.B.3 were met.

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

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

"I certify under the penalty of law, that the heavy metals requirements in Part III.B.1, the pathogen requirements in Part III.B.2, the vector attraction requirements in Part III.B.3, the management practices in Part III.C. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements, the vector attraction reduction requirements and the management practices have been met. I am aware that there are significant penalties for false certification including the possibility of imprisonment."
- 3. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit for the life of the permit. Data collected on site, copies of Biosolids Report forms, and a copy of this UPDES biosolids-only permit must be maintained on site during the duration of activity at the permitted location.



#### IV. STORM WATER REQUIREMENTS.

- A. Coverage of This Section. The requirements listed under this section shall apply to storm water discharges from food and kindred products processing facilities (commonly identified by Standard Industrial Classification (SIC) code 20) and treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Storm water discharges from the following portions of the facility may be eligible for coverage under this permit: industrial plant yards, material handling sites, refuse sites, sites used for application or disposal of process wastewaters, manufacturing buildings, storage areas for raw material and intermediate finished product, biosolids drying beds, haul or access roads on which transportation of biosolids may occur, grit screen cleaning areas, chemical loading, unloading and storage areas, salt or sand storage areas, vehicle or equipment storage and maintenance areas, or any other wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility that may have a reasonable expectation to contribute to pollutants in a storm water discharge.
- B. Prohibition of Non-Storm Water Discharges. Except for discharges identified in Part I., and discharges described below in this paragraph, non-storm water discharges are prohibited. The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from firefighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.
- C. Storm Water Pollution Prevention Plan Requirements. The permittee must have (on site) and implement a storm water pollution prevention plan as a condition of this permit.
1. Contents of the Plan. The plan shall include, at a minimum, the following items:
- a. *Pollution Prevention Team.* Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.
  - b. *Description of Potential Pollutant Sources.* Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:

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- (1) *Drainage.* A site map indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the wastewater treatment related activity or the slaughterhouse and meat packing activities and has a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:
- (a) Drainage direction and discharge points from all wastewater, slaughterhouse, and packing plant associated activities including but not limited to waste treating; vents and stacks from cooking, drying, and similar operations; animal holding pens; liquid storage tanks; spoiled product and broken product container storage areas; significant dust or particulate generating areas; exposed processing areas; application/storage of pest control chemicals; grit screen cleaning; bio-solids drying beds and transport; chemical/material loading; unloading and storage areas; vehicle maintenance areas; salt or sand storage areas.
  - (b) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.
  - (c) Location of bio-solids drying beds where exposed to precipitation or where the transportation of bio-solids may be spilled onto internal roadways or tracked off site.
  - (d) Location where grit screen cleaning or other routinely performed industrial activities are located and are exposed to precipitation.
  - (e) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.
  - (f) Locations where any major spills or leaks of toxic or hazardous materials have occurred.
  - (g) Location of any sand or salt piles.
  - (h) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.
  - (i) Location of receiving streams or other surface water bodies.
  - (j) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.
- (2) *Inventory of Exposed Materials.* An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been

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handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

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

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pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

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

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Discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

- (c) *Failure to Certify.* Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the *Director* within 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not feasible. Non-storm water discharges to waters of the State, which are not, authorized by a *UPDES* permit are unlawful, and must be terminated.
- (8) *Sediment and Erosion Control.* The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.
- (9) *Management of Runoff.* The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this permit] shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.
- (10) *Comprehensive Site Compliance Evaluation.* Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:
  - (a) Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.



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- (b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this section and pollution prevention measures and controls identified in the plan in accordance with *Part IV.C.1.c*. (Measures and Controls) of this section shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.
  - (c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph *b.* (above) shall be made and retained as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part VII.G* (Signatory Requirements) of this permit.
  - (d) The storm water pollution prevention plan must describe the scope and content of the comprehensive site evaluations that qualified personnel will conduct to 1) confirm the accuracy of the description of potential sources contained in the plan, 2) determine the effectiveness of the plan, and 3) assess compliance with the terms and conditions of the permit. The individual or individuals who will conduct the evaluations must be identified in the plan and should be members of the pollution prevention team, as identified in *Part IV.C.1.a* (Pollution Prevention Team) of this permit.
- (11) *Deadlines for Plan Preparation and Compliance.* The permittee shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit. If the permittee already has a plan, it shall be revised according to *Part IV.C.1.b.(10)*, Comprehensive Site Evaluation.
- (12) *Keeping Plans Current.* The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

**D. Monitoring and Reporting Requirements.**

1. Quarterly Visual Examination of Storm Water Quality. Facilities shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January



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through March; April through June; July through September; and October through December.

- a. *Sample and Data Collection.* Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well-lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.
- b. *Visual Storm Water Discharge Examination Reports.* Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.
- c. *Representative Discharge.* When the permittee has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.
- d. *Adverse Conditions.* When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).
- e. *Inactive and Unstaffed Site.* When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

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

- A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.
- B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.
- C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.
- E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10 and 40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.
- F. Records Contents. Records of monitoring information shall include:
1. The date, exact place, and time of sampling or measurements;
  2. The individual(s) who performed the sampling or measurements;
  3. The date(s) and time(s) analyses were performed;
  4. The individual(s) who performed the analyses;
  5. The analytical techniques or methods used; and,
  6. The results of such analyses.
- G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location
- H. Twenty-four Hour Notice of Noncompliance Reporting.
1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 231-1769, or 24-hour answering service (801) 536-4123.

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2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:
  - a. Any noncompliance which may endanger health or the environment;
  - b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See Part VI.G, Bypass of Treatment Facilities.);
  - c. Any upset which exceeds any effluent limitation in the permit (See Part VI.H, Upset Conditions.);
  - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit; or,
  - e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.
3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected;
  - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,
  - e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.
4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.
5. Reports shall be submitted to the addresses in Part I.D, Reporting of Monitoring Results.
- I. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part I.D are submitted. The reports shall contain the information listed in Part V.H.3
- J. Inspection and Entry The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
  1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

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

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**VI. COMPLIANCE RESPONSIBILITIES**

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

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2. Prohibition of Bypass.

- a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:
  - (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
  - (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
  - (3) The permittee submitted notices as required under *section VI.G.3.*
- b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in *sections VI.G.2.a (1), (2) and (3).*

3. Notice.

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

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soon as it becomes aware of the need to bypass and provide to the Director the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.

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

H. Upset Conditions.

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



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**VII. GENERAL REQUIREMENTS**

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

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- b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.
- 3. Changes to authorization. If an authorization under *paragraph VII.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph VII.G.2* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
- 4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
- H. Penalties for Falsification of Reports. The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.
- I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Director. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential.
- J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.
- K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.
- L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the

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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 permittee's biosolids use or land application practices do not comply with existing applicable state or federal regulations.

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**Q. Toxicity Limitation - Reopener Provision.**

This permit may be reopened and modified, following proper administrative procedures, to include whole effluent toxicity (WET) limitations, a compliance schedule, a change in the whole effluent toxicity 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. of this permit, during the permit period.
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) for toxicant(s), the Director concludes that a modified biomonitoring protocol is necessary to compensate for those toxicant(s) that are controlled numerically.
4. The TRE reveals other unique conditions or characteristics which the Director concludes justify the incorporation of unanticipated special conditions in the permit.

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

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**VIII. DEFINITIONS**

**A. Wastewater.**

1. The "7-day (and weekly) average", other than for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.
2. The "30-day (and monthly) average," other than for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.
3. "Act," means the *Utah Water Quality Act*.
4. "Acute toxicity" occurs when 50 percent or more mortality is observed for either test species at any effluent concentration (lethal concentration or "LC<sub>50</sub>").
5. "Bypass," means the diversion of waste streams from any portion of a treatment facility.
6. "Chronic toxicity" occurs when the IC<sub>25</sub><99.7 % effluent. The 99.7% effluent is the concentration of the effluent in the receiving water, at the end of the mixing zone expressed as per cent effluent.
7. "IC<sub>25</sub>" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.
8. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:
  - a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

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

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grown in the soil. Land application includes distribution and marketing (i.e. the selling or giving away of the biosolids).

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



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16. "Cumulative Pollutant Loading Rate" is the maximum amount of an inorganic pollutant (dry-weight basis) that can be applied to a unit area of land.
  17. "Grit and Screenings" are sand, gravel, cinders, other materials with a high specific gravity and relatively large materials such as rags generated during preliminary treatment of domestic sewage at a treatment works and shall be disposed of according to 40 CFR 258.
  18. "High Potential for Public Contact Site" is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
  19. "Low Potential for Public Contact Site" is the land with a low potential for contact by the public. This includes, but is not limited to, farms, ranches, reclamation areas, and other lands which are private lands, restricted public lands, or lands which are not generally accessible to or used by the public.
  20. "Monthly Average" is the arithmetic mean of all measurements taken during the month.
  21. "Volatile Solids" is the amount of the total solids in sewage sludge lost when the sludge is combusted at 550 degrees Celsius for 15-20 minutes in the presence of excess air.
- C. Storm Water.
1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
  2. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.
  3. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of *Appendix II* in the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity. Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.
  4. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.
  5. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

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6. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
7. "Municipal separate storm sewer system" (large and/or medium) means all municipal separate storm sewers that are either:
  - a. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or
  - b. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or
  - c. Owned or operated by a municipality other than those described in paragraph *a.* or *b.* (above) and that are designated by the *Director* as part of the large or medium municipal separate storm sewer system.
8. "NOI" means "notice of intent", it is an application form that is used to obtain coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
9. "NOT" means "notice of termination", it is a form used to terminate coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.
10. "Point source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
11. "Section 313 water priority chemical" means a chemical or chemical categories that:
  - a. Are listed at 40 CFR 372.65 pursuant to Section 313 of the *Emergency Planning and Community Right-to-Know Act (EPCRA)* (also known as *Title III of the Superfund Amendments and Reauthorization Act (SARA)* of 1986);
  - b. Are present at or above threshold levels at a facility subject to *EPCRA Section 313* reporting requirements; and
  - c. Meet at least one of the following criteria:
    - (1) Are listed in *Appendix D* of 40 CFR Part 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);

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

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as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (a) to (k) of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5*. The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

- a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);
- b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;
- c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;
- d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;
- e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D of RCRA*;
- f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;
- g. Steam electric power generating facilities, including coal handling sites;
- h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment

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cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (I) to (k) of this subsection are associated with industrial activity;

- i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;
  - j. Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;
  - k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))
17. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

**FACT SHEET AND STATEMENT OF BASIS  
SWIFT BEEF COMPANY  
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS & STORM WATER  
UPDES PERMIT NUMBER: UT0000281  
UPDES BIOSOLIDS PERMIT NUMBER: UTL-000281  
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR000000  
MAJOR INDUSTRIAL**

**FACILITY CONTACTS**

Person Name:	Darren Olsen
Position:	General Manager
Phone Number:	35-245-6456
Person Name:	Angela Pritchett
Position:	Environmental and Sustainability Manager
Phone Number:	435-245-2351
Person Name:	Ruben Van Tassel
Position:	Wastewater Treatment Plant Supervisor
Phone Number:	435-245-6456
Facility Name:	Swift Beef Company
Mailing and Facility Address:	410 North 200 West Hyrum Utah, 84219
Telephone:	435-245-6456
Actual Address:	410 North 200 West Hyrum Utah, 84219

**DESCRIPTION OF FACILITY**

Swift Beef Company, formerly known as EA Miller, is a beef slaughterhouse and meat packing facility. It is defined as a complex slaughterhouse in 40 CFR 432.21 and Standard Industrial Classification Code 2011 applies. The facility is located in Hyrum, Cache County, Utah. The treatment plant is approximately 0.75 miles north of the slaughter/packing plant.

The slaughterhouse operations began in 1935. Since then, the operation has grown both in number of cattle processed and number of products produced. In 2017 the facility processed 655 million pounds of boxed, combo and variety meat, ground beef, pet food, edible and inedible tallow, meat and meal, blood meal, gel bone, hides and #2 tallow.

The facility was upgraded in 2011 to provide treatment for significant reductions in phosphorus in the effluent as required by the Spring Creek TMDL.

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

Since the previous permit renewal, the Swift Beef plant has increased its production of a live kill weight (LKW) to 2,928,302 million pounds per day, but no increase in flow has been included. The permit limits for TSS, BOD and Oil and Grease were calculated based on the LKW and 40 CFR 432.22 effluent limitations attainable by the application of the best practicable control technology.

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

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

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

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

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

JBS is currently meeting the 1mg/L TP limit, due to the completion of a nutrient TMDL on the upper Bear River.

### **TMDL**

According to Utah's 2016 303(d) assessment unit UT16010203-008\_00, Spring Creek and tributaries from confluence with Little Bear River to headwaters are currently listed as impaired (TMDL required) for temperature and O/E Bio-assessment. A TMDL was completed for Spring Creek in 2002 which addressed impairments for dissolved oxygen, ammonia, E. coli and total phosphorus (TP). The TP target/endpoint was set at 0.05 mg/l at the watershed outlet. Since that time, major upgrades have been made to both Hyrum City's WWTP and Swift Beef Company's treatment plant, resulting in greatly improved effluent quality.

The 2015 intensive monitoring that occurred in the drainage showed the average TP concentration at the watershed outlet to be 0.086 mg/l, which is significantly lower than the 0.7 mg/l concentration that existed prior to the treatment plants improvements. Because of these significant water quality improvements, and the volume of TP reduction that has occurred, additional time is needed to realize the temporal impacts of these changes to be expressed in the monitoring data of the South Fork of Spring Creek. The TP concentration trend continues to decline over time and has not shown to be tapering off to date. At present, additional time and



monitoring are needed to assess the full impacts of the improvements. As a result, TP for Hyrum City's WWTP has been set at an interim level of 1.0 mg/l for September through May and 0.1 mg/l June through August and TP for Swift Beef Company has been set at an interim level of 1.0 mg/l for the current permit cycle and will be reevaluated following the next intensive monitoring cycle scheduled to begin in 2020.

## **DISCHARGE**

### **DESCRIPTION OF DISCHARGE**

Wastewater is collected from the following operations: blood and hide processing, the on-site rendering facility, storm water runoff, holding pen runoff, production area cleaning water, equipment washing, steam making, freshly slaughtered beef washing and paunch washings.

The wastewater treatment process consists of rotary screens and a dissolved air flotation unit at the processing plant to remove grease and solids followed by a grit settling tank and influent flow meter. Flow is then split for primary treatment and either goes to the DAF or the primary clarifier. The activated sludge system utilizes the Modified Ludzack-Ettinger (MLE) process which consists of a two stage anoxic and aeration basins followed by four clarifiers, two disk filters, UV disinfection or chlorination followed by sodium bisulfate prior to discharging at Outfall 001.

In general, JBS/SWIFT was compliant with requirements included in its previous UPDES Permit. Effluent monitoring and compliance data information is available for public review at [www.echo.epa.gov](http://www.echo.epa.gov) by searching for permit number UT0000281.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	The discharge pipe is located in the northwest corner of the wastewater treatment plant property between 200 West and 500 West in Hyrum City, Cache County at latitude 49°39'21" and longitude 111°52'05". The water is discharged inside the fenced area and flows under the chain-link fence to the receiving irrigation ditch.

<u>Outfall</u>	<u>Description of Reuse Water Discharge Point</u>
001R	Treated effluent for reuse will be stored in Pond 4 and Pond 5 at the wastewater treatment plant until it is needed in the irrigation distribution system.

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

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

Effluent concentration limitations on TSS, BOD<sub>5</sub>, E-coli concentrations and pH are based upon current Utah Secondary Treatment Standards, UAC R317-1-3.2.

The effluent limitations for flow, total dissolved solids (TDS), total residual chlorine (TRC), and dissolved oxygen are based upon the wasteload analysis.

Mass limits for TSS, BOD<sub>5</sub>, Oil and Grease are based on 40 CFR 432.22. In 2017 the LWK was 776,000,000 with production running 265 days for a daily kill of 2,928,301 pounds. A LWK value of 2,928 pounds per day per 1000 lbs was used to calculate the mass loading limits. The ammonia monthly maximum average limit and monitoring was based on the wasteload analysis, the ammonia daily maximum limit and monitoring was based upon 40 CFR 432.22 and 40 CFR 432.13. The nitrogen limits are based upon 40 CFR 432.22 and 40 CFR 432.13.

The phosphorous limits are based on studying the realized improvements as seen from the phosphorous reductions based on the Spring Creek TMDL and protective of Spring Creek during the critical months of the year.

The Type II Reuse Limitations for BOD<sub>5</sub>, TSS, E-Coli and pH are based upon UAC R317-3-11.5 with monitoring requirements reduced based on compliance history.

## **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

After an initial screening of metals data, it was determined that a quantitative RP analysis was not needed. A copy of the RP screening is included at the end of this Fact Sheet.

The permit limitations are

Parameter	Effluent Limitations <sup>a</sup>				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow	2.0	--	--	--	--
BOD <sub>5</sub> , mg/L	25	35	--	--	--
BOD <sub>5</sub> , lbs/day	615	--	--	--	1230
TSS, mg/L	25	35	--	--	--
TSS Min. lbs/day	732	--	--	--	1464
Dissolved Oxygen, mg/L	--	--	--	4.0	--

<b>Total Ammonia (as N), mg/L</b>					
<b>October-June</b>	4.0	--	--	--	8.0
<b>July -September</b>	3.0	--	--	--	8.0
<b>TRC, mg/L</b>					
<b>October-March</b>	--	--	--	--	0.15
<b>April-September</b>					0.25
<b>Nitrogen as N, mg/L</b>	134				194
<b><i>E. coli</i>, No./100mL</b>	126	157	--	--	--
<b>Total Phosphorous, mg/L</b>	1	--	--	--	--
<b>WET, Chronic Biomonitoring</b>					IC <sub>25</sub> > effluent (from WLA)
<b>1<sup>st</sup> &amp; 4<sup>th</sup> Quarter</b>	--	--	--	--	73%
<b>2<sup>nd</sup> &amp; 3<sup>rd</sup> Quarter</b>	--	--	--	--	58.4%
<b>Oil &amp; Grease, mg/L</b>	--	--	--	--	10.0
<b>Oil &amp; Grease, lbs/Day</b>	234	--	--	--	469
<b>pH, Standard Units</b>	--	--	--	6.5	9
<b>TDS, mg/L</b>	--	--	--	--	3,000

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

Parameter	Type II Reuse Outfall 001R Effluent Limitations *a				
	Max Monthly Average	Max Weekly Average	Max Daily Average	Minimum	Maximum
BOD <sub>5</sub> , mg/L	25	--	--	--	--
TSS, mg/L	25	35			
<i>E. coli</i> , No/100mL	--	126	--	--	500
pH, Standard Units	--	--	--	6.0	9.0

### 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.

Self-Monitoring and Reporting Requirements <sup>a</sup>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>b, c</sup>	Continuous	Recorder	MGD
BOD <sub>5</sub> ,	Weekly	Composite	mg/L
TSS,	Weekly	Composite	mg/L
<i>E. coli</i>	Weekly	Grab	No./100mL
pH	Weekly	Grab	SU
Total Ammonia (as N)	Twice Weekly	Grab	mg/L
DO	Weekly	Grab	mg/L
WET – Biomonitoring <sup>d</sup>			
Ceriodaphnia - Chronic	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter	Composite	Pass/Fail
Fathead Minnows - Chronic	2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite	Pass/Fail
TRC, mg/L,	Weekly	Grab	mg/L
Oil & Grease	Weekly	Grab	mg/L
Nitrogen as N, mg/L	Monthly	Composite	mg/L
TDS, mg/L	Weekly	Grab	mg/L
Total Kjeldahl Nitrogen, TKN (as N) <sup>e</sup>			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Orthophosphate, (as P) <sup>e</sup>			
Effluent	Monthly	Composite	mg/L
Phosphorus, Total <sup>e</sup>			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrite, NO <sub>2</sub> <sup>e</sup>	Monthly	Composite	mg/L
Nitrate, NO <sub>3</sub> <sup>e</sup>	Monthly	Composite	mg/L

The following is a summary of the Type II reuse self-monitoring and reporting requirements based upon UAC R317-3-11.5.

<b>Type II Reuse Outfall 001R Self-Monitoring and Reporting Requirements<sup>a, f</sup></b>			
<b>Parameter</b>	<b>Frequency</b>	<b>Sample Type</b>	<b>Units</b>
<b>Total Flow<sup>b, c</sup></b>	Continuous	Recorder	MGD
<b>TSS</b>	4 x weekly	Composite	mg/L
<b>BOD<sub>5</sub></b>	Weekly	Composite	mg/L
<b><i>E. coli</i></b>	4 x weekly	Grab	No./100mL
<b>pH</b>	4 x weekly	Grab	SU

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

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

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

<sup>d</sup> Chronic Ceriodaphnia will be tested during the 1<sup>st</sup> and 3<sup>rd</sup> quarters and chronic fathead minnows will be tested during the 2<sup>nd</sup> and 4<sup>th</sup> quarters.

<sup>e</sup> These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

<sup>f</sup> These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

#### Management Practices for Land Application of Treated Effluent:

- (1) The application of treated effluent to frozen, ice-covered, or snow covered land is prohibited.
- (2) No person shall apply treated effluent where the slope of the site exceeds 6 percent.
- (3) The use should not result in a surface water runoff.
- (4) The use must not result in the creation of an unhealthy or nuisance condition, as determined by the local health department.
- (5) Any irrigation with treated effluent must be at least 300 feet from a potable well.
- (6) For Type I reuse, any irrigation must be at least 50 feet from any potable water well.
- (7) For Type II reuse, any irrigation must be at least 300 feet from any potable water well.
- (8) 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.
- (9) Impoundments of treated effluent, if not sealed, must be at least 500 feet from any potable well.

- (10) 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)

## **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.

### **SUBSTANTIAL BIOSOLIDS TREATMENT CHANGES**

Previously, Biosolids requirements were not addressed in this UPDES permit. Swift Beef Biosolids consist mainly of solids from the beef processing facility but also contains human waste from the processing plant staff restrooms. This situation requires Biosolids permitting.

### **DESCRIPTION OF TREATMENT AND DISPOSAL**

Solids in the waste water are first digested in the anaerobic pond then discharged to the anoxic basins, then to the aeration basin. Solids are settled out in the clarifiers then sent to Huber screw presses where they are dewatered and augured into a dump truck. The dump trucks transport the biosolids to Miller Companies for further treatment and sold as compost.

### **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, the Swift Beef transferred 1,302 DMT of biosolids to Miller Companies; therefore they need to sample at least four times a year.

#### Landfill Monitoring

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

### **BIOSOLIDS LIMITATIONS**

#### Heavy Metals

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

The intent of the heavy metals regulations of Table 3, *40 CFR 503.13* is to ensure the heavy metals do not build up in the soil in home lawn and gardens to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see *Part III. C.* of the permit) to 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

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

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

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

<b>Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis</b>				
<b>Heavy Metals</b>	<b>Table 1</b>	<b>Table 2</b>	<b>Table 3</b>	<b>Table 4</b>
	<b>Ceiling Conc. Limits, (mg/kg)</b>	<b>CPLR<sup>1</sup>, (mg/ha)</b>	<b>Pollutant Conc. Limits, (mg/kg)</b>	<b>APLR<sup>2</sup>, (mg/ha-yr)</b>
<b>Total Nickel</b>	420	420	420	420
<b>Total Selenium</b>	100	100	100	100
<b>Total Zinc</b>	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;

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

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

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

Swift Beef transfers the biosolids to Miller Companies for windrow composting and distribution to the public and does not intend to directly 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

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). Swift Beef transfers the biosolids to Miller

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

Companies for windrow composting and distribution to the public and does not intend to land apply the biosolids and will therefore not be required to meet PSRP. If the permittee changes their intentions 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 Swift Beef will be required to meet VAR through the use of a method listed under *40 CFR 503.33*. Swift Beef 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 be retained for a minimum of five years.

#### Reporting

Swift Beef 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**

Storm water provisions are included in this combined UPDES permit.

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

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

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

**PRETREATMENT REQUIREMENTS**

Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR section 403, the State Pretreatment Requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste. The permittee must notify the Division of Water Quality's Pretreatment Coordinator if the discharge is to a POTW without an approved pretreatment program.

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

**BIOMONITORING REQUIREMENTS**

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

The permittee is a major industrial facility that will be discharging a consistent effluent to an irrigation ditch which eventually leads to South Fork Spring Creek. According to recently drafted WET guidance, JBS/Swift beef will be required to perform Chronic Whole Effluent Testing, every quarter, but will alternate between two species. In the past, this facility only conducted Acute WET testing. With newly drafted State WET Guidance, only Chronic WET testing will be required.

**PERMIT DURATION**

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

Drafted by  
Sarah Leavitt, Discharge  
Dan Griffin, Biosolids  
Jennifer Robinson, Pretreatment  
Lisa Stevens, Storm Water  
Dave Wham, Wasteload Analysis  
Mike Allred, TMDL  
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Began: January 14, 2019  
Ended: February 14, 2019

The Public Noticed of the draft permit was published in The Herald Journal.

Comments were received during the public comment period. A comment response summary was sent to all commenters on or about March 18, 2019.

**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**

Permittee Public Notice comment requesting Pond 4 to be an additional reuse storage and discharge location. The request was reviewed and implemented.

Permittee Public Notice comment requesting correction in the WET definition to reflect the Wasteload Analysis and permit limitation requirements. The request was reviewed and implemented.

Permittee Public Notice comment requesting Biosolids metal testing to be removed from permit requirements. The request was reviewed and denied due to the requirements from 40 CFR 503.



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# **ATTACHMENT 1**

## *Wasteload Analysis*

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

**Date:** March 23, 2018

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

**Facility:** Swift Beef Company  
UPDES No. UT000281

**Receiving water:** Ditch => South Fork Spring Creek

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

Discharge

001 Treatment plant discharge 2.0 MGD

Receiving Water

Swift Beef Co. discharges into a ditch system that runs for approximately 4.5 miles before coalescing as the South Fork of Spring Creek at Highway 89. As per UAC R317-2-13.10, the receiving ditch is classed 2B, 3E. As per R317-2-13.3(a), the designated beneficial uses of Little Bear River and tributaries, from Cutler Reservoir to headwaters are 2B, 3A, 3D, 4.

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

Utah Division of Water Quality  
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Swift Beef Company  
UPDES No. UT000281

- *Class 3E- Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Data from the following stations was used to populate the model:

**Table 1. Data Sources**

Station #	Station Name	Data Period
4904840	DITCH AB EA MILLER SC-12	2006-2016
4905540	E. A. MILLER CO. EFFLUENT	2012-2016
4905520	HYRUM WWTP	2012-2016
4904940	S FK SPRING CK @ US 89 XING	2012-2016
4904943	S FK SPRING CK W OF HYRUM WWTP AT END OF RD	2006-2016
4904810	SPRING CK SC-9	2012-2016

Data was segmented into two seasons; Irrigation (April-September) and Non-irrigation (October-May). Significant changes were made to Swift Beef Company's treatment plant in 2011. In order to be reflective of current conditions, only data from 2012 to present was used from those stations downstream of the facility.

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). Due to a lack of flow records, the 20th percentile of available flow measurements was calculated for the period of record to approximate the 7Q10 low flow condition. Calculated critical low flow conditions are as follows:

**Table 2. Critical low flow conditions**

Station #	Station Name	Low Flow (cfs)	
		Irrigation Season	Non-irrigation Season
4904840	DITCH AB EA MILLER SC-12	0.1	0.1
4904810	SPRING CK SC-9	2.2	0.5
4904940	S FK SPRING CK @ US 89 XING	6.7	3.8

Ambient water quality for the receiving water/discharge was characterized using data from the same stations and time periods as presented in Table 1.

### TMDL

According to Utah's 2016 303(d) assessment unit UT16010203-008\_00, Spring Creek and tributaries from confluence with Little Bear River to headwaters are currently listed as impaired (TMDL required) for temperature and O/E Bioassessment. A TMDL was completed for Spring Creek in 2002 which addressed impairments for dissolved oxygen, ammonia, E. coli and total phosphorus (TP). The TP target/endpoint was set at 0.05 mg/l at the watershed outlet. Since that

time, major upgrades have been made to both Hyrum City's WWTP and Swift Beef Company's treatment plant, resulting in greatly improved effluent quality. The 2015 intensive monitoring that occurred in the drainage showed the average TP concentration at the watershed outlet to be 0.086 mg/l, which is significantly lower than the 0.7 mg/l concentration that existed prior to the treatment plants improvements. Because of these significant water quality improvements, and the volume of TP reduction that has occurred, additional time is needed to realize the temporal impacts of these changes to be expressed in the monitoring data of the South Fork of Spring Creek. The TP concentration trend continues to decline over time and has not shown to be tapering off to date. At present, additional time and monitoring are needed to assess the full impacts of the improvements. As a result, TP for Hyrum City's WWTP has been set at an interim level of 1.0 mg/l for September through May and 0.1 mg/l June through August and TP for Swift Beef Company has been set at an interim level of 1.0 mg/l for the current permit cycle and will be reevaluated following the next intensive monitoring cycle scheduled to begin in 2020.

#### Mixing Zone

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

Because the receiving water is a ditch that flows for several miles with multiple inputs, the combined flows are considered to be totally mixed. Chronic and acute limits were calculated using 100% of the seasonal critical low flow.

#### Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were TDS, phosphorous and ammonia, as determined in consultation with the UPDES Permit Writer.

#### WET Limits

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

IC25 WET limits for Outfall 001:

Irrigation Season 58.4% effluent.

Non-Irrigation Season 73% effluent.

#### Wasteload Allocation Methods

The QUAL2Kw model was used for determining the WQBELs for parameters related to eutrophication and in-stream DO criteria, as well as ammonia toxicity. Effluent concentrations

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were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards or technology based effluent limits (TBEL), the concentration in the model was set at the secondary standard or TBEL.

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

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is not required for this facility. The proposed permit is a simple renewal of an existing UPDES permit. No increase in flow or concentration of pollutants over those authorized in the the existing permit is being requested.

Documents:

WLA Document: *SwiftBeef\_WLADoc\_3-23-18.docx*

Wasteload Analysis and Addendums: *SwiftBeef\_WLA\_NonIrrig\_3-23-18.xlsm*; *SwiftBeef\_WLA\_Irrig\_3-23-18.xlsm*

References:

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

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

Date: 12/18/2018

Time: 12:33 PM

**Discharging Facility:** EA Miller

UPDES No: UT00000281

Current Flow: 2.00 MGD

Design Flow: 2.00 MGD

**Irrigation Season (April - September)****Receiving Water:** Ditch to So. Fork of Spring Creek

Stream Classification: 2B, 3A, 3D, 4 Controlling: 3A

Stream Flows [cfs]:	0.01	Summer (July-Sept)	Critical Low Flow
	-	Fall (Oct-Dec)	Critical Low Flow
	0.01	Winter (Jan-Mar)	Critical Low Flow
	-	Spring (Apr-June)	Critical Low Flow

Stream TDS Values	1,812.00	Summer (July-Sept)
[mg/l as CaCO <sub>3</sub> ]	-	Fall (Oct-Dec)

	1,288.00	Winter (Jan-Mar)
	-	Spring (Apr-June)

**Parameter:****Effluent Limits:****WQ Standard:**

summer Flow, MGD:

2.00 MGD

BOD, mg/l:

25.00 summer

5.0 Indicator

Dissolved Oxygen, mg/l:

4.00 summer

6.5 30 Day Average

NH<sub>4</sub>

3.00 summer

Varies with pH and Temperature

TDS, mg/l:

3,000.00 summer

1200.00 mg/l

**Modeling Parameters:**

Acute River Width: 50.0%

Chronic River Width: 100.0%

**Antidegradation Review:**

An Antidegradation Level I Review was completed.

**Antidegradation Level II Review is NOT Required**



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

 Date: 12/18/2018  
Time: 12:33 PM

**Facilities:** EA Miller  
**Discharging to:** Ditch to So. Fork of Spring Creek

**UPDES No:** UT00000281

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

Ditch to So. Fork of Spring Creek	2B, 3A, 3D, 4
Antidegradation Review:	Antidegradation Level II Review is NOT Required

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	6.50 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	0.005 lbs/day	750.00 ug/l	0.040 lbs/day
Arsenic	190.00 ug/l	0.010 lbs/day	340.00 ug/l	0.018 lbs/day
Cadmium	0.76 ug/l	0.000 lbs/day	8.73 ug/l	0.000 lbs/day
Chromium III	268.22 ug/l	0.014 lbs/day	5611.67 ug/l	0.302 lbs/day
Chromium VI	11.00 ug/l	0.001 lbs/day	16.00 ug/l	0.001 lbs/day
Copper	30.50 ug/l	0.002 lbs/day	51.68 ug/l	0.003 lbs/day
Iron			1000.00 ug/l	0.054 lbs/day
Lead	18.58 ug/l	0.001 lbs/day	476.82 ug/l	0.026 lbs/day
Mercury	0.012 ug/l	0.000 lbs/day	2.40 ug/l	0.000 lbs/day
Nickel	168.54 ug/l	0.009 lbs/day	1515.91 ug/l	0.082 lbs/day

Selenium	4.60 ug/l	0.000 lbs/day	20.00 ug/l	0.001 lbs/day
Silver	N/A ug/l	N/A lbs/day	41.07 ug/l	0.002 lbs/day
Zinc	387.83 ug/l	0.021 lbs/day	387.83 ug/l	0.021 lbs/day

\* Allowed below discharge

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

Metals Standards based upon a hardness of 400 mg/l as CaCO<sub>3</sub> where applicable.

#### Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aldrin	ug/l		1.5000 ug/l	8.085E-05 lbs/day
Chlordane	0.0043 ug/l	2.318E-07 lbs/day	1.2000 ug/l	6.468E-05 lbs/day
DDT, DDE	0.0010 ug/l	5.390E-08 lbs/day	0.5500 ug/l	2.965E-05 lbs/day
Dieldrin	0.0019 ug/l	1.024E-07 lbs/day	1.2500 ug/l	6.738E-05 lbs/day
Endosulfan	0.0560 ug/l	3.018E-06 lbs/day	0.1100 ug/l	5.929E-06 lbs/day
Endrin	0.0023 ug/l	1.240E-07 lbs/day	0.0900 ug/l	4.851E-06 lbs/day
Guthion			0.0100	
Heptachlor	0.0038 ug/l	2.048E-07 lbs/day	0.2600 ug/l	1.401E-05 lbs/day
Lindane	0.0800 ug/l	4.312E-06 lbs/day	1.0000 ug/l	5.390E-05 lbs/day
Methoxychlor			0.0300	
Mirex			0.0100	
Parathion			0.0400	
PCB's	0.0140 ug/l	7.546E-07 lbs/day	2.0000 ug/l	1.078E-04 lbs/day
Pentachlorophenol	13.0000 ug/l	7.007E-04 lbs/day	20.0000 ug/l	1.078E-03 lbs/day
Toxephene	0.0002 ug/l	1.078E-08 lbs/day	0.7300 ug/l	3.935E-05 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic	N/A		100.0 ug/l	5.39E-03 lbs/day
Boron	N/A		750.0 ug/l	4.04E-02 lbs/day
Cadmium	N/A		10.0 ug/l	5.39E-04 lbs/day
Chromium	N/A		100.0 ug/l	5.39E-03 lbs/day
Copper	N/A		200.0 ug/l	1.08E-02 lbs/day
Lead	N/A		100.0 ug/l	5.39E-03 lbs/day
Selenium	N/A		50.0 ug/l	2.70E-03 lbs/day
TDS	N/A		1200.0 mg/l	3.23E-02 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic	N/A		50.0 ug/l	2.70E-03 lbs/day
Barium	N/A		1000.0 ug/l	5.39E-02 lbs/day
Cadmium	N/A		10.0 ug/l	5.39E-04 lbs/day
Chromium	N/A		50.0 ug/l	2.70E-03 lbs/day
Lead	N/A		50.0 ug/l	2.70E-03 lbs/day
Mercury	N/A		2.0 ug/l	1.08E-04 lbs/day
Selenium	N/A		10.0 ug/l	5.39E-04 lbs/day
Silver	N/A		50.0 ug/l	2.70E-03 lbs/day
Fluoride (3)	N/A		1.4 ug/l	7.55E-05 lbs/day
to	N/A		2.4 ug/l	1.29E-04 lbs/day
Nitrates as N	N/A		10.0 ug/l	5.39E-04 lbs/day

Chlorophenoxy Herbicides	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
2,4-D	N/A		100.0 ug/l	5.39E-03 lbs/day
2,4,5-TP	N/A		10.0 ug/l	5.39E-04 lbs/day

Endrin	N/A	0.2 ug/l	1.08E-05 lbs/day
Hexachlorocyclohexane (Lindane)	N/A	4.0 ug/l	2.16E-04 lbs/day
Methoxychlor	N/A	100.0 ug/l	5.39E-03 lbs/day
Toxaphene	N/A	5.0 ug/l	2.70E-04 lbs/day

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

	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Antimony	6E+00 ug/l	6E+00 lbs/day	6E+02 ug/l	6.42E+02 lbs/day
Arsenic				
Beryllium				
Cadmium				
Chromium III				
Chromium VI				
Copper	1E+03 ug/l	1E+03 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Lead				
Mercury				
Nickel	1E+02 ug/l	1E+02 lbs/day	5E+03 ug/l	4.61E+03 lbs/day
Selenium			4E+03 ug/l	4.21E+03 lbs/day
Silver				
Thallium	2E-01 ug/l	2E-01 lbs/day	5E-01 ug/l	4.71E-01 lbs/day
Zinc	7E+03 ug/l	7E+03 lbs/day	3E+04 ug/l	2.61E+04 lbs/day
Cyanide	1E+02 ug/l	1E+02 lbs/day	1E+02 ug/l	1.40E+02 lbs/day
Asbestos				
2,3,7,8-TCDD Dioxin	5E-09			
Acrolein	2E+02 ug/l	2E+02 lbs/day	3E+02 ug/l	2.91E+02 lbs/day
Acrylonitrile	5E-02 ug/l	5E-02 lbs/day	3E-01 ug/l	2.51E-01 lbs/day
Alachlor	2E+00 ug/l	2E+00 lbs/day		
Atrazine	3E+00 ug/l	3E+00 lbs/day		
Benzene	2E+00 ug/l	2E+00 lbs/day	5E+01 ug/l	5.12E+01 lbs/day
Bromoform	4E+00 ug/l	4E+00 lbs/day	1E+02 ug/l	1.40E+02 lbs/day
Carbofuran	4E+01 ug/l	4E+01 lbs/day		
Carbon Tetrachloride	2E-01 ug/l	2E-01 lbs/day	2E+00 ug/l	1.60E+00 lbs/day
Chlorobenzene	1E+02 ug/l	1E+02 lbs/day	2E+03 ug/l	1.61E+03 lbs/day
Chlorodibromomethane	4E-01 ug/l	4E-01 lbs/day	1E+01 ug/l	1.30E+01 lbs/day
Chloroethane				
2-Chloroethylvinyl Ether				
Chloroform	6E+00 ug/l	6E+00 lbs/day	5E+02 ug/l	4.72E+02 lbs/day
Dalapon	2E+02 ug/l	2E+02 lbs/day		
Di(2ethylhexyl)adipate	4E+02 ug/l	4E+02 lbs/day		
Dibromochloropropane	2E-01 ug/l	2E-01 lbs/day		
Dichlorobromomethane	6E-01 ug/l	6E-01 lbs/day	2E+01 ug/l	1.71E+01 lbs/day
1,1-Dichloroethane				
1,2-Dichloroethane	4E-01 ug/l	4E-01 lbs/day	4E+01 ug/l	3.71E+01 lbs/day
1,1-Dichloroethylene	7E+00 ug/l	7E+00 lbs/day	7E+03 ug/l	7.12E+03 lbs/day
Dichloroethylene (cis-1,2	7E+01 ug/l	7E+01 lbs/day	0E+00 ug/l	
Dinoseb	7E+00 ug/l	7E+00 lbs/day	0E+00 ug/l	
Diquat	2E+01 ug/l	2E+01 lbs/day	0E+00 ug/l	
1,2-Dichloropropane	5E-01 ug/l	5E-01 lbs/day	2E+01 ug/l	1.50E+01 lbs/day
1,3-Dichloropropene	3E-01 ug/l	3E-01 lbs/day	2E+01 ug/l	2.11E+01 lbs/day
Endothall	1E+02 ug/l	1E+02 lbs/day		
Ethylbenzene	5E+02 ug/l	5E+02 lbs/day	2E+03 ug/l	2.11E+03 lbs/day
Ethylene Dibromide	5E-02 ug/l	5E-02 lbs/day		
Glyphosate	7E+02 ug/l	7E+02 lbs/day		
Haloacetic acids	6E+01 ug/l	6E+01 lbs/day		
Methyl Bromide	5E+01 ug/l	5E+01 lbs/day	2E+03 ug/l	1.50E+03 lbs/day

Methyl Chloride				
Methylene Chloride	5E+00 ug/l	5E+00 lbs/day	6E+02 ug/l	5.92E+02 lbs/day
Ocamyl (vidate)	2E+02 ug/l	2E+02 lbs/day		
Picloram	5E+02 ug/l	5E+02 lbs/day		
Simazine	4E+00 ug/l	4E+00 lbs/day		
Styrene	1E+02 ug/l	1E+02 lbs/day		
1,1,2,2-Tetrachloroethane	2E-01 ug/l	2E-01 lbs/day	4E+00 ug/l	4.01E+00 lbs/day
Tetrachloroethylene	7E-01 ug/l	7E-01 lbs/day	3E+00 ug/l	3.31E+00 lbs/day
Toluene	1E+03 ug/l	1E+03 lbs/day	2E+04 ug/l	1.50E+04 lbs/day
1,2 -Trans-Dichloroethyle	1E+02 ug/l	1E+02 lbs/day	1E+04 ug/l	1.00E+04 lbs/day
1,1,1-Trichloroethane	2E+02 ug/l	2E+02 lbs/day		
1,1,2-Trichloroethane	6E-01 ug/l	6E-01 lbs/day	2E+01 ug/l	1.61E+01 lbs/day
Trichloroethylene	3E+00 ug/l	3E+00 lbs/day	3E+01 ug/l	3.01E+01 lbs/day
Vinyl Chloride	3E-02 ug/l	3E-02 lbs/day	2E+00 ug/l	2.41E+00 lbs/day
Xylenes	1E+04 ug/l	1E+04 lbs/day		
2-Chlorophenol	8E+01 ug/l	8E+01 lbs/day	2E+02 ug/l	1.50E+02 lbs/day
2,4-Dichlorophenol	8E+01 ug/l	8E+01 lbs/day	3E+02 ug/l	2.91E+02 lbs/day
2,4-Dimethylphenol	4E+02 ug/l	4E+02 lbs/day	9E+02 ug/l	8.52E+02 lbs/day
2-Methyl-4,6-Dinitrophenol	1E+01 ug/l	1E+01 lbs/day	3E+02 ug/l	2.81E+02 lbs/day
2,4-Dinitrophenol	7E+01 ug/l	7E+01 lbs/day	5E+03 ug/l	5.32E+03 lbs/day
2-Nitrophenol				
4-Nitrophenol				
3-Methyl-4-Chlorophenol				
Penetachlorophenol	3E-01 ug/l	3E-01 lbs/day	3E+00 ug/l	3.01E+00 lbs/day
Phenol	2E+04 ug/l	2E+04 lbs/day	2E+06 ug/l	1.71E+06 lbs/day
2,4,6-Trichlorophenol	1E+00 ug/l	1E+00 lbs/day	2E+00 ug/l	2.41E+00 lbs/day
Acenaphthene	7E+02 ug/l	7E+02 lbs/day	1E+03 ug/l	9.92E+02 lbs/day
Acenaphthylene				
Anthracene	8E+03 ug/l	8E+03 lbs/day	4E+04 ug/l	4.01E+04 lbs/day
Benzidine	9E-05 ug/l	9E-05 lbs/day	2E-04 ug/l	2.01E-04 lbs/day
Benzo(a)Anthracene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Benzo(a)Pyrene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Benzobfluoranthene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Benzoghiperylene	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Benzokfluoranthene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Bis(2-Chloroethoxy)Methane	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Bis(2-Chloroethyl)Ether	3E-02 ug/l	3E-02 lbs/day	5E-01 ug/l	5.32E-01 lbs/day
Bis(2-Chloroisopropyl)Ether	1E+03 ug/l	1E+03 lbs/day	7E+04 ug/l	6.52E+04 lbs/day
Bis(2-Ethylhexyl)Phthalate	1E+00 ug/l	1E+00 lbs/day	2E+00 ug/l	2.21E+00 lbs/day
4-Bromophenyl Phenyl Ether	0E+00			
Butylbenzyl Phthalate	2E+03 ug/l	2E+03 lbs/day	2E+03 ug/l	1.90E+03 lbs/day
2-Chloronaphthalene	1E+03 ug/l	1E+03 lbs/day	2E+03 ug/l	1.60E+03 lbs/day
4-Chlorophenyl Phenyl Ether				
Chrysene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Dibenz(a,h)Anthracene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
1,2-Dichlorobenzene	4E+02 ug/l	4E+02 lbs/day	1E+03 ug/l	1.30E+03 lbs/day
1,3-Dichlorobenzene	3E+02 ug/l	3E+02 lbs/day	1E+03 ug/l	9.63E+02 lbs/day
1,4-Dichlorobenzene	6E+01 ug/l	6E+01 lbs/day	2E+02 ug/l	1.91E+02 lbs/day
3,3-Dichlorobenzidine	2E-02 ug/l	2E-02 lbs/day	3E-02 ug/l	2.81E-02 lbs/day
Diethyl Phthalate	2E+03 ug/l	2E+03 lbs/day	4E+04 ug/l	4.41E+04 lbs/day
Dimethyl Phthalate	3E+05 ug/l	3E+05 lbs/day	1E+06 ug/l	1.10E+06 lbs/day
Di-n-Butyl Phthalate	2E+03 ug/l	2E+03 lbs/day	5E+03 ug/l	4.51E+03 lbs/day
2,4-Dinitrotoluene	1E-01 ug/l	1E-01 lbs/day	3E+00 ug/l	3.41E+00 lbs/day
2,6-Dinitrotoluene				
Di-n-Octyl Phthalate				
1,2-Diphenylhydrazine	4E-02 ug/l	4E-02 lbs/day	2E-01 ug/l	2.01E-01 lbs/day
Fluoranthene	1E+02 ug/l	1E+02 lbs/day		
Fluorene	1E+03 ug/l	1E+03 lbs/day	5E+03 ug/l	5.32E+03 lbs/day
Hexachlorobenzene	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	2.90E-04 lbs/day
Hexachlorobutidine	4E-01 ug/l	4E-01 lbs/day	2E+01 ug/l	1.81E+01 lbs/day

Hexachloroethane	1E+00 ug/l	1E+00 lbs/day	3E+00 ug/l	3.31E+00 lbs/day
Hexachlorocyclopentadiene	4E+01 ug/l	4E+01 lbs/day	1E+03 ug/l	1.10E+03 lbs/day
Ideno 1,2,3-cdPyrene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Isophorone	4E+01 ug/l	4E+01 lbs/day	1E+03 ug/l	9.63E+02 lbs/day
Naphthalene			ug/l	
Nitrobenzene	2E+01 ug/l	2E+01 lbs/day	7E+02 ug/l	6.92E+02 lbs/day
N-Nitrosodimethylamine	7E-04 ug/l	7E-04 lbs/day	3E+00 ug/l	3.01E+00 lbs/day
N-Nitrosodi-n-Propylamine	5E-03 ug/l	5E-03 lbs/day	5E-01 ug/l	5.12E-01 lbs/day
N-Nitrosodiphenylamine	3E+00 ug/l	3E+00 lbs/day	6E+00 ug/l	6.01E+00 lbs/day
Phenanthrene				
Pyrene	8E+02 ug/l	8E+02 lbs/day	4E+03 ug/l	4.01E+03 lbs/day
1,2,4-Trichlorobenzene	4E+01 ug/l	4E+01 lbs/day	7E+01 ug/l	7.02E+01 lbs/day
Aldrin	5E-05 ug/l	5E-05 lbs/day	5E-05 ug/l	5.01E-05 lbs/day
alpha-BHC	3E-03 ug/l	3E-03 lbs/day	5E-03 ug/l	4.91E-03 lbs/day
beta-BHC	9E-03 ug/l	9E-03 lbs/day	2E-02 ug/l	1.70E-02 lbs/day
gamma-BHC (Lindane)	2E-01 ug/l	2E-01 lbs/day	2E+00 ug/l	1.81E+00 lbs/day
delta-BHC	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Chlordane	8E-04 ug/l	8E-04 lbs/day	8E-04 ug/l	8.11E-04 lbs/day
4,4-DDT	2E-04 ug/l	2E-04 lbs/day	2E-04 ug/l	2.20E-04 lbs/day
4,4-DDE	2E-04 ug/l	2E-04 lbs/day	2E-04 ug/l	2.20E-04 lbs/day
4,4-DDD	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	3.11E-04 lbs/day
Dieldrin	5E-05 ug/l	5E-05 lbs/day	5E-05 ug/l	5.41E-05 lbs/day
alpha-Endosulfan	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
beta-Endosulfan	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
Endosulfan Sulfate	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
Endrin	6E-02 ug/l	6E-02 lbs/day	6E-02 ug/l	6.01E-02 lbs/day
Endrin Aldehyde	3E-02 ug/l	3E-02 lbs/day	3E-01 ug/l	3.01E-01 lbs/day
Heptachlor	8E-05 ug/l	8E-05 lbs/day	8E-05 ug/l	7.91E-05 lbs/day
Heptachlor Epoxide	4E-05 ug/l	4E-05 lbs/day	4E-05 ug/l	3.91E-05 lbs/day
Polychlorinated Biphenyls	6E-05 ug/l	6E-05 lbs/day	6E-05 ug/l	6.41E-05 lbs/day
PCB's				
Toxaphene	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	0.00E+00 lbs/day

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 QUAL2kw EPA and the University of Washington.

(2) 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. QUAL2kw default values or as adjusted by user, as noted.

## 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 NH <sub>3</sub> -N, mg/l
BOD <sub>5</sub> , 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 Headwater/Upstream Information

	Stream Critical		Temp. Deg. C	pH	T-NH <sub>4</sub> mg/l as N	BOD <sub>5</sub> mg/l	DO mg/l	TRC mg/l	TDS mg/l
	Low Flow	cfs							
Summer	0.010		15.1	8.3	0.05	0.10	9.10	0.00	1812.0
Fall	0.000		0.0	0.0	0.00	0.00	0.00	0.00	0.0
Winter	0.010		8.0	8.2	0.31	0.10	10.70	0.00	1288.0
Spring	0.000		0.0	0.0	0.00	0.00	0.00	0.00	0.0
Dissolved	Al		As	Cd	CrIII	CrVI	Copper	Fe	Pb

Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
All Seasons	15.00	2.50	0.38	134.11	5.50	5.59	0.00	9.29
Dissolved	Hg	Ni	Se	Ag	Zn	Boron		
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		
All Seasons	0.0060	3.75	1.30	1.00	41.00	375.0	* 1/2 MDL	

**Projected Discharge Information [See page 5 for additional information]**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	2.00	23.60	3,000.00	25.01
Fall	-	-	-	-
Winter	2.00	21.50	3,000.00	25.01
Spring	-	-	-	-

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

**IX. Effluent Limitations**

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

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

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

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

Season	Daily Average		
Summer	2.00 MGD		3.094 cfs
Fall	- MGD		0.000 cfs
Winter	2.00 MGD		3.094 cfs
Spring	- MGD		0.000 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 2 MGD. If the discharger is allowed to have a flow greater than 2 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
System is Totally Mixed	IC25 >	58.4% Effluent	[Chronic]



**Effluent Limitation for Biological Oxygen Demand (BOD<sub>5</sub>) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD<sub>5</sub> limitation as follows:

Season	Concentration	
Summer	25.00 mg/l as CBOD <sub>5</sub>	416.92 lbs/day
Fall	- mg/l as CBOD <sub>5</sub>	- lbs/day
Winter	25.00 mg/l as CBOD <sub>5</sub>	416.92 lbs/day
Spring	- mg/l as CBOD <sub>5</sub>	- 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	Load
Summer	4.00 mg/l	66.71 lbs/day
Fall	- mg/l	- lbs/day
Winter	4.00 mg/l	66.71 lbs/day
Spring	- mg/l	- lbs/day

**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	3.00 mg/l as N	50.03 lbs/day
	1 Hour Avg. - Acute	17.17 mg/l as N	286.26 lbs/day
Fall	4 Day Avg. - Chronic	- mg/l as N	- lbs/day
	1 Hour Avg. - Acute	- mg/l as N	- lbs/day
Winter	4 Day Avg. - Chronic	4.00 mg/l as N	66.71 lbs/day
	1 Hour Avg. - Acute	22.89 mg/l as N	381.68 lbs/day
Spring	4 Day Avg. - Chronic	- mg/l as N	- lbs/day
	1 Hour Avg. - Acute	- mg/l as N	- lbs/day

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

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

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	0.25 mg/l	4.17 lbs/day
	1 Hour Avg. - Acute	0.43 mg/l	7.20 lbs/day
Fall	4 Day Avg. - Chronic	- mg/l	- lbs/day
	1 Hour Avg. - Acute	- mg/l	- lbs/day
Winter	4 Day Avg. - Chronic	0.15 mg/l	2.50 lbs/day
	1 Hour Avg. - Acute	0.26 mg/l	4.32 lbs/day
Spring	4 Day Avg. - Chronic	- mg/l	- lbs/day
	1 Hour Avg. - Acute	- mg/l	- lbs/day

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

Season	Concentration	Load
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Summer	Maximum, Acute	3,000.0 mg/l	50,030 tons/day
Fall	Maximum, Acute	- mg/l	- tons/day
Winter	Maximum, Acute	3,000.0 mg/l	50,030 tons/day
Spring	Maximum, Acute	- mg/l	- tons/day

Colorado Salinity Form Limits      Determined by Permitting Section

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

Summer	Maximum	23.60 Deg. C.	74.5 Deg. F
Fall	Maximum	- Deg. C.	- Deg. F
Winter	Maximum	21.50 Deg. C.	70.7 Deg. F
Spring	Maximum	- Deg. C.	- Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards [Class 3]**

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	8.09E-02 lbs/day
Chlordane	4.31E-03 ug/l	2.32E-04 lbs/day	1.2E+00 ug/l	6.48E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	5.40E-05 lbs/day	5.5E-01 ug/l	2.97E-02 lbs/day
Dieldrin	1.90E-03 ug/l	1.03E-04 lbs/day	1.3E+00 ug/l	6.75E-02 lbs/day
Endosulfan	5.61E-02 ug/l	3.02E-03 lbs/day	1.1E-01 ug/l	5.94E-03 lbs/day
Endrin	2.30E-03 ug/l	1.24E-04 lbs/day	9.0E-02 ug/l	4.86E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02 ug/l	5.39E-04 lbs/day
Heptachlor	3.81E-03 ug/l	2.05E-04 lbs/day	2.6E-01 ug/l	1.40E-02 lbs/day
Lindane	8.01E-02 ug/l	4.32E-03 lbs/day	1.0E+00 ug/l	5.40E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02 ug/l	1.62E-03 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02 ug/l	5.39E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02 ug/l	2.16E-03 lbs/day
PCB's	1.40E-02 ug/l	7.56E-04 lbs/day	2.0E+00 ug/l	1.08E-01 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.02E-01 lbs/day	2.0E+01 ug/l	1.08E+00 lbs/day
Toxephene	2.00E-04 ug/l	1.08E-05 lbs/day	7.3E-01 ug/l	3.94E-02 lbs/day

**Effluent Limitations for E. coli Based upon Water Quality Standards [Class 2]**

E. coli      126.0 organisms per 100 ml

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

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

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.1 pCi/L	0.00
BOD (mg/l)	5.0 mg/l	83.5 lbs/day
Nitrate as N (mg/l)	4.0 mg/l	66.8 lbs/day
Total Phosphorus as P	0.1 mg/l	0.0 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:

Toxic Organics	Limitation (30 Day Avg.) Class 1C	Maximum Concentration	
		Concentra Effluent Limit (30 Day Avg.) Class 3	Load
Antimony	5.609E+00	6.421E+02	
Arsenic			
Beryllium			
Cadmium			
Chromium III			
Chromium VI			
Copper	1.304E+03		
Lead			
Mercury			
Nickel	1.003E+02	4.61E+03	
Selenium		4.21E+03	
Silver		0.00E+00	
Thallium	2.404E-01	4.71E-01	
Zinc	7.424E+03	2.61E+04	
Cyanide	1.404E+02	1.40E+02	
Asbestos	7.000E+06		
2,3,7,8-TCDD Dioxin		5.11E-09	
Acrolein	1.903E+02	2.91E+02	
Acrylonitrile	5.108E-02	2.51E-01	
Alachlor	2.003E+00	0.00E+00	
Atrazine	3.005E+00	0.00E+00	
Benzene	2.204E+00	5.12E+01	
Bromoform	4.307E+00	1.40E+02	
Carbofuran	4.006E+01		
Carbon Tetrachloride	2.304E-01	1.60E+00	
Chlorobenzene	1.002E+02	1.61E+03	
Chlorodibromomethane	4.006E-01	1.30E+01	
Chloroethane			
2-Chloroethylvinyl Ether			
Chloroform	5.709E+00	4.72E+02	
Dalapon	2.003E+02		
Di(2ethylhexyl)adipate	4.006E+02		
Dibromochloropropane	2.003E-01		
Dichlorobromomethane	5.509E-01	1.71E+01	
1,1-Dichloroethane		0.00E+00	
1,2-Dichloroethane	3.806E-01	3.71E+01	
1,1-Dichloroethylene	7.011E+00	7.12E+03	
Dichloroethylene (cis-1,2	7.011E+01	0.00E+00	
Dinoseb	7.011E+00	0.00E+00	
Diquat	2.003E+01	0.00E+00	
1,2-Dichloropropane	5.008E-01	1.50E+01	
1,3-Dichloropropene	3.405E-01	2.11E+01	
Endothall	1.002E+02	0.00E+00	
Ethylbenzene	5.309E+02	2.11E+03	
Ethylene Dibromide	5.008E-02	0.00E+00	

Glyphosate	7.011E+02	0.00E+00
Haloacetic acids	6.010E+01	0.00E+00
Methyl Bromide	4.708E+01	1.50E+03
Methyl Chloride	0.000E+00	
Methylene Chloride	4.607E+00	5.92E+02
Ocamyl (vidate)	2.003E+02	
Picloram	5.008E+02	
Simazine	4.006E+00	
Styrene	1.002E+02	
1,1,2,2-Tetrachloroethane	1.703E-01	4.01E+00
Tetrachloroethylene	6.911E-01	3.31E+00
Toluene	1.002E+03	1.50E+04
1,2 -Trans-Dichloroethyle	1.002E+02	1.00E+04
1,1,1-Trichloroethane	2.003E+02	0.00E+00
1,1,2-Trichloroethane	5.910E-01	1.61E+01
Trichloroethylene	2.504E+00	3.01E+01
Vinyl Chloride	2.504E-02	2.41E+00
Xylenes	1.002E+04	
2-Chlorophenol	8.113E+01	1.50E+02
2,4-Dichlorophenol	7.712E+01	2.91E+02
2,4-Dimethylphenol	3.806E+02	8.52E+02
2-Methyl-4,6-Dinitrophenol	1.302E+01	2.81E+02
2,4-Dinitrophenol	6.911E+01	5.32E+03
2-Nitrophenol		
4-Nitrophenol		
3-Methyl-4-Chlorophenol		
Penetachlorophenol	2.704E-01	3.01E+00
Phenol	2.103E+04	1.71E+06
2,4,6-Trichlorophenol	1.402E+00	2.41E+00
Acenaphthene	6.711E+02	9.92E+02
Acenaphthylene	0.000E+00	0.00E+00
Anthracene	8.313E+03	4.01E+04
Benzidine	8.614E-05	2.01E-04
Benzo(a)Anthracene	3.806E-03	1.81E-02
Benzo(a)Pyrene	3.806E-03	1.81E-02
Benzo(b)Fluoranthene	3.806E-03	1.81E-02
Benzo(g,h,i)Perylene		0.00E+00
Benzo(k)Fluoranthene	3.806E-03	1.81E-02
Bis(2-Chloroethoxy)Methane		0.00E+00
Bis(2-Chloroethyl)Ether	3.005E-02	5.32E-01
Bis(2-Chloroisopropyl)Ether	1.402E+03	6.52E+04
Bis(2-Ethylhexyl)Phthalate	1.202E+00	2.21E+00
4-Bromophenyl Phenyl Ether		0.00E+00
Butylbenzyl Phthalate	1.502E+03	1.90E+03
2-Chloronaphthalene	1.002E+03	1.60E+03
4-Chlorophenyl Phenyl Ether		
Chrysene	3.806E-03	1.81E-02
Dibenzo(a,h)Anthracene	3.806E-03	1.81E-02
1,2-Dichlorobenzene	4.207E+02	1.30E+03
1,3-Dichlorobenzene	3.205E+02	9.63E+02
1,4-Dichlorobenzene	6.310E+01	1.91E+02
3,3-Dichlorobenzidine	2.103E-02	2.81E-02
Diethyl Phthalate	1.703E+03	4.41E+04
Dimethyl Phthalate	2.704E+05	1.10E+06
Di-n-Butyl Phthalate	2.003E+03	4.51E+03
2,4-Dinitrotoluene	1.102E-01	3.41E+00
2,6-Dinitrotoluene		0.00E+00
Di-n-Octyl Phthalate		0.00E+00
1,2-Diphenylhydrazine	3.606E-02	2.01E-01
Fluoranthene	1.302E+02	

Fluorene	1.102E+03	5.32E+03
Hexachlorobenzene	2.805E-04	2.90E-04
Hexachlorobutadiene	4.407E-01	1.81E+01
Hexachloroethane	1.402E+00	3.31E+00
Hexachlorocyclopentadiene	4.006E+01	1.10E+03
Ideno 1,2,3-cdPyrene	3.806E-03	1.81E-02
Isophorone	3.506E+01	9.63E+02
Naphthalene		
Nitrobenzene	1.703E+01	6.92E+02
N-Nitrosodimethylamine	6.911E-04	3.01E+00
N-Nitrosodi-n-Propylamine	5.008E-03	5.12E-01
N-Nitrosodiphenylamine	3.305E+00	6.01E+00
Phenanthrene		
Pyrene	8.313E+02	4.01E+03
1,2,4-Trichlorobenzene	3.506E+01	7.02E+01
Aldrin	4.908E-05	5.01E-05
alpha-BHC	2.604E-03	4.91E-03
beta-BHC	9.115E-03	1.70E-02
gamma-BHC (Lindane)	2.003E-01	1.81E+00
delta-BHC		0.00E+00
Chlordane	8.013E-04	8.11E-04
4,4-DDT	2.204E-04	2.20E-04
4,4-DDE	2.204E-04	2.20E-04
4,4-DDD	3.105E-04	3.11E-04
Dieldrin	5.208E-05	5.41E-05
alpha-Endosulfan	6.210E+01	8.92E+01
beta-Endosulfan	6.210E+01	8.92E+01
Endosulfan Sulfate	6.210E+01	8.92E+01
Endrin	5.910E-02	6.01E-02
Endrin Aldehyde	2.905E-02	3.01E-01
Heptachlor	7.913E-05	7.91E-05
Heptachlor Epoxide	3.906E-05	3.91E-05
PCBs	6.410E-05	6.41E-05
Toxaphene	2.805E-04	

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

	Class 3: Chronic Aquatic Wildlife ug/l	Class 3: Acute Aquatic Wildlife ug/l	Class 1C: Drinking Water Supply	Class 1C: Acute Toxics Drinking Water Source ug/l	Class 3: Acute Toxics Drinking & Consumpt ion Criteria ug/l	Class 4: Acute Agricultur al ug/l	Acute Most Stringent ug/l
Aluminum	N/A	751.2					751.2
Antimony				5.6			5.6
Arsenic	190.6	340.5	50.2			100.3	50.2
Asbestos				7.00E+06			7000000.0
Barium			1001.6				1001.6
Beryllium							0.0
Cadmium	0.8	8.7	10.0			10.0	0.8
Chromium (III)	268.7	5620.5	49.7				49.7
Chromium (VI)	11.02	16.0				99.9	11.0
Copper	30.6	51.8		1304.2		200.6	30.6
Cyanide	5.2	22.0		140.4			5.2
Iron		1001.6					1001.6
Lead	18.6	477.6	50.1			100.3	18.6
Mercury	0.012	2.40	2.01				0.0
Nickel	169.1	1518.4		100.3			100.3
Selenium	4.6	20.0	10.0		4213.6	50.2	4.6
Silver		41.1	50.2				41.1
Thallium							0.0
Zinc	388.9	388.4			26083.9		388.4
Boron						751.2	751.2

**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	751.2	N/A	
Antimony	5.61		
Arsenic	50.2	190.6	Acute Controls
Asbestos	7.00E+06		
Barium	1001.6		
Beryllium			
Cadmium	0.8	0.8	
Chromium (III)	49.7	269	Acute Controls
Chromium (VI)	11.0	11.0	
Copper	30.6	30.6	
Cyanide	5.2	5.2	
Iron	1001.6		
Lead	18.6	18.6	
Mercury	0.012	0.012	
Nickel	100.3	169	Acute Controls
Selenium	4.6	4.6	
Silver	41.1	N/A	
Thallium	0.0		
Zinc	388.4	388.9	Acute Controls
Boron	751.21		

Other Effluent Limitations are based upon R317-1.

#### **X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

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

#### **XI. Colorado River Salinity Forum Considerations**

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

#### **XII. Summary Comments**

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

#### **XIII. Notice of UPDES Requirement**

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

#### **XIV. Special Considerations**

EA Miller discharges to a tributary of Spring Creek which is listed on the Utah 303(d) listed for total phosphorous (TP), ammonia and dissolved oxygen (DO). A TMDL was completed for Spring Creek on September 9th, 2002. The TMDL set the load allocation for EA Miller at 170 kg/yr TP based on the anticipated capacity of the plant (2 mgd) and an average total phosphorus concentration of 0.10 mg/l (30 day average).

Prepared by:  
David Wham  
Utah Division of Water Quality



File Name: EA Miller &amp; Hyrum WWTP\_Irrigation\_limits.xls

**Level I Antidegradation Review for: EA Miller**

Level II Antidegradation Review is NOT required. Basic permit renewal. No increase in load or concentration over last issued permit.

**APPENDIX - Coefficients and Other Model Information**

<b>Parameter</b>	<b>Value</b>	<b>Units</b>
<b><i>Stoichiometry:</i></b>		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
<b><i>Inorganic suspended solids:</i></b>		
Settling velocity	0.06128	m/d
<b><i>Oxygen:</i></b>		
Reaeration model	Internal	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
<b><i>Slow CBOD:</i></b>		
Hydrolysis rate	1.93545	/d
Temp correction	1.047	
Oxidation rate	1.18385	/d
Temp correction	1.047	
<b><i>Fast CBOD:</i></b>		
Oxidation rate	0.5447	/d
Temp correction	1.047	
<b><i>Organic N:</i></b>		
Hydrolysis	0.8365	/d
Temp correction	1.07	
Settling velocity	0.24964	m/d
<b><i>Ammonium:</i></b>		
Nitrification	4.2	/d
Temp correction	1.07	
<b><i>Nitrate:</i></b>		
Denitrification	1.02986	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.05126	m/d
Temp correction	1.07	

**Organic P:**

Hydrolysis	3.4361	/d
Temp correction	1.07	
Settling velocity	0.62926	m/d

**Inorganic P:**

Settling velocity	0.01384	m/d
Sed P oxygen attenuation half sat constant	1.69154	mgO2/L

**Phytoplankton:**

Max Growth rate	2.5	/d
Temp correction	1.07	
Respiration rate	0.1	/d
Temp correction	1.07	
Death rate	0	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	

**Light model**

Light constant	57.6	langleys/d
Ammonia preference	25	ugN/L
Settling velocity	0.15	m/d

**Bottom Plants:**

Growth model	Zero-order	
Max Growth rate	49.3845	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	100	gD/m2
Basal respiration rate	0.48434	/d
Photo-respiration rate parameter	0	unitless
Temp correction	1.07	
Excretion rate	0.46367	/d
Temp correction	1.07	
Death rate	0.40579	/d
Temp correction	1.07	
External nitrogen half sat constant	163.368	ugN/L
External phosphorus half sat constant	47.556	ugP/L
Inorganic carbon half sat constant	1.05E-05	moles/L
Bottom algae use HCO3- as substrate	Yes	

**Light model**

Light constant	2.09098	langleys/d
Ammonia preference	1.48807	ugN/L
Subsistence quota for nitrogen	29.957365	mgN/gD
Subsistence quota for phosphorus	0.3928168	mgP/gD
Maximum uptake rate for nitrogen	446.5885	mgN/gD/d
Maximum uptake rate for phosphorus	114.4235	mgP/gD/d
Internal nitrogen half sat ratio	2.856177	
Internal phosphorus half sat ratio	1.752547	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	

**Detritus (POM):**

Dissolution rate	2.7754	/d
Temp correction	1.07	
Settling velocity	3.89475	m/d

**Pathogens:**

Decay rate	0.8	/d
Temp correction	1.07	
Settling velocity	1	m/d
alpha constant for light mortality	1	/d per ly/hr

**pH:**

Partial pressure of carbon dioxide	347	ppm
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**Hyporheic metabolism****Model for biofilm oxidation of fast CBOD**

Max biofilm growth rate	5	gO <sub>2</sub> /m <sup>2</sup> /d or /d
Temp correction	1.047	
Fast CBOD half-saturation	0.5	mgO <sub>2</sub> /L
Oxygen inhib model	Exponential	
Oxygen inhib parameter	0.60	L/mgO <sub>2</sub>
Respiration rate	0.2	/d
Temp correction	1.07	
Death rate	0.05	/d
Temp correction	1.07	
External nitrogen half sat constant	15	ugN/L
External phosphorus half sat constant	2	ugP/L
Ammonia preference	25	ugN/L
First-order model carrying capacity	100.0	gD/m <sup>2</sup>
<b>Generic constituent</b>		
Decay rate	30.0	/d
Temp correction	1.1	
Settling velocity	1.0	m/d

**Atmospheric Inputs:**

	summer	Summer	Fall	Winter	Spring
Air Temperature, F	65.0	65.0	45.0	30.0	45.0
Dew Point, Temp., F	44.0	44.0	35.0	32.0	35.0
Wind, ft./sec. @ 21 ft.	2.0	2.0	2.0	2.0	2.0
Cloud Cover, %	10.0%	10.0%	10.0%	10.0%	10.0%
Shade, %	5.0%	5.0%	5.0%	5.0%	5.0%

**Other Inputs:**

Manning Coefficient	0.04	Default
Side Slope	10.0%	
Bottom Algae Coverage	50.0%	

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

**Date:** March 23, 2018

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

**Facility:** Swift Beef Company  
UPDES No. UT000281

**Receiving water:** Ditch => South Fork Spring Creek

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

Discharge

001 Treatment plant discharge 2.0 MGD

Receiving Water

Swift Beef Co. discharges into a ditch system that runs for approximately 4.5 miles before coalescing as the South Fork of Spring Creek at Highway 89. As per UAC R317-2-13.10, the receiving ditch is classed 2B, 3E. As per R317-2-13.3(a), the designated beneficial uses of Little Bear River and tributaries, from Cutler Reservoir to headwaters are 2B, 3A, 3D, 4.

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

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- *Class 3E- Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Data from the following stations was used to populate the model:

**Table 1. Data Sources**

Station #	Station Name	Data Period
4904840	DITCH AB EA MILLER SC-12	2006-2016
4905540	E. A. MILLER CO. EFFLUENT	2012-2016
4905520	HYRUM WWTP	2012-2016
4904940	S FK SPRING CK @ US 89 XING	2012-2016
4904943	S FK SPRING CK W OF HYRUM WWTP AT END OF RD	2006-2016
4904810	SPRING CK SC-9	2012-2016

Data was segmented into two seasons; Irrigation (April-September) and Non-irrigation (October-May). Significant changes were made to Swift Beef Company's treatment plant in 2011. In order to be reflective of current conditions, only data from 2012 to present was used from those stations downstream of the facility.

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). Due to a lack of flow records, the 20th percentile of available flow measurements was calculated for the period of record to approximate the 7Q10 low flow condition. Calculated critical low flow conditions are as follows:

**Table 2. Critical low flow conditions**

Station #	Station Name	Low Flow (cfs)	
		Irrigation Season	Non-irrigation Season
4904840	DITCH AB EA MILLER SC-12	0.1	0.1
4904810	SPRING CK SC-9	2.2	0.5
4904940	S FK SPRING CK @ US 89 XING	6.7	3.8

Ambient water quality for the receiving water/discharge was characterized using data from the same stations and time periods as presented in Table 1.

### TMDL

According to the Utah's 2016 303(d) assessment unit UT16010203-008\_00, Spring Creek and tributaries from confluence with Little Bear River to headwaters is currently listed as impaired (TMDL required) for temperature and O/E Bioassessment. A TMDL was completed for Spring Creek in 2002 which addressed impairments for dissolved oxygen, ammonia, E. coli and total phosphorous. Since that time, major upgrades have been made to both Hyrum City's WWTP and

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Swift Beef Company  
UPDES No. UT000281

Swift Beef Company's treatment plant, resulting in greatly improved effluent quality. Because of these significant water quality improvements in the Spring Creek Watershed, the TMDL is being implemented in a phased manner to allow time to assess the impact of these changes in the South Fork of Spring Creek. Total phosphorous has been set an interim level of 1.0 mg/l.

Mixing Zone

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

Because the receiving water is a ditch that flows for several miles with multiple inputs, the combined flows are considered to be totally mixed. Chronic and acute limits were calculated using 100% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were TDS, phosphorous and ammonia, as determined in consultation with the UPDES Permit Writer.

WET Limits

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

IC25 WET limits for Outfall 001:

Irrigation Season 58.4% effluent.

Non-Irrigation Season 73% effluent.

Wasteload Allocation Methods

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

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

Models and supporting documentation are available for review upon request.

Utah Division of Water Quality  
Wasteload Analysis  
Swift Beef Company  
UPDES No. UT000281

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is not required for this facility. The proposed permit is a simple renewal of an existing UPDES permit. No increase in flow or concentration of pollutants over those authorized in the the existing permit is being requested.

Documents:

WLA Document: *SwiftBeef\_WLADoc\_3-23-18.docx*

Wasteload Analysis and Addendums: *SwiftBeef\_WLA\_NonIrrig\_3-23-18.xlsm*; *SwiftBeef\_WLA\_Irrig\_3-23-18.xlsm*

References:

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

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

Date: 12/18/2018

Time: 1:07 PM

**Discharging Facility:** EA Miller

UPDES No: UT00000281

Current Flow: 2.00 MGD

Design Flow: 2.00 MGD

**Non Irrigation Season (October - May)****Receiving Water:** Ditch to So. Fork of Spring Creek

Stream Classification: 2B, 3A, 3D, 4 Controlling: 3A

Stream Flows [cfs]:	0.01	Summer (July-Sept)	Critical Low Flow
	-	Fall (Oct-Dec)	Critical Low Flow
	0.01	Winter (Jan-Mar)	Critical Low Flow
	-	Spring (Apr-June)	Critical Low Flow

Stream TDS Values	1,812.00	Summer (July-Sept)	Headwater
[mg/l as CaCO <sub>3</sub> ]	-	Fall (Oct-Dec)	

	1,288.00	Winter (Jan-Mar)	Headwater
	-	Spring (Apr-June)	

**Parameter:****Effluent Limits:****WQ Standard:**

winter Flow, MGD:	2.00	MGD	
BOD, mg/l:	25.00	winter	5.0 Indicator
Dissolved Oxygen, mg/l:	4.00	winter	6.5 30 Day Average
NH <sub>4</sub>	4.00	winter	Varies with pH and Temperature
TDS, mg/l:	3,000.00	winter	1200.00 mg/l

**Modeling Parameters:**

Acute River Width: 50.0%

Chronic River Width: 100.0%

**Antidegradation Review:**

An Antidegradation Level I Review was completed.

**Antidegradation Level II Review is NOT Required**



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

 Date: 12/18/2018  
Time: 1:07 PM

 Facilities: EA Miller  
Discharging to: Ditch to So. Fork of Spring Creek

UPDES No: UT00000281

**I. Introduction**

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

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

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

**II. Receiving Water and Stream Classification**

Ditch to So. Fork of Spring Creek	2B, 3A, 3D, 4
Antidegradation Review:	Antidegradation Level II Review is NOT Required

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

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	6.50 mg/l (30 Day Average) N/A mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aluminum	87.00 ug/l**	0.005 lbs/day	750.00 ug/l	0.040 lbs/day
Arsenic	190.00 ug/l	0.010 lbs/day	340.00 ug/l	0.018 lbs/day
Cadmium	0.76 ug/l	0.000 lbs/day	8.72 ug/l	0.000 lbs/day
Chromium III	268.04 ug/l	0.014 lbs/day	5607.97 ug/l	0.302 lbs/day
Chromium VI	11.00 ug/l	0.001 lbs/day	16.00 ug/l	0.001 lbs/day
Copper	30.48 ug/l	0.002 lbs/day	51.65 ug/l	0.003 lbs/day
Iron			1000.00 ug/l	0.054 lbs/day
Lead	18.56 ug/l	0.001 lbs/day	476.33 ug/l	0.026 lbs/day
Mercury	0.012 ug/l	0.000 lbs/day	2.40 ug/l	0.000 lbs/day
Nickel	168.43 ug/l	0.009 lbs/day	1514.88 ug/l	0.082 lbs/day

Selenium	4.60 ug/l	0.000 lbs/day	20.00 ug/l	0.001 lbs/day
Silver	N/A ug/l	N/A lbs/day	41.01 ug/l	0.002 lbs/day
Zinc	387.56 ug/l	0.021 lbs/day	387.56 ug/l	0.021 lbs/day

\* Allowed below discharge

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

Metals Standards based upon a hardness of 399.677835051546 mg/l as CaCO<sub>3</sub> where applicable.

#### Organics [Pesticides]

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Aldrin	ug/l		1.5000 ug/l	8.085E-05 lbs/day
Chlordane	0.0043 ug/l	2.318E-07 lbs/day	1.2000 ug/l	6.468E-05 lbs/day
DDT, DDE	0.0010 ug/l	5.390E-08 lbs/day	0.5500 ug/l	2.965E-05 lbs/day
Dieldrin	0.0019 ug/l	1.024E-07 lbs/day	1.2500 ug/l	6.738E-05 lbs/day
Endosulfan	0.0560 ug/l	3.018E-06 lbs/day	0.1100 ug/l	5.929E-06 lbs/day
Endrin	0.0023 ug/l	1.240E-07 lbs/day	0.0900 ug/l	4.851E-06 lbs/day
Guthion			0.0100	
Heptachlor	0.0038 ug/l	2.048E-07 lbs/day	0.2600 ug/l	1.401E-05 lbs/day
Lindane	0.0800 ug/l	4.312E-06 lbs/day	1.0000 ug/l	5.390E-05 lbs/day
Methoxychlor			0.0300	
Mirex			0.0100	
Parathion			0.0400	
PCB's	0.0140 ug/l	7.546E-07 lbs/day	2.0000 ug/l	1.078E-04 lbs/day
Pentachlorophenol	13.0000 ug/l	7.007E-04 lbs/day	20.0000 ug/l	1.078E-03 lbs/day
Toxephene	0.0002 ug/l	1.078E-08 lbs/day	0.7300 ug/l	3.935E-05 lbs/day

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic	N/A		100.0 ug/l	5.39E-03 lbs/day
Boron	N/A		750.0 ug/l	4.04E-02 lbs/day
Cadmium	N/A		10.0 ug/l	5.39E-04 lbs/day
Chromium	N/A		100.0 ug/l	5.39E-03 lbs/day
Copper	N/A		200.0 ug/l	1.08E-02 lbs/day
Lead	N/A		100.0 ug/l	5.39E-03 lbs/day
Selenium	N/A		50.0 ug/l	2.70E-03 lbs/day
TDS	N/A		1200.0 mg/l	3.23E-02 tons/day

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

Metals	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic	N/A		50.0 ug/l	2.70E-03 lbs/day
Barium	N/A		1000.0 ug/l	5.39E-02 lbs/day
Cadmium	N/A		10.0 ug/l	5.39E-04 lbs/day
Chromium	N/A		50.0 ug/l	2.70E-03 lbs/day
Lead	N/A		50.0 ug/l	2.70E-03 lbs/day
Mercury	N/A		2.0 ug/l	1.08E-04 lbs/day
Selenium	N/A		10.0 ug/l	5.39E-04 lbs/day
Silver	N/A		50.0 ug/l	2.70E-03 lbs/day
Fluoride (3)	N/A		1.4 ug/l	7.55E-05 lbs/day
to	N/A		2.4 ug/l	1.29E-04 lbs/day
Nitrates as N	N/A		10.0 ug/l	5.39E-04 lbs/day

Chlorophenoxy Herbicides	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
2,4-D	N/A		100.0 ug/l	5.39E-03 lbs/day
2,4,5-TP	N/A		10.0 ug/l	5.39E-04 lbs/day

Endrin	N/A	0.2 ug/l	1.08E-05 lbs/day
Hexachlorocyclohexane (Lindane)	N/A	4.0 ug/l	2.16E-04 lbs/day
Methoxychlor	N/A	100.0 ug/l	5.39E-03 lbs/day
Toxaphene	N/A	5.0 ug/l	2.70E-04 lbs/day

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

	Maximum Conc., ug/l - Acute Standards			
	Class 1C [2 Liters/Day for 70 Kg Person over 70 Yr.]		Class 3A, 3B [6.5 g for 70 Kg Person over 70 Yr.]	
Antimony	6E+00 ug/l	6E+00 lbs/day	6E+02 ug/l	6.42E+02 lbs/day
Arsenic				
Beryllium				
Cadmium				
Chromium III				
Chromium VI				
Copper	1E+03 ug/l	1E+03 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Lead				
Mercury				
Nickel	1E+02 ug/l	1E+02 lbs/day	5E+03 ug/l	4.61E+03 lbs/day
Selenium			4E+03 ug/l	4.21E+03 lbs/day
Silver				
Thallium	2E-01 ug/l	2E-01 lbs/day	5E-01 ug/l	4.71E-01 lbs/day
Zinc	7E+03 ug/l	7E+03 lbs/day	3E+04 ug/l	2.61E+04 lbs/day
Cyanide	1E+02 ug/l	1E+02 lbs/day	1E+02 ug/l	1.40E+02 lbs/day
Asbestos				
2,3,7,8-TCDD Dioxin	5E-09			
Acrolein	2E+02 ug/l	2E+02 lbs/day	3E+02 ug/l	2.91E+02 lbs/day
Acrylonitrile	5E-02 ug/l	5E-02 lbs/day	3E-01 ug/l	2.51E-01 lbs/day
Alachlor	2E+00 ug/l	2E+00 lbs/day		
Atrazine	3E+00 ug/l	3E+00 lbs/day		
Benzene	2E+00 ug/l	2E+00 lbs/day	5E+01 ug/l	5.12E+01 lbs/day
Bromoform	4E+00 ug/l	4E+00 lbs/day	1E+02 ug/l	1.40E+02 lbs/day
Carbofuran	4E+01 ug/l	4E+01 lbs/day		
Carbon Tetrachloride	2E-01 ug/l	2E-01 lbs/day	2E+00 ug/l	1.60E+00 lbs/day
Chlorobenzene	1E+02 ug/l	1E+02 lbs/day	2E+03 ug/l	1.61E+03 lbs/day
Chlorodibromomethane	4E-01 ug/l	4E-01 lbs/day	1E+01 ug/l	1.30E+01 lbs/day
Chloroethane				
2-Chloroethylvinyl Ether				
Chloroform	6E+00 ug/l	6E+00 lbs/day	5E+02 ug/l	4.72E+02 lbs/day
Dalapon	2E+02 ug/l	2E+02 lbs/day		
Di(2ethylhexyl)adipate	4E+02 ug/l	4E+02 lbs/day		
Dibromochloropropane	2E-01 ug/l	2E-01 lbs/day		
Dichlorobromomethane	6E-01 ug/l	6E-01 lbs/day	2E+01 ug/l	1.71E+01 lbs/day
1,1-Dichloroethane				
1,2-Dichloroethane	4E-01 ug/l	4E-01 lbs/day	4E+01 ug/l	3.71E+01 lbs/day
1,1-Dichloroethylene	7E+00 ug/l	7E+00 lbs/day	7E+03 ug/l	7.12E+03 lbs/day
Dichloroethylene (cis-1,2	7E+01 ug/l	7E+01 lbs/day	0E+00 ug/l	
Dinoseb	7E+00 ug/l	7E+00 lbs/day	0E+00 ug/l	
Diquat	2E+01 ug/l	2E+01 lbs/day	0E+00 ug/l	
1,2-Dichloropropane	5E-01 ug/l	5E-01 lbs/day	2E+01 ug/l	1.50E+01 lbs/day
1,3-Dichloropropene	3E-01 ug/l	3E-01 lbs/day	2E+01 ug/l	2.11E+01 lbs/day
Endothall	1E+02 ug/l	1E+02 lbs/day		
Ethylbenzene	5E+02 ug/l	5E+02 lbs/day	2E+03 ug/l	2.11E+03 lbs/day
Ethylene Dibromide	5E-02 ug/l	5E-02 lbs/day		
Glyphosate	7E+02 ug/l	7E+02 lbs/day		
Haloacetic acids	6E+01 ug/l	6E+01 lbs/day		
Methyl Bromide	5E+01 ug/l	5E+01 lbs/day	2E+03 ug/l	1.50E+03 lbs/day

Methyl Chloride				
Methylene Chloride	5E+00 ug/l	5E+00 lbs/day	6E+02 ug/l	5.92E+02 lbs/day
Ocamyl (vidate)	2E+02 ug/l	2E+02 lbs/day		
Picloram	5E+02 ug/l	5E+02 lbs/day		
Simazine	4E+00 ug/l	4E+00 lbs/day		
Styrene	1E+02 ug/l	1E+02 lbs/day		
1,1,2,2-Tetrachloroethane	2E-01 ug/l	2E-01 lbs/day	4E+00 ug/l	4.01E+00 lbs/day
Tetrachloroethylene	7E-01 ug/l	7E-01 lbs/day	3E+00 ug/l	3.31E+00 lbs/day
Toluene	1E+03 ug/l	1E+03 lbs/day	2E+04 ug/l	1.50E+04 lbs/day
1,2 -Trans-Dichloroethyle	1E+02 ug/l	1E+02 lbs/day	1E+04 ug/l	1.00E+04 lbs/day
1,1,1-Trichloroethane	2E+02 ug/l	2E+02 lbs/day		
1,1,2-Trichloroethane	6E-01 ug/l	6E-01 lbs/day	2E+01 ug/l	1.61E+01 lbs/day
Trichloroethylene	3E+00 ug/l	3E+00 lbs/day	3E+01 ug/l	3.01E+01 lbs/day
Vinyl Chloride	3E-02 ug/l	3E-02 lbs/day	2E+00 ug/l	2.41E+00 lbs/day
Xylenes	1E+04 ug/l	1E+04 lbs/day		
2-Chlorophenol	8E+01 ug/l	8E+01 lbs/day	2E+02 ug/l	1.50E+02 lbs/day
2,4-Dichlorophenol	8E+01 ug/l	8E+01 lbs/day	3E+02 ug/l	2.91E+02 lbs/day
2,4-Dimethylphenol	4E+02 ug/l	4E+02 lbs/day	9E+02 ug/l	8.52E+02 lbs/day
2-Methyl-4,6-Dinitrophenol	1E+01 ug/l	1E+01 lbs/day	3E+02 ug/l	2.81E+02 lbs/day
2,4-Dinitrophenol	7E+01 ug/l	7E+01 lbs/day	5E+03 ug/l	5.32E+03 lbs/day
2-Nitrophenol				
4-Nitrophenol				
3-Methyl-4-Chlorophenol				
Penetachlorophenol	3E-01 ug/l	3E-01 lbs/day	3E+00 ug/l	3.01E+00 lbs/day
Phenol	2E+04 ug/l	2E+04 lbs/day	2E+06 ug/l	1.71E+06 lbs/day
2,4,6-Trichlorophenol	1E+00 ug/l	1E+00 lbs/day	2E+00 ug/l	2.41E+00 lbs/day
Acenaphthene	7E+02 ug/l	7E+02 lbs/day	1E+03 ug/l	9.92E+02 lbs/day
Acenaphthylene				
Anthracene	8E+03 ug/l	8E+03 lbs/day	4E+04 ug/l	4.01E+04 lbs/day
Benzidine	9E-05 ug/l	9E-05 lbs/day	2E-04 ug/l	2.01E-04 lbs/day
BenzoaAnthracene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
BenzoaPyrene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
BenzobFluoranthene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
BenzoghiPerylene	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
BenzokFluoranthene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Bis2-ChloroethoxyMethane	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Bis2-ChloroethylEther	3E-02 ug/l	3E-02 lbs/day	5E-01 ug/l	5.32E-01 lbs/day
Bis2-ChloroisopropylEther	1E+03 ug/l	1E+03 lbs/day	7E+04 ug/l	6.52E+04 lbs/day
Bis2-EthylhexylPhthalate	1E+00 ug/l	1E+00 lbs/day	2E+00 ug/l	2.21E+00 lbs/day
4-Bromophenyl Phenyl Ether	0E+00			
Butylbenzyl Phthalate	2E+03 ug/l	2E+03 lbs/day	2E+03 ug/l	1.90E+03 lbs/day
2-Chloronaphthalene	1E+03 ug/l	1E+03 lbs/day	2E+03 ug/l	1.60E+03 lbs/day
4-Chlorophenyl Phenyl Ether				
Chrysene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Dibenzo(a, h)Anthracene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
1,2-Dichlorobenzene	4E+02 ug/l	4E+02 lbs/day	1E+03 ug/l	1.30E+03 lbs/day
1,3-Dichlorobenzene	3E+02 ug/l	3E+02 lbs/day	1E+03 ug/l	9.63E+02 lbs/day
1,4-Dichlorobenzene	6E+01 ug/l	6E+01 lbs/day	2E+02 ug/l	1.91E+02 lbs/day
3,3-Dichlorobenzidine	2E-02 ug/l	2E-02 lbs/day	3E-02 ug/l	2.81E-02 lbs/day
Diethyl Phthalate	2E+03 ug/l	2E+03 lbs/day	4E+04 ug/l	4.41E+04 lbs/day
Dimethyl Phthalate	3E+05 ug/l	3E+05 lbs/day	1E+06 ug/l	1.10E+06 lbs/day
Di-n-Butyl Phthalate	2E+03 ug/l	2E+03 lbs/day	5E+03 ug/l	4.51E+03 lbs/day
2,4-Dinitrotoluene	1E-01 ug/l	1E-01 lbs/day	3E+00 ug/l	3.41E+00 lbs/day
2,6-Dinitrotoluene				
Di-n-Octyl Phthalate				
1,2-Diphenylhydrazine	4E-02 ug/l	4E-02 lbs/day	2E-01 ug/l	2.01E-01 lbs/day
Fluoranthene	1E+02 ug/l	1E+02 lbs/day		
Fluorene	1E+03 ug/l	1E+03 lbs/day	5E+03 ug/l	5.32E+03 lbs/day
Hexachlorobenzene	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	2.90E-04 lbs/day
Hexachlorobutidine	4E-01 ug/l	4E-01 lbs/day	2E+01 ug/l	1.81E+01 lbs/day

Hexachloroethane	1E+00 ug/l	1E+00 lbs/day	3E+00 ug/l	3.31E+00 lbs/day
Hexachlorocyclopentadiene	4E+01 ug/l	4E+01 lbs/day	1E+03 ug/l	1.10E+03 lbs/day
Ieno 1,2,3-cdPyrene	4E-03 ug/l	4E-03 lbs/day	2E-02 ug/l	1.81E-02 lbs/day
Isophorone	4E+01 ug/l	4E+01 lbs/day	1E+03 ug/l	9.63E+02 lbs/day
Naphthalene			ug/l	
Nitrobenzene	2E+01 ug/l	2E+01 lbs/day	7E+02 ug/l	6.92E+02 lbs/day
N-Nitrosodimethylamine	7E-04 ug/l	7E-04 lbs/day	3E+00 ug/l	3.01E+00 lbs/day
N-Nitrosodi-n-Propylamine	5E-03 ug/l	5E-03 lbs/day	5E-01 ug/l	5.12E-01 lbs/day
N-Nitrosodiphenylamine	3E+00 ug/l	3E+00 lbs/day	6E+00 ug/l	6.01E+00 lbs/day
Phenanthrene				
Pyrene	8E+02 ug/l	8E+02 lbs/day	4E+03 ug/l	4.01E+03 lbs/day
1,2,4-Trichlorobenzene	4E+01 ug/l	4E+01 lbs/day	7E+01 ug/l	7.02E+01 lbs/day
Aldrin	5E-05 ug/l	5E-05 lbs/day	5E-05 ug/l	5.01E-05 lbs/day
alpha-BHC	3E-03 ug/l	3E-03 lbs/day	5E-03 ug/l	4.91E-03 lbs/day
beta-BHC	9E-03 ug/l	9E-03 lbs/day	2E-02 ug/l	1.70E-02 lbs/day
gamma-BHC (Lindane)	2E-01 ug/l	2E-01 lbs/day	2E+00 ug/l	1.81E+00 lbs/day
delta-BHC	0E+00 ug/l	0E+00 lbs/day	0E+00 ug/l	0.00E+00 lbs/day
Chlordane	8E-04 ug/l	8E-04 lbs/day	8E-04 ug/l	8.11E-04 lbs/day
4,4-DDT	2E-04 ug/l	2E-04 lbs/day	2E-04 ug/l	2.20E-04 lbs/day
4,4-DDE	2E-04 ug/l	2E-04 lbs/day	2E-04 ug/l	2.20E-04 lbs/day
4,4-DDD	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	3.11E-04 lbs/day
Dieldrin	5E-05 ug/l	5E-05 lbs/day	5E-05 ug/l	5.41E-05 lbs/day
alpha-Endosulfan	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
beta-Endosulfan	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
Endosulfan Sulfate	6E+01 ug/l	6E+01 lbs/day	9E+01 ug/l	8.92E+01 lbs/day
Endrin	6E-02 ug/l	6E-02 lbs/day	6E-02 ug/l	6.01E-02 lbs/day
Endrin Aldehyde	3E-02 ug/l	3E-02 lbs/day	3E-01 ug/l	3.01E-01 lbs/day
Heptachlor	8E-05 ug/l	8E-05 lbs/day	8E-05 ug/l	7.91E-05 lbs/day
Heptachlor Epoxide	4E-05 ug/l	4E-05 lbs/day	4E-05 ug/l	3.91E-05 lbs/day
Polychlorinated Biphenyls	6E-05 ug/l	6E-05 lbs/day	6E-05 ug/l	6.41E-05 lbs/day
PCB's				
Toxaphene	3E-04 ug/l	3E-04 lbs/day	3E-04 ug/l	0.00E+00 lbs/day

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 QUAL2kw EPA and the University of Washington.

(2) 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. QUAL2kw default values or as adjusted by user, as noted.

## 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 Headwater/Upstream Information

	Stream Critical		Temp. Deg. C	pH	T-NH4 mg/l as N	BOD5 mg/l	DO mg/l	TRC mg/l	TDS mg/l
	Low Flow	cfs							
Summer	0.010		15.1	8.3	0.05	0.10	9.10	0.00	1812.0
Fall	0.000		0.0	0.0	0.00	0.00	0.00	0.00	0.0
Winter	0.010		8.0	8.2	0.31	0.10	10.70	0.00	1288.0
Spring	0.000		0.0	0.0	0.00	0.00	0.00	0.00	0.0
Dissolved	Al	As	Cd	CrIII	CrVI	Copper	Fe	Pb	

Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
All Seasons	15.00	2.50	0.38	134.02	5.50	5.59	0.00	9.28
Dissolved	Hg	Ni	Se	Ag	Zn	Boron		
Metals	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		
All Seasons	0.0060	3.75	1.30	1.00	41.00	375.0	* 1/2 MDL	

**Projected Discharge Information [See page 5 for additional information]**

Season	Flow, MGD	Temp.	TDS mg/l	TDS tons/day
Summer	2.00	23.60	3,000.00	25.01
Fall	-	-	-	-
Winter	2.00	21.50	3,000.00	25.01
Spring	-	-	-	-

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

**IX. Effluent Limitations**

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

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

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

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

Season	Daily Average		
Summer	2.00	MGD	3.094 cfs
Fall	-	MGD	0.000 cfs
Winter	2.00	MGD	3.094 cfs
Spring	-	MGD	0.000 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 2 MGD. If the discharger is allowed to have a flow greater than 2 MGD during 7Q10 conditions, and effluent limit concentrations as indicated, then water quality standards will be violated. In order to prevent this from occurring, the permit writers must include the discharge flow limitation as indicated above; or, include loading effluent limits in the permit.

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

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

WET Requirements	LC50 >	EOP Effluent	[Acute]
System is Totally Mixed	IC25 >	73.0% Effluent	[Chronic]

**Effluent Limitation for Biological Oxygen Demand (BOD<sub>5</sub>) based upon Water Quality Standards or Regulations**

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent BOD<sub>5</sub> limitation as follows:

Season	Concentration	
Summer	25.00 mg/l as CBOD <sub>5</sub>	416.92 lbs/day
Fall	- mg/l as CBOD <sub>5</sub>	- lbs/day
Winter	25.00 mg/l as CBOD <sub>5</sub>	416.92 lbs/day
Spring	- mg/l as CBOD <sub>5</sub>	- 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	Load
Summer	4.00 mg/l	66.71 lbs/day
Fall	- mg/l	- lbs/day
Winter	4.00 mg/l	66.71 lbs/day
Spring	- mg/l	- lbs/day

**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	3.00 mg/l as N	50.03 lbs/day
	1 Hour Avg. - Acute	12.35 mg/l as N	205.89 lbs/day
Fall	4 Day Avg. - Chronic	- mg/l as N	- lbs/day
	1 Hour Avg. - Acute	- mg/l as N	- lbs/day
Winter	4 Day Avg. - Chronic	4.00 mg/l as N	66.71 lbs/day
	1 Hour Avg. - Acute	16.46 mg/l as N	274.52 lbs/day
Spring	4 Day Avg. - Chronic	- mg/l as N	- lbs/day
	1 Hour Avg. - Acute	- mg/l as N	- lbs/day

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

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

Season		Concentration	Load
Summer	4 Day Avg. - Chronic	0.25 mg/l	4.17 lbs/day
	1 Hour Avg. - Acute	0.43 mg/l	7.20 lbs/day
Fall	4 Day Avg. - Chronic	- mg/l	- lbs/day
	1 Hour Avg. - Acute	- mg/l	- lbs/day
Winter	4 Day Avg. - Chronic	0.15 mg/l	2.50 lbs/day
	1 Hour Avg. - Acute	0.26 mg/l	4.32 lbs/day
Spring	4 Day Avg. - Chronic	- mg/l	- lbs/day
	1 Hour Avg. - Acute	- mg/l	- lbs/day

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

Season	Concentration	Load
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Summer	Maximum, Acute	3,000.0	mg/l	50,030	tons/day
Fall	Maximum, Acute	-	mg/l	-	tons/day
Winter	Maximum, Acute	3,000.0	mg/l	50,030	tons/day
Spring	Maximum, Acute	-	mg/l	-	tons/day

Colorado Salinity Form Limits      Determined by Permitting Section

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

Summer	Maximum	23.60	Deg. C.	74.5	Deg. F
Fall	Maximum	-	Deg. C.	-	Deg. F
Winter	Maximum	21.50	Deg. C.	70.7	Deg. F
Spring	Maximum	-	Deg. C.	-	Deg. F

**Effluent Limitations for Organics [Pesticides]  
Based upon Water Quality Standards [Class 3]**

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    8.09E-02 lbs/day
Chlordane	4.31E-03 ug/l	2.32E-04 lbs/day	1.2E+00	ug/l    6.48E-02 lbs/day
DDT, DDE	1.00E-03 ug/l	5.40E-05 lbs/day	5.5E-01	ug/l    2.97E-02 lbs/day
Dieldrin	1.90E-03 ug/l	1.03E-04 lbs/day	1.3E+00	ug/l    6.75E-02 lbs/day
Endosulfan	5.61E-02 ug/l	3.02E-03 lbs/day	1.1E-01	ug/l    5.94E-03 lbs/day
Endrin	2.30E-03 ug/l	1.24E-04 lbs/day	9.0E-02	ug/l    4.86E-03 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l    5.39E-04 lbs/day
Heptachlor	3.81E-03 ug/l	2.05E-04 lbs/day	2.6E-01	ug/l    1.40E-02 lbs/day
Lindane	8.01E-02 ug/l	4.32E-03 lbs/day	1.0E+00	ug/l    5.40E-02 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l    1.62E-03 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l    5.39E-04 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l    2.16E-03 lbs/day
PCB's	1.40E-02 ug/l	7.56E-04 lbs/day	2.0E+00	ug/l    1.08E-01 lbs/day
Pentachlorophenol	1.30E+01 ug/l	7.02E-01 lbs/day	2.0E+01	ug/l    1.08E+00 lbs/day
Toxephene	2.00E-04 ug/l	1.08E-05 lbs/day	7.3E-01	ug/l    3.94E-02 lbs/day

**Effluent Limitations for E. coli Based upon Water Quality Standards [Class 2]**

E. coli      126.0 organisms per 100 ml

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

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

	1 Hour Average	
	Concentration	Loading
Gross Beta (pCi/l)	50.1 pCi/L	0.00
BOD (mg/l)	5.0 mg/l	83.5 lbs/day
Nitrate as N (mg/l)	4.0 mg/l	66.8 lbs/day
Total Phosphorus as P	0.1 mg/l	0.0 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:

Toxic Organics	Effluent Limitation (30 Day Avg.) Class 1C	Maximum Concentration	
		Concentra	Load
		Effluent Limit (30 Day Avg.) Class 3	
Antimony	5.609E+00	6.421E+02	
Arsenic			
Beryllium			
Cadmium			
Chromium III			
Chromium VI			
Copper	1.304E+03		
Lead			
Mercury			
Nickel	1.003E+02	4.61E+03	
Selenium		4.21E+03	
Silver		0.00E+00	
Thallium	2.404E-01	4.71E-01	
Zinc	7.424E+03	2.61E+04	
Cyanide	1.404E+02	1.40E+02	
Asbestos	7.000E+06		
2,3,7,8-TCDD Dioxin		5.11E-09	
Acrolein	1.903E+02	2.91E+02	
Acrylonitrile	5.108E-02	2.51E-01	
Alachlor	2.003E+00	0.00E+00	
Atrazine	3.005E+00	0.00E+00	
Benzene	2.204E+00	5.12E+01	
Bromoform	4.307E+00	1.40E+02	
Carbofuran	4.006E+01		
Carbon Tetrachloride	2.304E-01	1.60E+00	
Chlorobenzene	1.002E+02	1.61E+03	
Chlorodibromomethane	4.006E-01	1.30E+01	
Chloroethane			
2-Chloroethylvinyl Ether			
Chloroform	5.709E+00	4.72E+02	
Dalapon	2.003E+02		
Di(2ethylhexyl)adipate	4.006E+02		
Dibromochloropropane	2.003E-01		
Dichlorobromomethane	5.509E-01	1.71E+01	
1,1-Dichloroethane		0.00E+00	
1,2-Dichloroethane	3.806E-01	3.71E+01	
1,1-Dichloroethylene	7.011E+00	7.12E+03	
Dichloroethylene (cis-1,2	7.011E+01	0.00E+00	
Dinoseb	7.011E+00	0.00E+00	
Diquat	2.003E+01	0.00E+00	
1,2-Dichloropropane	5.008E-01	1.50E+01	
1,3-Dichloropropene	3.405E-01	2.11E+01	
Endothall	1.002E+02	0.00E+00	
Ethylbenzene	5.309E+02	2.11E+03	
Ethylene Dibromide	5.008E-02	0.00E+00	
Glyphosate	7.011E+02	0.00E+00	
Haloacetic acids	6.010E+01	0.00E+00	

Methyl Bromide	4.708E+01	1.50E+03
Methyl Chloride	0.000E+00	
Methylene Chloride	4.607E+00	5.92E+02
Ocamyl (vidate)	2.003E+02	
Picloram	5.008E+02	
Simazine	4.006E+00	
Styrene	1.002E+02	
1,1,2,2-Tetrachloroethane	1.703E-01	4.01E+00
Tetrachloroethylene	6.911E-01	3.31E+00
Toluene	1.002E+03	1.50E+04
1,2 -Trans-Dichloroethyle	1.002E+02	1.00E+04
1,1,1-Trichloroethane	2.003E+02	0.00E+00
1,1,2-Trichloroethane	5.910E-01	1.61E+01
Trichloroethylene	2.504E+00	3.01E+01
Vinyl Chloride	2.504E-02	2.41E+00
Xylenes	1.002E+04	
2-Chlorophenol	8.113E+01	1.50E+02
2,4-Dichlorophenol	7.712E+01	2.91E+02
2,4-Dimethylphenol	3.806E+02	8.52E+02
2-Methyl-4,6-Dinitrophenol	1.302E+01	2.81E+02
2,4-Dinitrophenol	6.911E+01	5.32E+03
2-Nitrophenol		
4-Nitrophenol		
3-Methyl-4-Chlorophenol		
Penetachlorophenol	2.704E-01	3.01E+00
Phenol	2.103E+04	1.71E+06
2,4,6-Trichlorophenol	1.402E+00	2.41E+00
Acenaphthene	6.711E+02	9.92E+02
Acenaphthylene	0.000E+00	0.00E+00
Anthracene	8.313E+03	4.01E+04
Benzidine	8.614E-05	2.01E-04
BenzoaAnthracene	3.806E-03	1.81E-02
BenzoaPyrene	3.806E-03	1.81E-02
BenzobFluoranthene	3.806E-03	1.81E-02
BenzoghiPerylene		0.00E+00
BenzokFluoranthene	3.806E-03	1.81E-02
Bis2-ChloroethoxyMethane		0.00E+00
Bis2-ChloroethylEther	3.005E-02	5.32E-01
Bis2-Chloroisopropy1 Ether	1.402E+03	6.52E+04
Bis2-EthylhexylPhthalate	1.202E+00	2.21E+00
4-Bromophenyl Phenyl Ether		0.00E+00
Butylbenzyl Phthalate	1.502E+03	1.90E+03
2-Chloronaphthalene	1.002E+03	1.60E+03
4-Chlorophenyl Phenyl Ether		
Chrysene	3.806E-03	1.81E-02
Dibenzoa, (h)Anthracene	3.806E-03	1.81E-02
1,2-Dichlorobenzene	4.207E+02	1.30E+03
1,3-Dichlorobenzene	3.205E+02	9.63E+02
1,4-Dichlorobenzene	6.310E+01	1.91E+02
3,3-Dichlorobenzidine	2.103E-02	2.81E-02
Diethyl Phthalate	1.703E+03	4.41E+04
Dimethyl Phthalate	2.704E+05	1.10E+06
Di-n-Butyl Phthalate	2.003E+03	4.51E+03
2,4-Dinitrotoluene	1.102E-01	3.41E+00
2,6-Dinitrotoluene		0.00E+00
Di-n-Octyl Phthalate		0.00E+00
1,2-Diphenylhydrazine	3.606E-02	2.01E-01
Fluoranthene	1.302E+02	
Fluorene	1.102E+03	5.32E+03
Hexachlorobenzene	2.805E-04	2.90E-04

Hexachlorobutidine	4.407E-01	1.81E+01
Hexachloroethane	1.402E+00	3.31E+00
Hexachlorocyclopentadiene	4.006E+01	1.10E+03
Ideno 1,2,3-cdPyrene	3.806E-03	1.81E-02
Isophorone	3.506E+01	9.63E+02
Naphthalene		
Nitrobenzene	1.703E+01	6.92E+02
N-Nitrosodimethylamine	6.911E-04	3.01E+00
N-Nitrosodi-n-Propylamine	5.008E-03	5.12E-01
N-Nitrosodiphenylamine	3.305E+00	6.01E+00
Phenanthrene		
Pyrene	8.313E+02	4.01E+03
1,2,4-Trichlorobenzene	3.506E+01	7.02E+01
Aldrin	4.908E-05	5.01E-05
alpha-BHC	2.604E-03	4.91E-03
beta-BHC	9.115E-03	1.70E-02
gamma-BHC (Lindane)	2.003E-01	1.81E+00
delta-BHC		0.00E+00
Chlordane	8.013E-04	8.11E-04
4,4-DDT	2.204E-04	2.20E-04
4,4-DDE	2.204E-04	2.20E-04
4,4-DDD	3.105E-04	3.11E-04
Dieldrin	5.208E-05	5.41E-05
alpha-Endosulfan	6.210E+01	8.92E+01
beta-Endosulfan	6.210E+01	8.92E+01
Endosulfan Sulfate	6.210E+01	8.92E+01
Endrin	5.910E-02	6.01E-02
Endrin Aldehyde	2.905E-02	3.01E-01
Heptachlor	7.913E-05	7.91E-05
Heptachlor Epoxide	3.906E-05	3.91E-05
PCBs	6.410E-05	6.41E-05
Toxaphene	2.805E-04	

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

	Class 3 Chronic Aquatic Wildlife ug/l	Class 3: Acute Aquatic Wildlife ug/l	Class 1C: Drinking Water Supply	Class 1C: Acute Toxics Drinking Water Source ug/l	Class 3: Acute Toxics Drinking & Consumption Criteria ug/l	Class 4: Acute Agricultural ug/l	Acute Most Stringent ug/l
Aluminum	N/A	751.2					751.2
Antimony				5.6			5.6
Arsenic	190.6	340.5	50.2			100.3	50.2
Asbestos				7.00E+06			7000000.0
Barium			1001.6				1001.6
Beryllium							0.0
Cadmium	0.8	8.7	10.0			10.0	0.8
Chromium (III)	268.5	5616.8	49.7				49.7
Chromium (VI)	11.02	16.0				99.9	11.0
Copper	30.6	51.7		1304.2		200.6	30.6
Cyanide	5.2	22.0		140.4			5.2
Iron		1001.6					1001.6
Lead	18.6	477.1	50.1			100.3	18.6
Mercury	0.012	2.40	2.01				0.0
Nickel	169.0	1517.3		100.3			100.3
Selenium	4.6	20.0	10.0		4213.6	50.2	4.6
Silver		41.1	50.2				41.1
Thallium							0.0
Zinc	388.7	388.1			26083.9		388.1
Boron						751.2	751.2

**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	751.2	N/A	
Antimony	5.61		
Arsenic	50.2	190.6	Acute Controls
Asbestos	7.00E+06		
Barium	1001.6		
Beryllium			
Cadmium	0.8	0.8	
Chromium (III)	49.7	268	Acute Controls
Chromium (VI)	11.0	11.0	
Copper	30.6	30.6	
Cyanide	5.2	5.2	
Iron	1001.6		
Lead	18.6	18.6	
Mercury	0.012	0.012	
Nickel	100.3	169	Acute Controls
Selenium	4.6	4.6	
Silver	41.1	N/A	
Thallium	0.0		
Zinc	388.1	388.7	Acute Controls
Boron	751.21		

Other Effluent Limitations are based upon R317-1.

#### **X. Antidegradation Considerations**

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

The antidegradation rules and procedures allow for modification of effluent limits less than those based strictly upon mass balance equations utilizing 100% of the assimilative capacity of the receiving water. Additional factors include considerations for "Blue-ribbon" fisheries, special recreational areas, threatened and endangered species, and drinking water sources.

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

#### **XI. Colorado River Salinity Forum Considerations**

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

#### **XII. Summary Comments**

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

#### **XIII. Notice of UPDES Requirement**

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

#### **XIV. Special Considerations**

EA Miller discharges to a tributary of Spring Creek which is listed on the Utah 303(d) listed for total phosphorous (TP), ammonia and dissolved oxygen (DO). A TMDL was completed for Spring Creek on September 9th, 2002. The TMDL set the load allocation for EA Miller at 170 kg/yr TP based on the anticipated capacity of the plant (2 mgd) and an average total phosphorus concentration of 0.10 mg/l (30 day average).

Prepared by:  
David Wham  
Utah Division of Water Quality

File Name: EA Miller &amp; Hyrum WWTP\_Irrigation\_limits.xls

**Level I Antidegradation Review for: EA Miller**

Level II Antidegradation Review is NOT required. Basic permit renewal. No increase in load or concentration over last issued permit.

**APPENDIX - Coefficients and Other Model Information**

<i>Parameter</i>	<i>Value</i>	<i>Units</i>
<b><i>Stoichiometry:</i></b>		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
<b><i>Inorganic suspended solids:</i></b>		
Settling velocity	0.06128	m/d
<b><i>Oxygen:</i></b>		
Reaeration model	Internal	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
<b><i>Slow CBOD:</i></b>		
Hydrolysis rate	1.93545	/d
Temp correction	1.047	
Oxidation rate	1.18385	/d
Temp correction	1.047	
<b><i>Fast CBOD:</i></b>		
Oxidation rate	0.5447	/d
Temp correction	1.047	
<b><i>Organic N:</i></b>		
Hydrolysis	0.8365	/d
Temp correction	1.07	
Settling velocity	0.24964	m/d
<b><i>Ammonium:</i></b>		
Nitrification	4.2	/d
Temp correction	1.07	
<b><i>Nitrate:</i></b>		
Denitrification	1.02986	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.05126	m/d
Temp correction	1.07	

<b>Organic P:</b>		
Hydrolysis	3.4361	/d
Temp correction	1.07	
Settling velocity	0.62926	m/d
<b>Inorganic P:</b>		
Settling velocity	0.01384	m/d
Sed P oxygen attenuation half sat constant	1.69154	mgO2/L
<b>Phytoplankton:</b>		
Max Growth rate	2.5	/d
Temp correction	1.07	
Respiration rate	0.1	/d
Temp correction	1.07	
Death rate	0	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	
Light model	Half saturation	
Light constant	57.6	langleys/d
Ammonia preference	25	ugN/L
Settling velocity	0.15	m/d
<b>Bottom Plants:</b>		
Growth model	Zero-order	
Max Growth rate	49.3845	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	100	gD/m2
Basal respiration rate	0.48434	/d
Photo-respiration rate parameter	0	unitless
Temp correction	1.07	
Excretion rate	0.46367	/d
Temp correction	1.07	
Death rate	0.40579	/d
Temp correction	1.07	
External nitrogen half sat constant	163.368	ugN/L
External phosphorus half sat constant	47.556	ugP/L
Inorganic carbon half sat constant	1.05E-05	moles/L
Bottom algae use HCO3- as substrate	Yes	
Light model	Half saturation	
Light constant	2.09098	langleys/d
Ammonia preference	1.48807	ugN/L
Subsistence quota for nitrogen	29.957365	mgN/gD
Subsistence quota for phosphorus	0.3928168	mgP/gD
Maximum uptake rate for nitrogen	446.5885	mgN/gD/d
Maximum uptake rate for phosphorus	114.4235	mgP/gD/d
Internal nitrogen half sat ratio	2.856177	
Internal phosphorus half sat ratio	1.752547	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	
<b>Detritus (POM):</b>		
Dissolution rate	2.7754	/d
Temp correction	1.07	
Settling velocity	3.89475	m/d
<b>Pathogens:</b>		
Decay rate	0.8	/d
Temp correction	1.07	
Settling velocity	1	m/d
alpha constant for light mortality	1	/d per ly/hr
<b>pH:</b>		
Partial pressure of carbon dioxide	347	ppm



**Hyporheic metabolism****Model for biofilm oxidation of fast CBOD**

Max biofilm growth rate	5	gO <sub>2</sub> /m <sup>2</sup> /d or /d
Temp correction	1.047	
Fast CBOD half-saturation	0.5	mgO <sub>2</sub> /L
Oxygen inhib model	Exponential	
Oxygen inhib parameter	0.60	L/mgO <sub>2</sub>
Respiration rate	0.2	/d
Temp correction	1.07	
Death rate	0.05	/d
Temp correction	1.07	
External nitrogen half sat constant	15	ugN/L
External phosphorus half sat constant	2	ugP/L
Ammonia preference	25	ugN/L
First-order model carrying capacity	100.0	gD/m <sup>2</sup>
<b>Generic constituent</b>		
Decay rate	30.0	/d
Temp correction	1.1	
Settling velocity	1.0	m/d

**Atmospheric Inputs:**

	winter	Summer	Fall	Winter	Spring
Air Temperature, F	30.0	65.0	45.0	30.0	45.0
Dew Point, Temp., F	32.0	44.0	35.0	32.0	35.0
Wind, ft./sec. @ 21 ft.	2.0	2.0	2.0	2.0	2.0
Cloud Cover, %	10.0%	10.0%	10.0%	10.0%	10.0%
Shade, %	5.0%	5.0%	5.0%	5.0%	5.0%

**Other Inputs:**

Manning Coefficient	0.04	Default
Side Slope	10.0%	
Bottom Algae Coverage	50.0%	

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## **ATTACHMENT 4**

### *Reasonable Potential Analysis*

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## **REASONABLE POTENTIAL ANALYSIS**

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

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

Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is not needed.

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