

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Minor Industrial Permit No. **UT0026123**

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

**Gunlock Water Treatment Facility**

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named **Santa Clara River,**

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

This permit shall become effective on February 1, 2021

This permit expires at midnight on January 31, 2026

Signed this 25th day of January, 2021.



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Erica Brown Gaddis, PhD  
Director

DWQ-2021-000652

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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*.

<u>Outfall Number(s)</u>	<u>Location of Discharge Outfall(s)</u>
001	Located at latitude 37° 13' 46" N and longitude 113° 46' 49" W. Intermittent discharge of decant drying water that discharges to a detention pond that eventually flows to the Santa Clara River offsite.

- B. Narrative Standard. It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.
- C. Specific Limitations and Self-Monitoring Requirements.
1. Effective immediately, and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfall(s) 001 as defined in *Part VII*, and determined by test procedures described in *Part I. C.4 a & b* of this permit DWQ's Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control, dated February 2018.
  2.
    - a. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified below:

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<b>Effluent Limitations <sup>a</sup></b>				
Parameter	Maximum Monthly Avg.	Maximum Weekly Avg.	Daily Minimum	Daily Maximum
Total Flow (MGD)	-	-	--	0.02
BOD <sub>5</sub> , mg/L	25	35	--	--
TSS, mg/L	25	35	--	--
Dissolved Oxygen, mg/L	--	--	5.0	--
TRC, mg/L				
Summer (Jul-Sep)	--	--	--	0.29
Fall (Oct-Dec)	--	--	--	0.21
Winter (Jan-Mar)	--	--	--	0.16
Spring (Apr-Jun)	--	--	--	0.23
<i>E. coli</i> , No./100mL	126	157	--	--
WET, Chronic Biomonitoring	--	--	--	IC <sub>25</sub> > 3.4% effluent
Selenium, mg/L <sup>k</sup>	--	--	--	0.0046
Oil & Grease, mg/L	--	--	--	10.0
pH, Standard Units	--	--	6.5	9
TDS, tons/day <sup>h</sup>	--	--	--	1.0
TDS, mg/L <sup>h</sup>	--	--	--	2,360

<b>Effluent Self-Monitoring and Reporting Requirements <sup>a</sup></b>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>b,c</sup>	Continuous	Recorder	MGD
BOD <sub>5</sub>	Monthly	Grab	mg/L
TSS	Monthly	Grab	mg/L
<i>E. coli</i>	Monthly	Grab	No./100mL
pH	Monthly	Grab	SU
DO	Monthly	Grab	mg/L
WET , Chronic Biomonitoring <sup>e, f</sup> <i>Ceriodaphnia dubia</i> <i>Pimephales promelas</i> (Fathead Minnows)	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter 2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite Composite	Pass/Fail Pass/Fail
TRC, mg/L,	Daily	Grab	mg/L
Oil & Grease <sup>d</sup>	When Sheen Observed	Grab	mg/L
TDS <sup>g, h</sup>	Monthly	Composite	tons/day
TDS <sup>g, h</sup>	Monthly	Composite	mg/L
Temperature <sup>j</sup>	Monthly	Grab	°C
Total Arsenic <sup>i</sup>	Monthly	Grab	mg/L
Total Iron <sup>i</sup>	Monthly	Grab	mg/L
Total Manganese <sup>i</sup>	Monthly	Grab	mg/L
Total Selenium <sup>k</sup>	Monthly	Grab	mg/L
Metals <sup>l</sup>	1 x in Permit Cycle	Composite	mg/L

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<b>Metals to be Monitored</b>		
Parameter	Sample Type	Units
Total Arsenic	Composite	mg/L
Total Cadmium	Composite	mg/L
Total Chromium	Composite	mg/L
Total Copper	Composite	mg/L
Total Cyanide	Grab	mg/L
Total Lead	Composite	mg/L
Total Mercury	Grab/Composite	mg/L
Total Nickel	Composite	mg/L
Total Selenium	Composite	mg/L
Total Silver	Composite	mg/L
Total Zinc	Composite	mg/L

**Table References**

- a. See Definitions, Part VII, for definition of terms.
- b. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- c. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.
- d. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.
- e. If sampling procedures outlined in I.C.4.a, specifically, the ability to collect the three (3) required samples on a Monday, Wednesday, and Friday of a sampling period cannot be followed due to the frequency of discharge at the facility, the facility shall conduct the sampling following the below collection procedures. The facility must evaluate which option is most appropriate in the order they are listed, conducting the sampling following the first collection procedure they are able to meet.
  - (1) Collect the three samples in three (3) consecutive days.
  - (2) If enough water is available, collect the additional samples from the detention pond following a three (3) consecutive day procedure.
  - (3) Collect all three samples at the time of discharge on the same day.
- f. If no toxicity is observed for 10 consecutive tests, testing frequency may be reduced or removed is approved by the Director in accordance with administrative procedures for modifying the permit.
- g. If the facility is unable to collect a composite sample, then a grab should be taken.
- h. The facility has both concentration and mass limits for Total Dissolved Solids (TDS). The Santa Clara River is listed on Utah's current 303(d) list as impaired for TDS and has an approved TMDL. TDS mass limitations are based on Colorado Basin Salinity

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Control Forum and concentration-based limits are based on the approved TMDL for the Virgin River Watershed and reflects the Virgin River site specific standard.

- i. Arsenic, Iron, Manganese are currently monitoring only. Monitoring is required for these parameters because they were identified as a pollutant of concern by the applicant. Data collected will be used to determine if a future limit is required, if more data is needed, or if there is no need for continued monitoring.
- j. The Santa Clara River is listed on Utah's current 303(d) list for Temperature, Boron, and Arsenic. At this time there is no approved TMDL for Temperature, Boron, or Arsenic but TMDL development may take place in the future.
- k. The Santa Clara River is listed on Utah's current 303(d) list for Selenium. The limit for Selenium is based on the approved TMDL for the Virgin River Watershed and reflects the standard.
- l. Metals sampling shall occur 1 time during the 5-year permit cycle.

**End Table References**

1. Compliance Schedule
  - a. There is no Compliance Schedule included in this permit or Compliance Schedule Language
2. Chronic Whole Effluent Toxicity (WET) Testing.
  - a. *Whole Effluent Testing – Chronic Toxicity.*

Starting immediately, the permittee shall quarterly conduct chronic static renewal toxicity tests on a grab sample of the final effluent at Outfall(s) 001. The sample shall be collected at the point of compliance before mixing with the receiving water.

Three samples are required and samples shall be collected on Monday, Wednesday and Friday of each sampling period or collected on a two-day progression for each sampling period. This may be changed with Director approval. The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition*, October 2002, EPA—821-R-02-013 as per 40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS. Test species shall consist of *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow).

A multi dilution test consisting of at least five concentrations and a control is required at two dilutions below and two above the RWC, if possible. If test acceptability criteria are not met for control survival, growth, or reproduction, the test shall be considered invalid. A valid replacement test is required within the specified sampling period to remain in compliance with this permit. Chronic toxicity occurs when, during a chronic toxicity test, the 25% inhibition concentration (IC25) calculated on the basis of test organism survival and growth or survival and reproduction, is less than or equal to 3.4% effluent concentration (equivalent to the RWC).

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If a sample is found to be chronically toxic during a routine test, the monitoring frequency shall become biweekly (see Part I.C.4.b., Accelerated Testing). (the Director may enter acceptable variations in the test procedure here as documented in the Fact Sheet Statement of Basis and based on the test acceptability criteria as contained in Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control February, 2018). If possible, dilution water should be obtained from the receiving stream.

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

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the required reporting period (e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28). Monthly test results shall be reported along with the DMR submitted for that month. The format for the report shall be consistent with Appendix C of "Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity, Utah Division of Water Quality, February, 2018.

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

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

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

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

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

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

d. *Preliminary Toxicity Investigation.*

- (1) When a pattern of toxicity is detected the permittee will notify the Director in writing within 5 days and begin an evaluation of the possible causes of the toxicity. The permittee will have 15 working days from demonstration of the pattern of toxicity to complete an optional Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Director. The PTI may include, but is not limited to: additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if any spill may have occurred.
- (2) If the PTI identifies a probable toxicant and/or a probable source of toxicity, the permittee shall submit, as part of its final results, written notification of that effect to the Director. Within thirty days of completing the PTI the permittee shall submit to the Director for approval a control program to control effluent toxicity and shall proceed to implement such plan in accordance with the Director's approval. The control program, as submitted to or revised by the Director, will be incorporated into the permit. After final implementation, the permittee must demonstrate successful removal of toxicity by passing a two species WET test as outlined in this permit. With adequate justification, the Director may extend these deadlines.
- (3) If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Director as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (see Part \_\_\_\_ 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 shall submit the following:

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

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

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

**B. 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. The first report is due on March 28, 2021. 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.

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**II. INDUSTRIAL PRETREATMENT PROGRAM**

- A. Discharge to POTW. Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of The Water Quality Act of 1987, the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at 40 CFR 403, the State Pretreatment Requirements at UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters. At a minimum the discharge, into a POTW, must meet the requirements of Part II of the permit.
- B. Hazardous Waste Notification. 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).
- C. General and Specific Prohibitions.
1. General Prohibitions. The permittee may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference. These general prohibitions and the specific prohibitions in paragraph 2. of this section apply to the introducing pollutants into a POTW whether or not the permittee is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.
  2. Specific Prohibitions. The following pollutants shall not be introduced into a POTW:
    - a. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than 140°F (60°C);
    - b. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;
    - c. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;
    - d. Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge at such volume or strength as to cause interference in the POTW;
    - e. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104°F (40°C));
    - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
    - g. Pollutants, which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems;
    - h. Any trucked or hauled pollutants, except at discharge points designated by the POTW; or

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- i. Any pollutant that causes pass through or interference at the POTW.
  - j. Any specific pollutant which exceeds any local limitation established by the POTW.
- D. Categorical Standards. In addition to the general and specific limitations expressed in *Part II. C.* of this section, applicable National Categorical Pretreatment Standards must be met by all industrial users discharging into a POTW. These standards are published in the federal regulations at *40 CFR 405 through 471*.
- E. Definitions. For this section the following definitions shall apply:
- 1. *Indirect Discharge* means the introduction of pollutants into a publicly-owned treatment works (POTW) from any non-domestic source regulated under section 307 (b), (c) or (d) of the CWA.
  - 2. *Interference* means a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:
    - a. Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
    - b. Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.
  - 3. *Pass Through* means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).
  - 4. *Publicly Owned Treatment Works* or *POTW* means a treatment works as defined by section 212 of the CWA, which is owned by a State or municipality (as defined by section 502(4) of the CWA). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the CWA, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.
  - 5. *Significant industrial user (SIU)* is defined as an industrial user discharging to a POTW that satisfies any of the following:
    - a. Has a process wastewater flow of 25,000 gallons or more per average work day;
    - b. Has a flow greater than five percent of the flow carried by the municipal system receiving the waste;

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- c. Is subject to Categorical Pretreatment Standards, or
  - d. Has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.
6. *User or Industrial User (IU)* means a source of Indirect Discharge.

**III. BIOSOLIDS REQUIREMENTS**

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, since this facility is a drinking water plant, there is not any regular biosolids production. Therefore 40 CFR 503 does not apply at this time. In the future, if the sludge needs to be removed from the drying beds and is disposed in some way, the Division of Water Quality must be contacted prior to the removal of the sludge to ensure that all applicable state and federal regulations are met.

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

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

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



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

**V. 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 V.G, Bypass of Treatment Facilities* and *Part V.H, Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.
- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.
- G. Bypass of Treatment Facilities.
1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.
  2. Prohibition of Bypass.
    - a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

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- (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;
  - (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and
  - (3) The permittee submitted notices as required under *section V.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 V.G.2.a (1), (2) and (3)*.
3. Notice.
- a. *Anticipated bypass.* Except as provided above in *section V.G.2* and below in *section V.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Director:
    - (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages;
    - (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;
    - (3) Description of specific measures to be taken to minimize environmental and public health impacts;
    - (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;
    - (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and,
    - (6) Any additional information requested by the Director.
  - b. *Emergency Bypass.* Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *section V.G.3.a.(1) through (6)* to the extent practicable.

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- 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 V.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.

**VI. COMPLIANCE RESPONSIBILITIES**

- 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 VI.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 VI.G.2* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

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

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1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;
  2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
  3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.
- N. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.
- O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:
1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
  2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.
  3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.
- P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.

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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 date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;
1. Toxicity is detected, as per *Part I.C.4.a* of this permit, during the duration of this permit.
  2. The TRE results indicate that the toxicant(s) represent pollutant(s) or pollutant parameter(s) that may be controlled with specific numerical limits, and the Director concludes that numerical controls are appropriate.
  3. Following the implementation of numerical control(s) of toxicant(s), the Director agrees that a modified biomonitoring protocol is necessary to compensate for those toxicants that are controlled numerically.
  4. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.
- R. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".



**VII. 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> < 3.4% effluent. The 3.4% 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;
  - 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;

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- 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.

**FACT SHEET AND STATEMENT OF BASIS  
GUNLOCK WATER TREATMENT FACILITY  
RENEWAL PERMIT: DISCHARGE  
UPDES PERMIT NUMBER: UT0026123  
MINOR INDUSTRIAL**

**FACILITY CONTACTS**

Person Name: Kade Bringham  
Position: Technical Services Manager  
Phone Number: (435) 627-4854

Person Name: Ted Hurst  
Position: Operator  
Phone Number: (435) 627-4850

Facility Name: Gunlock Water Treatment Plant  
Mailing Address: 175 East 200 North, St. George, Utah 84770  
Facility Address: Off Gunlock Drive, Dammeron Valley, UT 84783

**DESCRIPTION OF FACILITY**

The Gunlock Water Treatment Facility will be a newly constructed facility designed to primarily treat arsenic in groundwater. The new water treatment facility will supply clean drinking water to the City of St. George and surrounding areas. Arsenic and other contaminants will be removed through filter media. The main treatment process involves a pre-oxidation with chlorine, coagulation (ferric chloride) and pressure filtration with sand and anthracite media and air scour capabilities, followed by post-chlorination. Backwash waste flows will be pumped to one of two backwash clarifiers. Water within the clarifiers will be decanted and returned to the front of the plant. Periodically, the sludge in the tank bottom will be removed through a blowdown process and will be pumped to drying beds for further processing. Water within the drying beds will be removed through evaporation. However, in the event that the water production exceeds the evaporation rate, decanted water will be sent to a detention pond, which eventually runs to the Santa Clara River. Dried Sludge will be removed and hauled to a local landfill. The discharge is not anticipated to be year-round, but only during periods of low evaporation and high water production.

## **DISCHARGE**

### **DESCRIPTION OF DISCHARGE**

Gunlock Water Treatment Plant is a groundwater treatment facility that maintains a UPDES permit in the event that a discharge of drying bed decant water is necessary.

Outfall Number(s)  
001

Location of Discharge Outfall(s)  
Located at latitude 37° 13' 46" N and longitude 113° 46' 39" W. Intermittent discharge of decant drying water that discharges to a detention pond that eventually flows to the Santa Clara River offsite.

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

If a discharge were to occur, it would discharge to a detention pond then the Santa Clara River, which is a Class 1C, 2B, 3B, and 4 according to *Utah Administrative Code (UAC) R317-2-13*:

- Class 1C -- Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
- Class 2B -- Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.
- Class 3B -- Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.
- Class 4 -- Protected for agricultural uses including irrigation of crops and stock watering.

### **BASIS FOR EFFLUENT LIMITATIONS**

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD<sub>5</sub>), *E. coli*, and pH are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. Limitations on dissolved oxygen (DO) and total residual chlorine (TRC) were based on the wasteload analysis (WLA). Whole Effluent Toxicity (WET) monitoring requirements were based on WET policy adopted in January 2018 and IC<sub>25</sub> is based on WLA. The oil and grease is based on best professional judgment (BPJ). Attached is a WLA for this discharge into the Santa Clara River.

Total Dissolved Solids (TDS) limitations are based upon Utah Water Quality Standards for concentration values and the Colorado River Basin Salinity Control Forum (CRBSCF) for mass loading values when applicable as authorized in *UAC R317-2-4*. In accordance with the CRBSCF the effluent will be limited to a maximum discharge of 1 ton per day. The Santa Clara River is on Utah's most current 303(d) list for TDS. The Santa Clara River is included in an approved TMDL for the Virgin River Watershed. The TMDL calls for a 24% reduction in TDS loading, but does not assign allocations to facilities. Since no allocations were identified in the TMDL, the facility will be required to meet the Virgin River's site specific criteria for TDS, which is 2,360 mg/L.

The Santa Clara River is also listed on Utah's most current 303(d) list for Selenium. The Santa Clara River was included in an approved TMDL for the Virgin River Watershed. The TMDL calls for a 9% reduction in Selenium loading, but does not provide any allocations to facilities. Because no allocation was provided the facility will be held to the 4.6 ug/L (0.0046 mg/L) standard, but is asked to report in mg/L.

Since this is a new UPDES permit and the discharge will use assimilative capacity of the receiving water, a Level II Antidegradation review (ADR) was required. The level II ADR was public noticed from December 14, 2020 to January 14, 2021 as part of this permit. The permittee is expected to be able to comply with these limitations. It has been determined that this discharge will not cause a violation of water quality standards. The permit limitations are:

<b>Effluent Limitations <sup>a</sup></b>				
Parameter	Maximum Monthly Avg.	Maximum Weekly Avg.	Daily Minimum	Daily Maximum
Total Flow (MGD)	-	-	--	0.02
BOD <sub>5</sub> , mg/L	25	35	--	--
TSS, mg/L	25	35	--	--
Dissolved Oxygen, mg/L	--	--	5.0	--
TRC, mg/L				
Summer (Jul-Sep)	--	--	--	0.291
Fall (Oct-Dec)	--	--	--	0.205
Winter (Jan-Mar)	--	--	--	0.147
Spring (Apr-Jun)	--	--	--	0.227
<i>E. coli</i> , No./100mL	126	157	--	--
WET, Chronic Biomonitoring	--	--	--	IC <sub>25</sub> > 3.4% effluent
Selenium, mg/L <sup>k</sup>	--	--	--	0.0046
Oil & Grease, mg/L	--	--	--	10.0
pH, Standard Units	--	--	6.5	9
TDS, tons/day <sup>h</sup>	--	--	--	1.0
TDS, mg/L <sup>h</sup>	--	--	--	2,360

**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 was not conducted following DWQ’s September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance) because there is inadequate data for use in a RP. As a result, monitoring for metals will be included in this permit. The monitoring will help establish a record of presence or absence of each pollutant. Monitoring for metals will be required 1 X during this permit cycle. To ensure that the metals sampling requirement is met during the permit cycle, the facility should consider collecting the samples as soon as they begin to discharge.

**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.

The applicant identified Arsenic, TSS, Iron, and Manganese as pollutants of concern. Since this facility currently doesn’t discharge, the concentrations of the parameters of concern (POC) in the effluent are not known. Monitoring only for Arsenic, Iron, and Manganese were included in this permit to determine if a future limit will be required. Based on the results the facility may receive limits, continue monitoring only, or have the monitoring requirements removed. At this time no limit for Arsenic, Manganese, and Iron were included.

The monitoring only for Temperature and Boron was included in this permit cycle because the Santa Clara River is listed on the 303(d) list for Temperature and Boron. Currently no TMDL was included for temperature or Boron, but TMDL development may take place in the future. Based on monitoring results, in the future the facility may receive limits, continue monitoring only, or have the monitoring requirements removed. At this time no limit was included for Temperature or Boron. The Santa Clara River is also listed on the 303 (d) list for Arsenic.

Self-monitoring and reporting requirements are listed below:

<b>Effluent Self-Monitoring and Reporting Requirements <sup>a</sup></b>			
Parameter	Frequency	Sample Type	Units
Total Flow <sup>b,c</sup>	Continuous	Recorder	MGD
BOD <sub>5</sub>	Monthly	Grab	mg/L
TSS	Monthly	Grab	mg/L
<i>E. coli</i>	Monthly	Grab	No./100mL
pH	Monthly	Grab	SU
DO	Monthly	Grab	mg/L
WET , Chronic Biomonitoring <sup>e, f</sup> <i>Ceriodaphnia dubia</i> <i>Pimephales promelas</i> (Fathead Minnows)	1 <sup>st</sup> & 3 <sup>rd</sup> Quarter 2 <sup>nd</sup> & 4 <sup>th</sup> Quarter	Composite Composite	Pass/Fail Pass/Fail
TRC, mg/L,	Daily	Grab	mg/L
Oil & Grease <sup>d</sup>	When Sheen Observed	Grab	mg/L
TDS <sup>g, h</sup>	Monthly	Composite	tons/day
TDS <sup>g, h</sup>	Monthly	Composite	mg/L
Temperature <sup>j</sup>	Monthly	Grab	°C
Total Arsenic <sup>i</sup>	Monthly	Grab	mg/L
Total Iron <sup>i</sup>	Monthly	Grab	mg/L
Total Manganese <sup>i</sup>	Monthly	Grab	mg/L
Total Selenium <sup>k</sup>	Monthly	Grab	mg/L
Total Boron <sup>k</sup>	Monthly	Grab	mg/L
Metals <sup>l</sup>	1 x in Permit Cycle	Composite	mg/L

<b>Metals to be Monitored</b>		
Parameter	Sample Type	Units
Total Arsenic	Composite	mg/L
Total Cadmium	Composite	mg/L
Total Chromium	Composite	mg/L
Total Copper	Composite	mg/L
Total Cyanide	Grab	mg/L
Total Lead	Composite	mg/L
Total Mercury	Grab/Composite	mg/L
Total Nickel	Composite	mg/L
Total Selenium	Composite	mg/L
Total Silver	Composite	mg/L
Total Zinc	Composite	mg/L

**Table References**

See Definitions, Part VII, for definition of terms.

- A. Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- B. If the rate of discharge is controlled, the rate and duration of discharge shall be reported.
- C. Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.
- D. If sampling procedures outlined in I.C.4.a, specifically, the ability to collect the three (3) required samples on a Monday, Wednesday, and Friday of a sampling period cannot be followed due to the frequency of discharge at the facility, the facility shall conduct the sampling following the below collection procedures. The facility must evaluate which option is most appropriate in the order they are listed, conducting the sampling following the first collection procedure they are able to meet.
  - 1) Collect the three samples in three (3) consecutive days.
  - 2) If enough water is available, collect the additional samples from the detention pond following a three (3) consecutive day procedure.
  - 3) Collect all three samples at the time of discharge on the same day.
- E. If no toxicity is observed for 10 consecutive tests, testing frequency may be reduced or removed is approved by the Director in accordance with administrative procedures for modifying the permit.
- F. If the facility is unable to collect a composite sample, then a grab should be taken.
- G. The facility has both concentration and mass limits for Total Dissolved Solids (TDS). The Santa Clara River is listed on Utah's current 303(d) list as impaired for TDS and has an approved TMDL. TDS mass limitations are based on Colorado Basin Salinity Control Forum and concentration based limits are based on the approved TMDL for the Virgin River Watershed and reflects the Virgin River site specific standard.
- H. Arsenic, Iron, Manganese are currently monitoring only. Monitoring is required for these parameters because they were identified as a pollutant of concern by the applicant. Data collected will be used to determine if a future limit is required, if more data is needed, or if there is no need for continued monitoring.
- I. The Santa Clara River is listed on Utah's current 303(d) list for Temperature, Boron, and Arsenic. At this time there is no approved TMDL for Temperature, Boron, or Arsenic but TMDL development may take place in the future.
- J. The Santa Clara River is listed on Utah's current 303(d) list for Selenium. The limit for Selenium is based on the approved TMDL for the Virgin River Watershed and reflects the standard.
- K. Metals sampling shall occur 1 time during the 5-year permit cycle.

**End Table References**

### **PRETREATMENT REQUIREMENTS**

Any wastewater discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of the CWA, the permittee shall comply with all applicable Federal Pretreatment Regulations promulgated at 40 CFR Part 403, the State Pretreatment Requirements at UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters.

In addition, in accordance with 40 CFR Part 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 the permittee discharges any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under 40 CFR Part 261. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

### **BIOSOLIDS**

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, since this facility is a drinking water plant, there is not any regular sludge production. Therefore 40 CFR 503 does not apply at this time. In the future, if the sludge needs to be removed from the drying beds and is disposed in some way, the Division of Water Quality must be contacted prior to the removal of the sludge to ensure that all applicable state and federal regulations are met.

### **BIOMONITORING REQUIREMENTS**

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring), dated February 2018. Authority to require effluent biomonitoring is provided in Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3 and Water Quality Standards, UAC R317-2-5 and R317 -2-7.2.

Since the permittee is a new facility, the permit will require whole effluent toxicity (WET) testing. For this permit cycle Gunlock Water Treatment Plant will be required to conduct Chronic Wet tests quarterly alternating between *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnows) test species. If no toxicity is observed for 10 consecutive tests, testing frequency may be reduced or removed if approved by the Director in accordance with administrative procedures for modifying the permit. Decisions on type of WET testing and species were based on the revised UPDES Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control dated February 2018. The permit will also contain the standard requirements for accelerated testing upon failure of a WET test and PTI (Preliminary Toxicity Investigation) and TRE (Toxicity Reduction Evaluation) as necessary.

### **Alternative Wet Monitoring Procedures**

Gunlock Water Treatment Plant anticipated to discharge only during periods of low evaporation and high water production. The intermittent nature and unknown quantity of the discharge may prevent Gunlock from meeting sampling procedures outlined in I.C.4.a. of the permit. The below language was included in the permit to allow for Gunlock to have additional options to meet their Wet testing requirements:



If sampling procedures outlined in I.C.4.a, specifically, the ability to collect the three (3) required samples on a Monday, Wednesday, and Friday of a sampling period cannot be followed due to the frequency of discharge at the facility, the facility shall conduct the sampling following the below collection procedures. The facility must evaluate which option is most appropriate in the order they are listed, conducting the sampling following the first collection procedure they are able to meet.

- (1) Collect the three samples in three (3) consecutive days.
- (2) If enough water is available, collect the additional samples from the detention pond following a three (3) consecutive day procedure.
- (3) Collect all three samples at the time of discharge on the same day.

**PERMIT DURATION**

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

Drafted by  
Leanna Littler, Discharge  
Dan Griffin, Biosolids  
Jeffery Studenka, Colorado Salinity Forum  
Lonnie Shull, Biomonitoring  
Jennifer Robinson, Pretreatment  
Suzan Tahir, Wasteload Analysis  
Amy Dickey, TMDL  
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Began: December 14, 2020  
Ended: January 14, 2021

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

The Public Noticed of the draft permit was published on the Department Website.

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

**ADDENDUM TO FSSOB**

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. The FSSOB facility description section was updated to clarify that the facility will supply drinking water. Due to the nature of these changes they were not considered Major and the permit is not required to be re Public Noticed.

**Responsiveness Summary**


No comments were received.

DWQ-2021-000650

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# **ATTACHMENT 1**

## *Wasteload Analysis*

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

**Date:** September 17, 2020

**Prepared by:** Suzan Tahir  
Standards and Technical Services

**Facility:** Gunlock Water Treatment Facility  
UPDES No. UT0026123

**Receiving water:** Santa Clara River (1C, 2B, 3B, 4)

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

Discharge

The design flow of the facility is 0.02 MGD.

Receiving Water

Per UAC R317-2-13.2(a), the designated beneficial uses of the Santa Clara River from confluence with Virgin River to Gunlock Reservoir are 1C, 2B, 3B and 4.

- *Class 1C - Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water*
- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*
- *Class 3B - Protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

**Utah Division of Water Quality  
Wasteload Analysis  
Gunlock Water Treatment Facility  
UPDES No.UT0026123**

Flow

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). There was very limited data therefore the 20<sup>th</sup> percentile flow values were used for each season using monitoring station #4950500, SANTA CLARA RIVER BELOW GUNLOCK RESERVOIR (2000-2020). The calculated critical low flow values for each season are listed in Table 1.

Table 1. Seasonal Flow Values (20<sup>th</sup> percentile)

Season	Average Flow (cfs)
Summer	0.89
Fall	0.61
Winter	0.42
Spring	0.68
Overall	55.54

Ambient receiving water quality was characterized using DWQ monitoring station #4950500 (SANTA CLARA RIVER BELOW GUNLOCK RESERVOIR) for the period 2000-2020.

There was no DWQ monitoring station for the discharge point (new facility), therefore the discharge was characterized using very limited data provided in the Gunlock and Sand Hollow Water Treatment Preliminary Design Report prepared by Alpha Engineering and Carollo in 2018 (Alpha Engineering & Carollo, 2018).

Total Maximum Daily Load (TMDL)

According to the Utah's 2016 303(d) Water Quality Assessment Report, the receiving water for the discharge, Santa Clara-1, Santa Clara River from confluence with Virgin River to Gunlock Reservoir (UT15010008-001\_00) is not supporting all assessed uses and exhibits evidence of water quality impairments for arsenic, temperature, and boron.

Historically, the receiving segment of the Santa Clara River (Santa Clara-1) was included on Utah's 2002 303(d) list for temperature, selenium and total dissolved solids. The TMDL that addressed those parameters was approved by EPA in 2004 and can be found at the following link: <https://documents.deq.utah.gov/water-quality/watershed-protection/total-maximum-daily-loads/DWQ-2015-006610.pdf>

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and for chronic conditions is 2500 ft, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

Based on the results of the mixing zone modeling, plume width was 100 % of the river at 2500 feet. 100 % of the seasonal critical low flow was used to calculate chronic limits. Acute limits

**Utah Division of Water Quality  
Wasteload Analysis  
Gunlock Water Treatment Facility  
UPDES No.UT0026123**

were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

Potential parameters of concern were identified as arsenic, total suspended solids, iron and manganese.

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 should be based on 3.4% effluent.

Wasteload Allocation Methods

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

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

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

A Level II Antidegradation Review (ADR) is required because the Gunlock Water Treatment Facility will be a newly constructed facility.



**Utah Division of Water Quality  
Wasteload Analysis  
Gunlock Water Treatment Facility  
UPDES No.UT0026123**

**Documents:**

WLA Document: *Gunlock\_WLA\_09-17-2020.docx*

Wasteload Analysis and Addendums: *Gunlock\_WLA\_09-17-2020.xlsm*

**References:**

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

Alpha Engineering , & Carollo. (2018). *Technical Memorandum 1 Gunlock & Sand Hollow Water Treatment Preliminary Design Report.* St. George.

Utah Division of Water Quality  
Salt Lake City, Utah

WASTELOAD ANALYSIS [WLA]  
Addendum: Statement of Basis

20-Aug-20  
4:00 PM

Facilities: Gunlock Water Treatment Facility  
Discharging to: Santa Clara River

UPDES No: UT-UT0026123

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

Santa Clara River: 1C, 2B, 3B, 4  
Antidegradation Review: Level I review completed. Level II review is required.

III. Numeric Stream Standards for Protection of Aquatic Wildlife

Total Ammonia (TNH3)	Varies as a function of Temperature and pH Rebound. See Water Quality Standards
Chronic Total Residual Chlorine (TRC)	0.011 mg/l (4 Day Average) 0.019 mg/l (1 Hour Average)
Chronic Dissolved Oxygen (DO)	5.50 mg/l (30 Day Average) 4.00 mg/l (7Day Average) 3.00 mg/l (1 Day Average)
Maximum Total Dissolved Solids	1200.0 mg/l

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Salt Lake City, Utah**

**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**	0.015 lbs/day	750.00	ug/l	0.125 lbs/day
Arsenic	190.00 ug/l	0.032 lbs/day	340.00	ug/l	0.057 lbs/day
Cadmium	0.51 ug/l	0.000 lbs/day	5.10	ug/l	0.001 lbs/day
Chromium III	173.91 ug/l	0.029 lbs/day	3638.50	ug/l	0.607 lbs/day
ChromiumVI	11.00 ug/l	0.002 lbs/day	16.00	ug/l	0.003 lbs/day
Copper	19.41 ug/l	0.003 lbs/day	31.40	ug/l	0.005 lbs/day
Iron			1000.00	ug/l	0.167 lbs/day
Lead	9.48 ug/l	0.002 lbs/day	243.15	ug/l	0.041 lbs/day
Mercury	0.0120 ug/l	0.000 lbs/day	2.40	ug/l	0.000 lbs/day
Nickel	107.73 ug/l	0.018 lbs/day	968.95	ug/l	0.162 lbs/day
Selenium	4.60 ug/l	0.001 lbs/day	20.00	ug/l	0.003 lbs/day
Silver	N/A ug/l	N/A lbs/day	16.53	ug/l	0.003 lbs/day
Zinc	247.72 ug/l	0.041 lbs/day	247.72	ug/l	0.041 lbs/day

\* Allowed below discharge

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

Metals Standards Based upon a Hardness of 235.67 mg/l as CaCO3

**Organics [Pesticides]**

Parameter	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard		
	Concentration	Load*	Concentration		Load*
Aldrin			1.500	ug/l	0.000 lbs/day
Chlordane	0.004 ug/l	0.021 lbs/day	1.200	ug/l	0.000 lbs/day
DDT, DDE	0.001 ug/l	0.005 lbs/day	0.550	ug/l	0.000 lbs/day
Dieldrin	0.002 ug/l	0.009 lbs/day	1.250	ug/l	0.000 lbs/day
Endosulfan	0.056 ug/l	0.278 lbs/day	0.110	ug/l	0.000 lbs/day
Endrin	0.002 ug/l	0.011 lbs/day	0.090	ug/l	0.000 lbs/day
Guthion			0.010	ug/l	0.000 lbs/day
Heptachlor	0.004 ug/l	0.019 lbs/day	0.260	ug/l	0.000 lbs/day
Lindane	0.080 ug/l	0.397 lbs/day	1.000	ug/l	0.000 lbs/day
Methoxychlor			0.030	ug/l	0.000 lbs/day
Mirex			0.010	ug/l	0.000 lbs/day
Parathion			0.040	ug/l	0.000 lbs/day
PCB's	0.014 ug/l	0.069 lbs/day	2.000	ug/l	0.000 lbs/day
Pentachlorophenol	13.00 ug/l	64.530 lbs/day	20.000	ug/l	0.003 lbs/day
Toxephene	0.0002 ug/l	0.001 lbs/day	0.7300	ug/l	0.000 lbs/day

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Salt Lake City, Utah**

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

	4 Day Average (Chronic) Standard		1 Hour Average (Acute) Standard	
	Concentration	Load*	Concentration	Load*
Arsenic			100.0 ug/l	lbs/day
Boron			750.0 ug/l	lbs/day
Cadmium			10.0 ug/l	0.00 lbs/day
Chromium			100.0 ug/l	lbs/day
Copper			200.0 ug/l	lbs/day
Lead			100.0 ug/l	lbs/day
Selenium			50.0 ug/l	lbs/day
TDS, Summer			1200.0 mg/l	0.10 tons/day

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

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

**Chlorophenoxy Herbicides**

2,4-D	ug/l	lbs/day
2,4,5-TP	ug/l	lbs/day
Endrin	ug/l	lbs/day
ocyclohexane (Lindane)	ug/l	lbs/day
Methoxychlor	ug/l	lbs/day
Toxaphene	ug/l	lbs/day

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

Toxic Organics	Maximum Conc., ug/l - Acute Standards			
	Class 1C		Class 3A, 3B	
	[2 Liters/Day for 70 Kg Person over 70 Yr.]		[6.5 g for 70 Kg Person over 70 Yr.]	
Acenaphthene	ug/l	lbs/day	2700.0 ug/l	13.40 lbs/day
Acrolein	ug/l	lbs/day	780.0 ug/l	3.87 lbs/day
Acrylonitrile	ug/l	lbs/day	0.7 ug/l	0.00 lbs/day
Benzene	ug/l	lbs/day	71.0 ug/l	0.35 lbs/day
Benzidine	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Carbon tetrachloride	ug/l	lbs/day	4.4 ug/l	0.02 lbs/day
Chlorobenzene	ug/l	lbs/day	21000.0 ug/l	104.24 lbs/day
1,2,4-Trichlorobenzene				
Hexachlorobenzene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Dichloroethane	ug/l	lbs/day	99.0 ug/l	0.49 lbs/day
1,1,1-Trichloroethane				
Hexachloroethane	ug/l	lbs/day	8.9 ug/l	0.04 lbs/day
1,1-Dichloroethane				
1,1,2-Trichloroethane	ug/l	lbs/day	42.0 ug/l	0.21 lbs/day
1,1,2,2-Tetrachloroethane	ug/l	lbs/day	11.0 ug/l	0.05 lbs/day
Chloroethane			0.0 ug/l	0.00 lbs/day
Bis(2-chloroethyl) ether	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
2-Chloroethyl vinyl ether	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2-Chloronaphthalene	ug/l	lbs/day	4300.0 ug/l	21.34 lbs/day

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2,4,6-Trichlorophenol	ug/l	lbs/day	6.5 ug/l	0.03 lbs/day
p-Chloro-m-cresol			0.0 ug/l	0.00 lbs/day
Chloroform (HM)	ug/l	lbs/day	470.0 ug/l	2.33 lbs/day
2-Chlorophenol	ug/l	lbs/day	400.0 ug/l	1.99 lbs/day
1,2-Dichlorobenzene	ug/l	lbs/day	17000.0 ug/l	84.39 lbs/day
1,3-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	12.91 lbs/day
1,4-Dichlorobenzene	ug/l	lbs/day	2600.0 ug/l	12.91 lbs/day
3,3'-Dichlorobenzidine	ug/l	lbs/day	0.1 ug/l	0.00 lbs/day
1,1-Dichloroethylene	ug/l	lbs/day	3.2 ug/l	0.02 lbs/day
1,2-trans-Dichloroethylene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dichlorophenol	ug/l	lbs/day	790.0 ug/l	3.92 lbs/day
1,2-Dichloropropane	ug/l	lbs/day	39.0 ug/l	0.19 lbs/day
1,3-Dichloropropylene	ug/l	lbs/day	1700.0 ug/l	8.44 lbs/day
2,4-Dimethylphenol	ug/l	lbs/day	2300.0 ug/l	11.42 lbs/day
2,4-Dinitrotoluene	ug/l	lbs/day	9.1 ug/l	0.05 lbs/day
2,6-Dinitrotoluene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
1,2-Diphenylhydrazine	ug/l	lbs/day	0.5 ug/l	0.00 lbs/day
Ethylbenzene	ug/l	lbs/day	29000.0 ug/l	143.95 lbs/day
Fluoranthene	ug/l	lbs/day	370.0 ug/l	1.84 lbs/day
4-Chlorophenyl phenyl ether				
4-Bromophenyl phenyl ether				
Bis(2-chloroisopropyl) e	ug/l	lbs/day	170000.0 ug/l	843.86 lbs/day
Bis(2-chloroethoxy) met	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methylene chloride (HM)	ug/l	lbs/day	1600.0 ug/l	7.94 lbs/day
Methyl chloride (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Methyl bromide (HM)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Bromoform (HM)	ug/l	lbs/day	360.0 ug/l	1.79 lbs/day
Dichlorobromomethane	ug/l	lbs/day	22.0 ug/l	0.11 lbs/day
Chlorodibromomethane	ug/l	lbs/day	34.0 ug/l	0.17 lbs/day
Hexachlorobutadiene(c)	ug/l	lbs/day	50.0 ug/l	0.25 lbs/day
Hexachlorocyclopentadi	ug/l	lbs/day	17000.0 ug/l	84.39 lbs/day
Isophorone	ug/l	lbs/day	600.0 ug/l	2.98 lbs/day
Naphthalene				
Nitrobenzene	ug/l	lbs/day	1900.0 ug/l	9.43 lbs/day
2-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4-Nitrophenol	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
2,4-Dinitrophenol	ug/l	lbs/day	14000.0 ug/l	69.49 lbs/day
4,6-Dinitro-o-cresol	ug/l	lbs/day	765.0 ug/l	3.80 lbs/day
N-Nitrosodimethylamine	ug/l	lbs/day	8.1 ug/l	0.04 lbs/day
N-Nitrosodiphenylamine	ug/l	lbs/day	16.0 ug/l	0.08 lbs/day
N-Nitrosodi-n-propylami	ug/l	lbs/day	1.4 ug/l	0.01 lbs/day
Pentachlorophenol	ug/l	lbs/day	8.2 ug/l	0.04 lbs/day
Phenol	ug/l	lbs/day	4.6E+06 ug/l	2.28E+04 lbs/day
Bis(2-ethylhexyl)phthala	ug/l	lbs/day	5.9 ug/l	0.03 lbs/day
Butyl benzyl phthalate	ug/l	lbs/day	5200.0 ug/l	25.81 lbs/day
Di-n-butyl phthalate	ug/l	lbs/day	12000.0 ug/l	59.57 lbs/day
Di-n-octyl phthlate				
Diethyl phthalate	ug/l	lbs/day	120000.0 ug/l	595.66 lbs/day
Dimethyl phthlate	ug/l	lbs/day	2.9E+06 ug/l	1.44E+04 lbs/day
Benzo(a)anthracene (P)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(a)pyrene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(b)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Benzo(k)fluoranthene (F	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chrysene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Acenaphthylene (PAH)				
Anthracene (PAH)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dibenzo(a,h)anthracene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Indeno(1,2,3-cd)pyrene	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Pyrene (PAH)	ug/l	lbs/day	11000.0 ug/l	54.60 lbs/day
Tetrachloroethylene	ug/l	lbs/day	8.9 ug/l	0.04 lbs/day
Toluene	ug/l	lbs/day	200000 ug/l	992.77 lbs/day
Trichloroethylene	ug/l	lbs/day	81.0 ug/l	0.40 lbs/day
Vinyl chloride	ug/l	lbs/day	525.0 ug/l	2.61 lbs/day

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				lbs/day
<b>Pesticides</b>				lbs/day
Aldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Dieldrin	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Chlordane	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDT	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDE	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
4,4'-DDD	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
alpha-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.01 lbs/day
beta-Endosulfan	ug/l	lbs/day	2.0 ug/l	0.01 lbs/day
Endosulfan sulfate	ug/l	lbs/day	2.0 ug/l	0.01 lbs/day
Endrin	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Endrin aldehyde	ug/l	lbs/day	0.8 ug/l	0.00 lbs/day
Heptachlor	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
Heptachlor epoxide				
<b>PCB's</b>				
PCB 1242 (Arochlor 1242)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1254 (Arochlor 1254)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1221 (Arochlor 1221)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1232 (Arochlor 1232)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1248 (Arochlor 1248)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1260 (Arochlor 1260)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
PCB-1016 (Arochlor 1016)	ug/l	lbs/day	0.0 ug/l	0.00 lbs/day
<b>Pesticide</b>				
Toxaphene	ug/l		0.0 ug/l	0.00 lbs/day
<b>Dioxin</b>				
Dioxin (2,3,7,8-TCDD)	ug/l	lbs/day		
<b>Metals</b>				
Antimony	ug/l	lbs/day		
Arsenic	ug/l	lbs/day	4300.00 ug/l	21.34 lbs/day
Asbestos	ug/l	lbs/day		
Beryllium				
Cadmium				
Chromium (III)				
Chromium (VI)				
Copper				
Cyanide	ug/l	lbs/day	2.2E+05 ug/l	1092.05 lbs/day
Lead	ug/l	lbs/day		
Mercury			0.15 ug/l	0.00 lbs/day
Nickel			4600.00 ug/l	22.83 lbs/day
Selenium	ug/l	lbs/day		
Silver	ug/l	lbs/day		
Thallium			6.30 ug/l	0.03 lbs/day
Zinc				

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

## VII. Mathematical Modeling of Stream Quality

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

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

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

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

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

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

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

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

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

## VIII. Modeling Information

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

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

### Other Conditions

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

### Model Inputs

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

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**Current Upstream Information  
Stream  
Critical Low**

	<b>Flow cfs</b>	<b>Temp. Deg. C</b>	<b>pH</b>	<b>T-NH3 mg/l as N</b>	<b>BOD5 mg/l</b>	<b>DO mg/l</b>	<b>TRC mg/l</b>	<b>TDS mg/l</b>
Summer (Irrig. Season)	0.9	22.0	8.2	0.03	1.00	6.91	0.00	262.3
Fall	0.6	9.7	8.1	0.02	1.00	---	0.00	303.8
Winter	0.4	6.4	8.2	0.02	1.00	---	0.00	292.5
Spring	0.7	15.2	8.3	0.02	1.00	---	0.00	266.5
Dissolved Metals All Seasons	Al ug/l	As ug/l	Cd ug/l	CrIII ug/l	CrVI ug/l	Copper ug/l	Fe ug/l	Pb ug/l
	18.72	12.98	0.05	2.50	2.65*	1.40	15.0	0.21
Dissolved Metals All Seasons	Hg ug/l	Ni ug/l	Se ug/l	Ag ug/l	Zn ug/l	Boron ug/l		
	0.1000	2.50	0.50	0.25	7.08	10.0		* 1/2 MDL

**Projected Discharge Information**

<b>Season</b>	<b>Flow, MGD</b>	<b>Temp.</b>	<b>TDS mg/l</b>	<b>TDS tons/day</b>
Summer	0.02000	15.5	361.00	0.03010
Fall	0.02000	12.0		
Winter	0.02000	15.5		
Spring	0.02000	12.3		

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:

<b>Season</b>	<b>Daily Average</b>	
Summer	0.020 MGD	0.031 cfs
Fall	0.020 MGD	0.031 cfs
Winter	0.020 MGD	0.031 cfs
Spring	0.020 MGD	0.031 cfs

**Flow Requirement or Loading Requirement**

The calculations in this wasteload analysis utilize the maximum effluent discharge flow of 0.02 MGD. If the discharger is allowed to have a flow greater than 0.02 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 >	23.2% Effluent	[Acute]
	IC25 >	3.4% Effluent	[Chronic]



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

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

Season	Concentration	
Summer	25.0 mg/l as BOD5	4.2 lbs/day
Fall	25.0 mg/l as BOD5	4.2 lbs/day
Winter	25.0 mg/l as BOD5	4.2 lbs/day
Spring	25.0 mg/l as BOD5	4.2 lbs/day

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

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

Season	Concentration
Summer	5.00
Fall	5.00
Winter	5.00
Spring	5.00

**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	38.9 mg/l as N	6.5 lbs/day
	1 Hour Avg. - Acute	87.8 mg/l as N	14.6 lbs/day
Fall	4 Day Avg. - Chronic	54.9 mg/l as N	9.2 lbs/day
	1 Hour Avg. - Acute	79.8 mg/l as N	13.3 lbs/day
Winter	4 Day Avg. - Chronic	107.4 mg/l as N	17.9 lbs/day
	1 Hour Avg. - Acute	342.3 mg/l as N	57.1 lbs/day
Spring	4 Day Avg. - Chronic	50.0 mg/l as N	0.0 lbs/day
	1 Hour Avg. - Acute	74.1 mg/l as N	0.0 lbs/day

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

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**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	0.325	mg/l	0.05	lbs/day
	1 Hour Avg. - Acute	0.291	mg/l	0.05	lbs/day
Fall	4 Day Avg. - Chronic	0.226	mg/l	0.04	lbs/day
	1 Hour Avg. - Acute	0.205	mg/l	0.03	lbs/day
Winter	4 Day Avg. - Chronic	0.159	mg/l	0.03	lbs/day
	1 Hour Avg. - Acute	0.147	mg/l	0.02	lbs/day
Spring	4 Day Avg. - Chronic	0.251	mg/l	0.00	lbs/day
	1 Hour Avg. - Acute	0.227	mg/l	0.00	lbs/day

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

Season		Concentration		Load	
Summer	Maximum, Acute	28173.0	mg/l	2.35	tons/day
Fall	Maximum, Acute	26979.5	mg/l	2.25	tons/day
Winter	Maximum, Acute	27304.6	mg/l	2.28	tons/day
Spring	4 Day Avg. - Chronic	28053.6	mg/l	2.34	tons/day

Colorado Salinity Forum Limits      Determined by Permitting Section  
Concentration limit is based on limits developed in the West Colorado Watershed TMDL,  
approved by EPA in 2004.

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 235.67 mg/l):

	4 Day Average		Load	1 Hour Average		Load
	Concentration			Concentration		
Aluminum	N/A		N/A	11,267.8	ug/l	1.9 lbs/day
Arsenic	5,282.04	ug/l	0.6 lbs/day	5,043.4	ug/l	0.8 lbs/day
Cadmium	13.76	ug/l	0.0 lbs/day	77.7	ug/l	0.0 lbs/day
Chromium III	5,104.53	ug/l	0.6 lbs/day	55,933.8	ug/l	9.3 lbs/day
Chromium VI	213.08	ug/l	0.0 lbs/day	189.0	ug/l	0.0 lbs/day
Copper	537.39	ug/l	0.1 lbs/day	462.8	ug/l	0.1 lbs/day
Iron	N/A		N/A	15,166.9	ug/l	2.5 lbs/day
Lead	275.99	ug/l	0.0 lbs/day	3,737.2	ug/l	0.6 lbs/day
Mercury	(2.52)	ug/l	0.0 lbs/day	35.5	ug/l	0.0 lbs/day
Nickel	3,134.66	ug/l	0.3 lbs/day	14,869.1	ug/l	2.5 lbs/day
Selenium	122.54	ug/l	0.0 lbs/day	300.5	ug/l	0.1 lbs/day
Silver	N/A	ug/l	N/A lbs/day	250.7	ug/l	0.0 lbs/day
Zinc	7,169.92	ug/l	0.8 lbs/day	3,708.8	ug/l	0.6 lbs/day
Cyanide	154.78	ug/l	0.0 lbs/day	338.4	ug/l	0.1 lbs/day

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

Summer	100.0 Deg. C.	212.0 Deg. F
Fall	92.6 Deg. C.	198.6 Deg. F
Winter	64.7 Deg. C.	148.5 Deg. F
Spring	100.0 Deg. C.	212.0 Deg. F

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

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

	<b>4 Day Average</b>		<b>1 Hour Average</b>		
	<b>Concentration</b>	<b>Load</b>	<b>Concentration</b>		<b>Load</b>
Aldrin			1.5E+00	ug/l	3.87E-04 lbs/day
Chlordane	4.30E-03 ug/l	7.17E-04 lbs/day	1.2E+00	ug/l	3.10E-04 lbs/day
DDT, DDE	1.00E-03 ug/l	1.67E-04 lbs/day	5.5E-01	ug/l	1.42E-04 lbs/day
Dieldrin	1.90E-03 ug/l	3.17E-04 lbs/day	1.3E+00	ug/l	3.22E-04 lbs/day
Endosulfan	5.60E-02 ug/l	9.34E-03 lbs/day	1.1E-01	ug/l	2.84E-05 lbs/day
Endrin	2.30E-03 ug/l	3.84E-04 lbs/day	9.0E-02	ug/l	2.32E-05 lbs/day
Guthion	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.58E-06 lbs/day
Heptachlor	3.80E-03 ug/l	6.34E-04 lbs/day	2.6E-01	ug/l	6.71E-05 lbs/day
Lindane	8.00E-02 ug/l	1.33E-02 lbs/day	1.0E+00	ug/l	2.58E-04 lbs/day
Methoxychlor	0.00E+00 ug/l	0.00E+00 lbs/day	3.0E-02	ug/l	7.74E-06 lbs/day
Mirex	0.00E+00 ug/l	0.00E+00 lbs/day	1.0E-02	ug/l	2.58E-06 lbs/day
Parathion	0.00E+00 ug/l	0.00E+00 lbs/day	4.0E-02	ug/l	1.03E-05 lbs/day
PCB's	1.40E-02 ug/l	2.33E-03 lbs/day	2.0E+00	ug/l	5.16E-04 lbs/day
Pentachlorophenol	1.30E+01 ug/l	2.17E+00 lbs/day	2.0E+01	ug/l	5.16E-03 lbs/day
Toxephene	2.00E-04 ug/l	3.34E-05 lbs/day	7.3E-01	ug/l	1.88E-04 lbs/day

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**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)	50.0 pCi/L	
BOD (mg/l)	5.0 mg/l	0.8 lbs/day
Nitrates as N	4.0 mg/l	0.7 lbs/day
Total Phosphorus as P	0.05 mg/l	0.0 lbs/day
Total Suspended Solids	90.0 mg/l	15.0 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:

	Maximum Concentration	
	Concentration	Load
<b>Toxic Organics</b>		
Acenaphthene	8.04E+04 ug/l	1.34E+01 lbs/day
Acrolein	2.32E+04 ug/l	3.87E+00 lbs/day
Acrylonitrile	1.96E+01 ug/l	3.28E-03 lbs/day
Benzene	2.11E+03 ug/l	3.52E-01 lbs/day
Benzidine	ug/l	lbs/day
Carbon tetrachloride	1.31E+02 ug/l	2.18E-02 lbs/day
Chlorobenzene	6.25E+05 ug/l	1.04E+02 lbs/day
1,2,4-Trichlorobenzene		
Hexachlorobenzene	2.29E-02 ug/l	3.82E-06 lbs/day
1,2-Dichloroethane	2.95E+03 ug/l	4.91E-01 lbs/day
1,1,1-Trichloroethane		
Hexachloroethane	2.65E+02 ug/l	4.42E-02 lbs/day
1,1-Dichloroethane		
1,1,2-Trichloroethane	1.25E+03 ug/l	2.08E-01 lbs/day
1,1,2,2-Tetrachloroethane	3.27E+02 ug/l	5.46E-02 lbs/day
Chloroethane		
Bis(2-chloroethyl) ether	4.17E+01 ug/l	6.95E-03 lbs/day
2-Chloroethyl vinyl ether		
2-Chloronaphthalene	1.28E+05 ug/l	2.13E+01 lbs/day
2,4,6-Trichlorophenol	1.93E+02 ug/l	3.23E-02 lbs/day
p-Chloro-m-cresol		
Chloroform (HM)	1.40E+04 ug/l	2.33E+00 lbs/day
2-Chlorophenol	1.19E+04 ug/l	1.99E+00 lbs/day
1,2-Dichlorobenzene	5.06E+05 ug/l	8.44E+01 lbs/day
1,3-Dichlorobenzene	7.74E+04 ug/l	1.29E+01 lbs/day
1,4-Dichlorobenzene	7.74E+04 ug/l	1.29E+01 lbs/day
3,3'-Dichlorobenzidine	2.29E+00 ug/l	3.82E-04 lbs/day
1,1-Dichloroethylene	9.52E+01 ug/l	1.59E-02 lbs/day
1,2-trans-Dichloroethylene1		
2,4-Dichlorophenol	2.35E+04 ug/l	3.92E+00 lbs/day
1,2-Dichloropropane	1.16E+03 ug/l	1.94E-01 lbs/day
1,3-Dichloropropylene	5.06E+04 ug/l	8.44E+00 lbs/day
2,4-Dimethylphenol	6.85E+04 ug/l	1.14E+01 lbs/day
2,4-Dinitrotoluene	2.71E+02 ug/l	4.52E-02 lbs/day
2,6-Dinitrotoluene		
1,2-Diphenylhydrazine	1.61E+01 ug/l	2.68E-03 lbs/day
Ethylbenzene	8.63E+05 ug/l	1.44E+02 lbs/day
Fluoranthene	1.10E+04 ug/l	1.84E+00 lbs/day
4-Chlorophenyl phenyl ether		
4-Bromophenyl phenyl ether		
Bis(2-chloroisopropyl) ether	5.06E+06 ug/l	8.44E+02 lbs/day
Bis(2-chloroethoxy) methane		
Methylene chloride (HM)	4.76E+04 ug/l	7.94E+00 lbs/day
Methyl chloride (HM)		
Methyl bromide (HM)		
Bromoform (HM)	1.07E+04 ug/l	1.79E+00 lbs/day

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Dichlorobromomethane(HM)	6.55E+02 ug/l	1.09E-01 lbs/day
Chlorodibromomethane (HM)	1.01E+03 ug/l	1.69E-01 lbs/day
Hexachlorocyclopentadiene	5.06E+05 ug/l	8.44E+01 lbs/day
Isophorone	1.79E+04 ug/l	2.98E+00 lbs/day
Naphthalene		
Nitrobenzene	5.66E+04 ug/l	9.43E+00 lbs/day
2-Nitrophenol		
4-Nitrophenol		
2,4-Dinitrophenol	4.17E+05 ug/l	6.95E+01 lbs/day
4,6-Dinitro-o-cresol	2.28E+04 ug/l	3.80E+00 lbs/day
N-Nitrosodimethylamine	2.41E+02 ug/l	4.02E-02 lbs/day
N-Nitrosodiphenylamine	4.76E+02 ug/l	7.94E-02 lbs/day
N-Nitrosodi-n-propylamine	4.17E+01 ug/l	6.95E-03 lbs/day
Pentachlorophenol	2.44E+02 ug/l	4.07E-02 lbs/day
Phenol	1.37E+08 ug/l	2.28E+04 lbs/day
Bis(2-ethylhexyl)phthalate	1.76E+02 ug/l	2.93E-02 lbs/day
Butyl benzyl phthalate	1.55E+05 ug/l	2.58E+01 lbs/day
Di-n-butyl phthalate	3.57E+05 ug/l	5.96E+01 lbs/day
Di-n-octyl phthlate		
Diethyl phthalate	3.57E+06 ug/l	5.96E+02 lbs/day
Dimethyl phthlate	8.63E+07 ug/l	1.44E+04 lbs/day
Benzo(a)anthracene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Benzo(a)pyrene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Benzo(b)fluoranthene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Benzo(k)fluoranthene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Chrysene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Acenaphthylene (PAH)		
Anthracene (PAH)		
Dibenzo(a,h)anthracene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Indeno(1,2,3-cd)pyrene (PAH)	9.23E-01 ug/l	1.54E-04 lbs/day
Pyrene (PAH)	3.27E+05 ug/l	5.46E+01 lbs/day
Tetrachloroethylene	2.65E+02 ug/l	4.42E-02 lbs/day
Toluene	5.95E+06 ug/l	9.93E+02 lbs/day
Trichloroethylene	2.41E+03 ug/l	4.02E-01 lbs/day
Vinyl chloride	1.56E+04 ug/l	2.61E+00 lbs/day

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**Pesticides**

Aldrin	4.17E-03 ug/l	6.95E-07 lbs/day
Dieldrin	4.17E-03 ug/l	6.95E-07 lbs/day
Chlordane	1.76E-02 ug/l	2.93E-06 lbs/day
4,4'-DDT	1.76E-02 ug/l	2.93E-06 lbs/day
4,4'-DDE	1.76E-02 ug/l	2.93E-06 lbs/day
4,4'-DDD	2.50E-02 ug/l	4.17E-06 lbs/day
alpha-Endosulfan	5.95E+01 ug/l	9.93E-03 lbs/day
beta-Endosulfan	5.95E+01 ug/l	9.93E-03 lbs/day
Endosulfan sulfate	5.95E+01 ug/l	9.93E-03 lbs/day
Endrin	2.41E+01 ug/l	4.02E-03 lbs/day
Endrin aldehyde	2.41E+01 ug/l	4.02E-03 lbs/day
Heptachlor	6.25E-03 ug/l	1.04E-06 lbs/day
Heptachlor epoxide		

**PCB's**

PCB 1242 (Arochlor 1242)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1254 (Arochlor 1254)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1221 (Arochlor 1221)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1232 (Arochlor 1232)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1248 (Arochlor 1248)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1260 (Arochlor 1260)	1.34E-03 ug/l	2.23E-07 lbs/day
PCB-1016 (Arochlor 1016)	1.34E-03 ug/l	2.23E-07 lbs/day

**Pesticide**

Toxaphene	2.23E-02 ug/l	3.72E-06 lbs/day
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**Metals**

Antimony	ug/l	lbs/day
Arsenic	ug/l	lbs/day
Asbestos	ug/l	lbs/day
Beryllium		
Cadmium		
Chromium (III)		
Chromium (VI)		
Copper	ug/l	lbs/day
Cyanide	ug/l	lbs/day
Lead		
Mercury	ug/l	lbs/day
Nickel	ug/l	lbs/day
Selenium		
Silver		
Thallium	ug/l	lbs/day
Zinc		

**Dioxin**

Dioxin (2,3,7,8-TCDD)	4.17E-07 ug/l	6.95E-11 lbs/day
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**Utah Division of Water Quality  
Salt Lake City, Utah**

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

	<b>Class 4 Acute Agricultural ug/l</b>	<b>Class 3 Acute Aquatic Wildlife ug/l</b>	<b>Acute Toxics Drinking Water Source ug/l</b>	<b>Acute Toxics Wildlife ug/l</b>	<b>1C Acute Health Criteria ug/l</b>	<b>Acute Most Stringent ug/l</b>	<b>Class 3 Chronic Aquatic Wildlife ug/l</b>
Aluminum		11267.8				11267.8	N/A
Antimony				127991.0		127991.0	
Arsenic	2976.5	5043.4			0.0	2976.5	5282.0
Barium						0.0	
Beryllium						0.0	
Cadmium	296.2	77.7			0.0	77.7	13.8
Chromium (III)		55933.8			0.0	55933.8	5104.5
Chromium (VI)	2904.6	189.0			0.0	188.95	213.08
Copper	5912.8	462.8				462.8	537.4
Cyanide		338.4	6548377.5			338.4	154.8
Iron		15166.9				15166.9	
Lead	2970.5	3737.2			0.0	2970.5	276.0
Mercury		35.48		4.46	0.0	4.46	-2.519
Nickel		14869.1		136920.6		14869.1	3134.7
Selenium	1473.9	300.5			0.0	300.5	122.5
Silver		250.7			0.0	250.7	
Thallium				187.5		187.5	
Zinc		3708.8				3708.8	7169.9
Boron	19974.5					19974.5	

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

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

	<b>WLA Acute ug/l</b>	<b>WLA Chronic ug/l</b>	
Aluminum	11267.8	N/A	
Antimony	127991.01		
Arsenic	2976.5	5282.0	Acute Controls
Asbestos	0.00E+00		
Barium			
Beryllium			
Cadmium	77.7	13.8	
Chromium (III)	55933.8	5105	
Chromium (VI)	189.0	213.1	Acute Controls
Copper	462.8	537.4	Acute Controls
Cyanide	338.4	154.8	
Iron	15166.9		
Lead	2970.5	276.0	
Mercury	4.465	-2.519	
Nickel	14869.1	3135	
Selenium	300.5	122.5	
Silver	250.7	N/A	
Thallium	187.5		
Zinc	3708.8	7169.9	Acute Controls
Boron	19974.46		

Other Effluent Limitations are based upon R317-1.

E. coli 126.0 organisms per 100 ml

**X. Antidegradation Considerations**

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

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 required.

**XI. Colorado River Salinity Forum Considerations**

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

**XII. Summary Comments**

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



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

**XIII. Notice of UPDES Requirement**

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

Utah Division of Water Quality  
801-538-6052  
File Name: Gunlock\_WLA\_09-17-2020

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

**APPENDIX - Coefficients and Other Model Information**

CBOD Coeff. (Kd)20 1/day 2.000	CBOD Coeff. FORCED (Kd)/day 0.000	CBOD Coeff. (Ka)T 1/day 2.191	REAER. Coeff. (Ka)20 (Ka)/day 48.183	REAER. Coeff. FORCED 1/day 0.000	REAER. Coeff. (Ka)T 1/day 50.512	NBOD Coeff. (Kn)20 1/day 0.600	NBOD Coeff. (Kn)T 1/day 0.699
Open Coeff. (K4)20 1/day 0.000	Open Coeff. (K4)T 1/day 0.000	NH3 LOSS (K5)20 1/day 4.000	NH3 (K5)T 1/day 4.383	NO2+NO3 LOSS (K6)20 1/day 0.000	NO2+NO3 (K6)T 1/day 0.000	TRC Decay K(CI)20 1/day 32.000	TRC K(CI)(T) 1/day 35.934
BENTHIC DEMAND (SOD)20 gm/m2/day 1.000	BENTHIC DEMAND (SOD)T gm/m2/day 1.134						
K1 CBOD {theta} 1.0	K2 Reaer. {theta} 1.0	K3 NH3 {theta} 1.1	K4 Open {theta} 1.0	K5 NH3 Loss {theta} 1.0	K6 NO2+3 {theta} 1.0	K(CI) TRC {theta} 1.1	S Benthic {theta} 1.1

**Antidegradation Review**

An antidegradation review (ADR) was conducted to determine whether the proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. The Level I ADR evaluated the criteria of R317-2-3.5(b) and determined that a Level II antidegradation Review is required.