State of Utah

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Department of
Environmental Quality

L. Scott Baird
*Executive Director*

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
*Director*

July 20, 2020

Vicky Miller, Environmental Engineer
Canyon Fuel Company, LLC - Dugout Canyon Mine
PO Box 1029
Wellington, UT 84542
***Via Email***

Subject: Issuance of Renewal Permit, Canyon Fuel Company, LLC
Dugout Canyon Mine
**UPDES Permit No. UT0025593**

Dear Ms. Miller:

Enclosed is a signed copy of UPDES Permit No. UT0025593, as well as the updated Fact Sheet Statement of Basis, and the Waste Load Analysis for the facility referenced above. The 30-day public notice period ended July 10, 2020 with no comments received. Therefore the permit has been re-issued as drafted and is effective September 1, 2020, subject to the right to appeal in accordance with the provisions of Utah Administrative Code, Section R317-9.

As the State agency charged with the administration of issuing UPDES Permits, we are continuously looking for ways to improve our quality of service to you. In an effort to improve the State UPDES permitting process we are asking for your input. Please take a few moments to complete an online survey (Go to https://deq.utah.gov/division-water-quality and click on the "Feedback" link on the lower right side of page.) The results will be used to improve our quality and responsiveness to our permittees and give us feedback on customer satisfaction. We will address any issues you have identified on an ongoing basis.

Thanks for your continued efforts in helping to protect Utah's Water Quality. If you have any questions with regards to this matter, please contact Jeff Studenka at (801) 536-4395 or jstudenka@utah.gov.

Sincerely,

Dan Hall

Dan Hall, Acting Manager
UPDES Surface Water Section

DH/JAS/blj

Enclosures:
1. Signed Permit (DWQ-2020-011054)
2. Updated Fact Sheet Statement of Basis (DWQ-2020-011451)
3. Wasteload Analysis &ADR (DWQ-2020-010955 & DWQ-2020-010957)

Cc: Via Email w/Enclosures
Amy Clark, US EPA Region VIII
Orion Rogers, Southeast Utah Health Department
Russell Seeley, DEQ SE District Engineer
Steve Christensen, DOGM Coal Program Manager
Chris Cline, US Fish & Wildlife Services
Mike Fowlks, Utah Division of Wildlife Resources
Jason Gipson, Chief, Utah Regulatory Office, US Corps of Engineers

DWQ-2020-014663
FILE: UPDES Sections 1&2

**FACT SHEET AND STATEMENT OF BASIS**
**CANYON FUEL COMPANY, LLC DUGOUT CANYON MINE**
**DISCHARGE RENEWAL PERMIT**
**UPDES PERMIT NUMBER: UT0025593**
**MINOR INDUSTRIAL FACILITY**

## FACILITY CONTACT INFORMATION

| | |
|---|---|
| Contact Name: | Vicky Miller |
| Position: | Environmental Engineer |
| Phone Number: | (435) 636-2887 |
| Mailing Address: | PO Box 1029<br>Wellington, Utah 84542 |

## DESCRIPTION OF FACILITY

The Canyon Fuel Company's Dugout Canyon Mine (Dugout Mine) is an underground coal mine operation with *Standard Industrial Classification 1222*, for *bituminous underground coal mining operations*. The facility is located approximately 12 ½ miles northeast of Wellington, Utah in Dugout Canyon off Nine Mile Canyon Road. It has a total of seven permitted discharge points (Outfalls 001 thru 007). Outfalls 001 and 005 are mine water discharges which go to Dugout Creek and Pace Canyon Creek, respectively and are the main discharges from Dugout. Outfall 002 is from a sedimentation pond which collects surface water runoff from the main facility in Dugout Canyon and discharges to Dugout Creek once a year on average during cleaning and maintenance of the pond. Outfall 003 is from a water storage tank that intermittently discharges to Dugout Creek when full. Outfall 004 is from a sedimentation pond at the waste rock disposal site, which has not discharged to date and is not expected to discharge due to its size. If a discharge were to occur, it would go to an unnamed tributary of Grassy Trail Creek. Outfall 006, which has also not discharged to date, is from a sediment pond trap that collects surface water runoff from the Pace Canyon fan portal breakout facility and would discharge to Pace Canyon Creek. Outfall 007 is from a sedimentation pond at the waste rock disposal site, which is not expected to discharge due to the pond retention size.

## SUMMARY OF CHANGES FROM PREVIOUS PERMIT

There are only two significant changes from the previous permit. First, the Storm Water permit provisions have been removed as part of a separation of the previously combined UPDES industrial permit. Dugout Mine will now be required to apply for and obtain separate UPDES Industrial Storm Water Permit coverage under the MSGP No. UTR000000, as described further in the Storm Water section of this Fact Sheet. The second change is that quarterly monitoring of the mine water discharges has been added for the following total metals; arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc. The additional total metals monitoring is described further in the Reasonable Potential section of this Fact Sheet. All other permit provisions remain unchanged.

## DISCHARGE INFORMATION

### DESCRIPTION OF DISCHARGE OUTFALLS

The permitted discharging outfalls are as follows:

| Outfall Number(s) | Location of Discharge Outfall(s) |
|---|---|
| 001 | Mine water discharge to Dugout Creek. Latitude 39° 41' 01", Longitude 110° 32' 44". |

| | |
|---|---|
| 002 | Sedimentation pond discharge to Dugout Creek. Latitude 39° 40' 56", Longitude 110° 32' 52". |
| 003 | Storage water discharge to Dugout Creek. Latitude 39° 41' 18", Longitude 110° 32' 29". |
| 004 | Sedimentation pond (waste rock site) discharge to an unknown tributary of Grassy Trail Creek. Latitude 39° 36' 40", Longitude 110° 36' 43". |
| 005 | Pace Canyon fan portal breakout, mine water discharge to Pace Creek. Latitude 39° 40' 17.772", Longitude 110° 30' 29.051". |
| 006 | Sediment trap culvert discharge to Pace Creek. Latitude 39° 40' 14.3553", Longitude 110° 30' 32.3161". |
| 007 | Sedimentation pond (waste rock site) discharge to an unknown tributary of Grassy Trail Creek. Latitude 39° 36' 42", Longitude 110° 36' 39". |

**RECEIVING WATERS AND STREAM CLASSIFICATION**

Dugout Creek is the receiving water for Outfalls 001, 002, and 003. An unnamed tributary to Grassy Trail Creek is the receiving water for Outfalls 004 and 007. Outfalls 005 and 006 discharge to Pace Canyon Creek. The classifications for these receiving waters are as follows:

Class 2B – protected for secondary contact recreation such as boating, wading, or similar uses.

Class 3C – protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 – protected for agricultural uses including irrigation of crops and stock watering.

**BASIS FOR EFFLUENT LIMITATIONS**

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *Utah Administrative Code* (*UAC) R317-8-4.2*, effluent limitations are derived from technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). In cases where multiple limits have been developed, those that are more stringent apply. In cases where no limits or multiple limits have been developed, Best Professional Judgment (BPJ) of the permitting authority may be used where applicable. "Best Professional Judgment" refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards or other relevant information.

Permit limits can also be derived from the Wasteload Analysis (WLA), as is the case with the flow limitation, which is based upon the maximum design effluent flow for the main mine water discharges as previously provided by the facility. The WLA incorporates Secondary Treatment Standards, Water Quality Standards, including Total Maximum Daily Load (TMDL) impairments as appropriate, Antidegradation Review (ADR) and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model

demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were completed. An ADR Level I review was performed and concluded that an ADR Level II review was not required this time since there are no proposed increases in flow or concentrations from the previous permit. The WLA indicates that the effluent limitations will be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters. The WLA and ADR are attached as an addendum to this Fact Sheet.

The following list is the basis of the effluent limitations for permit parameters:

1) Since the Dugout Mine discharge meets the EPA definition of "alkaline mine drainage," the permittee is subject to the technology based effluent limitations in *40 CFR Part 434.45*. Applicable technology based limits included in the permit are as follows:

    a. Total suspended solids (TSS) daily maximum limit of 70 mg/L.

    b. For discharges composed of surface water or mine water commingled with surface water, *40 CFR Part 434.63* allows alternate effluent limits to be applied when discharges result from specific runoff events, detailed below and in the permit. Dugout Mine has the burden of proof that the described runoff event occurred as described in the permit.

        i. For runoff events (rainfall or snowmelt) less than or equal to a 10-year 24-hour precipitation event, settleable solids may be substituted for TSS and shall be limited to 0.5 milliliters per liter (ml/L). All other effluent limitations must be achieved concurrently, as described in the permit.

2) TSS 30-day and 7-day averages are based on Utah Secondary Treatment Standards.

3) Daily minimum and daily maximum limitations on pH are derived from Utah Secondary Treatment Standards and Water Quality Standards.

4) Total dissolved solids (TDS) are limited by both mass loading and concentration requirements as described below:

    a. Since discharges from Dugout Mine are within the Colorado River Basin, TDS mass loading is limited according to policies established by the Colorado River Basin Salinity Control Forum (Forum), as authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the Forum produced the *"Policy For Implementation of Colorado River Salinity Standards Through the NPDES Permit Program"* (Policy), with the most current subsequent triennial revision dated October 2017. Based on Forum Policy, provisions have previously been made for salinity-offset projects to account for any TDS loading in excess of the permit requirement. Salinity-offset provisions have once again been included in Dugout Mine's permit as the facility remains current on the requirements included therein to account for any and all excess TDS loading. These provisions and requirements, as described further in both the permit and in this Fact Sheet, will remain in Dugout Mine's renewal permit as appropriate.

    b. TDS concentrations are limited by Water Quality Standards in *UAC R317-2-14*, which includes site specific criterion for impaired water bodies as developed through the total maximum daily load (TMDL) process. Although a TMDL standard has previously been established with a site specific TDS effluent limit of 3,000 mg/L for point source

discharges, as taken from the *Price River, San Rafael River and Muddy Creek TMDLs for Dissolved Solids –West Colorado Watershed Management Unit, Utah, August 2004, p. A-25, Table A-12,* previous discharge TDS data from Dugout indicates that the permittee should be able to continue complying with the existing and more stringent limitation of 2,400 mg/L. Therefore based on BPJ of the permitting authority, the TDS concentration limit of 2,400 mg/L for all discharge points will be retained in this renewal permit.

5) Limitation on total iron is water quality based as presented in the WLA and is once again a BPJ decision of the permitting authority. The resulting total iron effluent limitation from the WLA is 1.0 mg/L, however the previous permit WLAs resulting total iron effluent limitations were 1.05-1.1 mg/L. The 1.1 mg/L effluent limitation has been in place for the past 15 years since inception of the permit and has been protective of downstream beneficial uses with no known environmental impacts. Based on BPJ of the permit writer, which included discussions with the waste load analyst, the total iron effluent limitation will be maintained at the previous permit effluent limitation of 1.1 mg/L.

6) Oil and Grease concentrations are limited to 10 mg/L by BPJ of the permitting authority to be consistent with other industrial facilities statewide.

**Reasonable Potential Analysis**

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

A qualitative RP analysis was performed on the existing parameters of concern, which includes total iron, TDS, TSS and pH as indicated in the WLA, to determine if there was reasonable potential for the mine water discharges to exceed the applicable water quality standards. Based on the RP analysis, none of these parameters exceeded the most stringent water quality standard or were determined to have a reasonable potential to exceed the standard, excepting for TSS which already has specific effluent limitations as appropriate. However, an RP analysis could not be properly completed on any other metals because historically metals monitoring has not been included in previous permits (except for iron which is already in the permit with a limit). Therefore, this renewal permit will require that the permittee obtain more metals data by monitoring the mine water discharges on a quarterly basis for total concentrations of arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc so that a more thorough RP analyses can be performed in the future. A copy of the RP analysis is included as an attachment at the end of this Fact Sheet.

The permittee is expected to be able to continue complying with the permit limitations as follows:

| Parameter, Units | Effluent Limitations *a | | | |
|---|---|---|---|---|
| | Maximum Monthly Average | Maximum Weekly Average | Daily Minimum | Daily Maximum |
| Total Effluent Flow, MGD, *b | 2.0 | -- | -- | Report |
| Total Iron, mg/L | -- | -- | -- | 1.1 |
| Total Suspended Solids (TSS), mg/L | 25 | 35 | -- | 70 |
| Total Dissolved Solids (TDS), mg/L, *c | Report | -- | -- | 2,400 |
| TDS, tons/day, *c | -- | -- | -- | 1.0 *c |
| pH, Standard Units(SU) | -- | -- | 6.5 | 9.0 |
| Oil & Grease, mg/L, *d | -- | -- | -- | 10 |

mg/L – milligrams per liter; MGD – million gallons per day

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following self-monitoring requirements are the same as in the previous permit. The permit will require reports to be submitted monthly 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 reports for biomonitoring, as well as lab reports for metals and toxic organics, if required in the future must be submitted with the applicable DMRs. A review of the past 5 years of DMR data reveals that Dugout Mine has had no significant permit exceedances and should be able to continue complying with the permit provisions as included.

| Self-Monitoring and Reporting Requirements *a | | | |
|---|---|---|---|
| Parameter | Frequency | Sample Type | Units |
| Total Flow, *b | Twice Monthly | Measured | MGD |
| Total Iron | Twice Monthly | Grab | mg/L |
| TSS | Twice Monthly | Grab | mg/L |
| TDS, *c | Twice Monthly | Grab | mg/L & tons/day |
| pH | Twice Monthly | Grab | SU |
| Oil & Grease, *d | Twice Monthly | Visual, Grab | Yes/No, mg/L |
| Total Metals, *e | Quarterly | Grab | mg/L |

There shall be no visible sheen or floating solids or visible foam in other than trace amounts upon any discharges and there shall be no discharge of any sanitary wastes at any time.

*a See Permit *Part V.A*, for definition of terms.

*b The maximum monthly average of 2.0 MGD applies to mine water discharging Outfalls 001 & 005 only. The remaining outfalls shall report the

maximum monthly average upon discharging. Flows from all outfalls shall be from either a continuous recorder, or measured at least twice per month upon discharging. If the rate of discharge is controlled, such as from intermittent discharging outfalls, the rate and duration of discharge shall be reported.

*c The TDS concentration from each of the outfalls shall not exceed 2400 mg/L as a daily maximum limit. No tons per day loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1.0 ton per day as a sum from all discharge points. If the permittee is not able to meet the 500 mg/L 30-day average, or the 1.0 ton per day loading limit, then the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include an approved plan with TDS credits on a ton-for-ton basis for which the permittee is over the 1.0 ton per day loading limit. The permittee has an approved salinity offset plan already in place, which includes tracking the TDS credits for each monthly monitoring period during the life of this permit. Any changes to the salinity offset plan must be approved by the Director and upon approval shall be appended to this permit.

*d Oil and grease monitoring shall initially be a visual test. If any oil and/or grease sheens are observed visually, or there is any other reason to believe that oil and/or grease may be present in the discharge, then a grab sample of the effluent must be immediately taken and this sample shall not exceed 10 mg/L.

*e Quarterly total metals monitoring is required from mine water discharges at Outfalls 001 & 005 and includes arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc.

## STORM WATER REQUIREMENTS

As mentioned previously, the Storm Water provisions have been omitted from this UPDES permit. However, based on the type of industrial activities occurring at the facility, the permittee is required to maintain separate permit coverage, or an appropriate exclusion, under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activities (UTR000000). If the facility has not already done so, it has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP, or exclusion documentation. This can be accomplished online at: https://deq.utah.gov/water-quality/general-multi-sector-industrial-storm-water-permit-updes-permits.

## PRETREATMENT REQUIREMENTS

This facility does not discharge process wastewater to a sanitary sewer system. Any process wastewater that the facility may discharge 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 Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste. In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they

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

**BIOMONITORING REQUIREMENTS**

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the 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 UAC R317-2-7.2*.

The permittee is not classified as a major facility or a significant minor facility and discharges from Dugout Mine are from intercepted ground water and/or storm water only, in which toxicity has not been an existing or a potential concern. Discharges are to ephemeral drainages and do not normally reach downstream waters, but are rather utilized in full by local farming and ranching practices. However, upon request from DWQ and during the development of a previous permit, the permittee performed an Acute Biomonitoring WET test, using the appropriate test species and methods, resulting in no acute toxicity.

This information, along with the fact that the mine water discharges have previously and consistently been used for local irrigation and stock watering practices with no observable or reported ill effects, brings the conclusion that no toxicity is present in the effluent. Based on these considerations, there is no reasonable potential for toxicity in the facility's discharge. As such, there will be no numerical WET limitations or WET monitoring requirements in this permit. However, the permit will contain a toxicity limitation re-opener provision that allows for modification of the permit at any time in the future should additional information indicate the presence of toxicity in the discharge.

**PERMIT DURATION**

It is recommended that this permit be effective for a duration of five (5) years, as authorized in *UAC R317-8-5.1(1)*.

Drafted and reviewed by:

Jeff Studenka, Discharge & Colorado River Basin Salinity Control
Lonnie Shull, Biomonitoring
Lisa Stevens, Storm Water
Jen Robinson, Pretreatment
Amy Dickey, Watershed/TMDL
Suzan Tahir, Wasteload Analysis & ADR

Utah Division of Water Quality, (801) 536-4300
June 1, 2020

**PUBLIC NOTICE INFORMATION (updated July 13, 2020)**

Began: June 10, 2020
Ended: July 10, 2020

The Public Notice of the draft renewal permit was published on DWQ's website for at least 30 days as per Utah Administrative Code (UAC) R317-8-6.5.

During the public comment period provided under UAC 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 UAC R317-8-6.12.

No comments or requests were received during the 30-day public notice and comment period. Staff recommends re-issuing the permit as drafted.

**ADDENDUM TO FSSOB**

**ATTACHMENTS (2):** I. Wasteload Analysis and Antidegradation Review
II. Reasonable Potential Analysis Summary

DWQ-2020-011451

# ATTACHMENT 1

*Wasteload Analysis and Antidegradation Review*

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

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

| |
|---|
| **10-Apr-20** |
| **4:00 PM** |

**Facilities:** **Canyon Fuel Dugout Mine / Dugout Creek** **UPDES No: UT-UT0025593**
**Discharging to:** **Dugout Creek**

## I. Introduction

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

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

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

## II. Receiving Water and Stream Classification

| | |
|---|---|
| Dugout Creek: | 2B, 3C, 4 |
| Antidegradation Review: | Level I review completed. Level II review not required. |

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

| | | | |
|---|---|---|---|
| Total Ammonia (TNH3) | Varies as a function of Temperature and pH Rebound. See Water Quality Standards | | |
| Chronic Total Residual Chlorine (TRC) | 0.011 | mg/l (4 Day Average) | |
| | 0.019 | mg/l (1 Hour Average) | |
| Chronic Dissolved Oxygen (DO) | 5.00 | mg/l (30 Day Average) | |
| | N/A | mg/l (7Day Average) | |
| | 3.00 | mg/l (1 Day Average | |
| Maximum Total Dissolved Solids | 3000.0 | mg/l | Background |

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

| Parameter | 4 Day Average (Chronic) Standard Concentration | | Load* | | 1 Hour Average (Acute) Standard Concentration | | Load* | |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 87.00 | ug/l** | 0.141 | lbs/day | 750.00 | ug/l | 1.213 | lbs/day |
| Arsenic | 190.00 | ug/l | 0.307 | lbs/day | 340.00 | ug/l | 0.550 | lbs/day |
| Cadmium | 0.61 | ug/l | 0.001 | lbs/day | 6.52 | ug/l | 0.011 | lbs/day |
| Chromium III | 211.92 | ug/l | 0.343 | lbs/day | 4433.76 | ug/l | 7.169 | lbs/day |
| ChromiumVI | 11.00 | ug/l | 0.018 | lbs/day | 16.00 | ug/l | 0.026 | lbs/day |
| Copper | 23.85 | ug/l | 0.039 | lbs/day | 39.41 | ug/l | 0.064 | lbs/day |
| Iron | | | | | 1000.00 | ug/l | 1.617 | lbs/day |
| Lead | 12.88 | ug/l | 0.021 | lbs/day | 330.61 | ug/l | 0.535 | lbs/day |
| Mercury | 0.0120 | ug/l | 0.000 | lbs/day | 2.40 | ug/l | 0.004 | lbs/day |
| Nickel | 132.13 | ug/l | 0.214 | lbs/day | 1188.45 | ug/l | 1.922 | lbs/day |
| Selenium | 4.60 | ug/l | 0.007 | lbs/day | 20.00 | ug/l | 0.032 | lbs/day |
| Silver | N/A | ug/l | N/A | lbs/day | 25.04 | ug/l | 0.040 | lbs/day |
| Zinc | 303.94 | ug/l | 0.491 | lbs/day | 303.94 | ug/l | 0.491 | 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 300 mg/l as CaCO3

**Organics [Pesticides]**

| Parameter | 4 Day Average (Chronic) Standard Concentration | | Load* | | 1 Hour Average (Acute) Standard Concentration | | Load* | |
|---|---|---|---|---|---|---|---|---|
| Aldrin | | | | | 1.500 | ug/l | 0.002 | lbs/day |
| Chlordane | 0.004 | ug/l | 0.072 | lbs/day | 1.200 | ug/l | 0.002 | lbs/day |
| DDT, DDE | 0.001 | ug/l | 0.017 | lbs/day | 0.550 | ug/l | 0.001 | lbs/day |
| Dieldrin | 0.002 | ug/l | 0.032 | lbs/day | 1.250 | ug/l | 0.002 | lbs/day |
| Endosulfan | 0.056 | ug/l | 0.934 | lbs/day | 0.110 | ug/l | 0.000 | lbs/day |
| Endrin | 0.002 | ug/l | 0.038 | lbs/day | 0.090 | ug/l | 0.000 | lbs/day |
| Guthion | | | | | 0.010 | ug/l | 0.000 | lbs/day |
| Heptachlor | 0.004 | ug/l | 0.063 | lbs/day | 0.260 | ug/l | 0.000 | lbs/day |
| Lindane | 0.080 | ug/l | 1.334 | lbs/day | 1.000 | ug/l | 0.002 | 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 | 0.233 | lbs/day | 2.000 | ug/l | 0.003 | lbs/day |
| Pentachlorophenol | 13.00 | ug/l | 216.804 | lbs/day | 20.000 | ug/l | 0.032 | lbs/day |
| Toxephene | 0.0002 | ug/l | 0.003 | lbs/day | 0.7300 | ug/l | 0.001 | lbs/day |

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

| | 4 Day Average (Chronic) Standard | | 1 Hour Average (Acute) Standard | |
|---|---|---|---|---|
| | **Concentration** | **Load*** | **Concentration** | **Load*** |
| Arsenic | | | 100.0 ug/l | lbs/day |
| Boron | | | 750.0 ug/l | 0.61 lbs/day |
| Cadmium | | | 10.0 ug/l | 0.01 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 | | | 3000.0 mg/l | 2.43 tons/day |

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

| | 4 Day Average (Chronic) Standard | | 1 Hour Average (Acute) Standard | |
|---|---|---|---|---|
| **Metals** | **Concentration** | **Load*** | **Concentration** | **Load*** |
| Arsenic | | | 50.0 ug/l | 0.834 lbs/day |
| Barium | | | 1000.0 ug/l | 16.677 lbs/day |
| Cadmium | | | 10.0 ug/l | 0.167 lbs/day |
| Chromium | | | 50.0 ug/l | 0.834 lbs/day |
| Lead | | | 50.0 ug/l | 0.834 lbs/day |
| Mercury | | | 2.0 ug/l | 0.033 lbs/day |
| Selenium | | | 10.0 ug/l | 0.167 lbs/day |
| Silver | | | 50.0 ug/l | 0.834 lbs/day |
| Fluoride (3) | | | 1.4 ug/l | 0.023 lbs/day |
| to | | | 2.4 ug/l | 0.040 lbs/day |
| Nitrates as N | | | 10.0 ug/l | 0.167 lbs/day |
| **Chlorophenoxy Herbicides** | | | | |
| 2,4-D | | | 100.0 ug/l | 1.668 lbs/day |
| 2,4,5-TP | | | 10.0 ug/l | 0.167 lbs/day |
| Endrin | | | 0.2 ug/l | 0.003 lbs/day |
| ocyclohexane (Lindane) | | | 4.0 ug/l | 0.067 lbs/day |
| Methoxychlor | | | 100.0 ug/l | 1.668 lbs/day |
| Toxaphene | | | 5.0 ug/l | 0.083 lbs/day |

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

| | Maximum Conc., ug/l - Acute Standards | | | |
|---|---|---|---|---|
| | **Class 1C** | | **Class 3A, 3B** | |
| **Toxic Organics** | [2 Liters/Day for 70 Kg Person over 70 Yr.] | | [6.5 g for 70 Kg Person over 70 Yr.] | |
| Acenaphthene | 1200.00 ug/l | 20.01 lbs/day | 2700.0 ug/l | 45.03 lbs/day |
| Acrolein | 320.00 ug/l | 5.34 lbs/day | 780.0 ug/l | 13.01 lbs/day |
| Acrylonitrile | 0.06 ug/l | 0.00 lbs/day | 0.7 ug/l | 0.01 lbs/day |
| Benzene | 1.20 ug/l | 0.02 lbs/day | 71.0 ug/l | 1.18 lbs/day |
| Benzidine | 0.00012 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| Carbon tetrachloride | 0.25 ug/l | 0.00 lbs/day | 4.4 ug/l | 0.07 lbs/day |
| Chlorobenzene | 680.00 ug/l | 11.34 lbs/day | 21000.0 ug/l | 350.22 lbs/day |
| 1,2,4-Trichlorobenzene | | | | |
| Hexachlorobenzene | 0.00075 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| 1,2-Dichloroethane | 0.38 ug/l | 0.01 lbs/day | 99.0 ug/l | 1.65 lbs/day |
| 1,1,1-Trichloroethane | | | | |
| Hexachloroethane | 1.90 ug/l | 0.03 lbs/day | 8.9 ug/l | 0.15 lbs/day |
| 1,1-Dichloroethane | | | | |
| 1,1,2-Trichloroethane | 0.61 ug/l | 0.01 lbs/day | 42.0 ug/l | 0.70 lbs/day |
| 1,1,2,2-Tetrachloroetha | 0.17 ug/l | 0.00 lbs/day | 11.0 ug/l | 0.18 lbs/day |
| Chloroethane | | | 0.0 ug/l | 0.00 lbs/day |
| Bis(2-chloroethyl) ether | 0.03 ug/l | 0.00 lbs/day | 1.4 ug/l | 0.02 lbs/day |
| 2-Chloroethyl vinyl ethe | 0.00 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| 2-Chloronaphthalene | 1700.00 ug/l | 28.35 lbs/day | 4300.0 ug/l | 71.71 lbs/day |
| 2,4,6-Trichlorophenol | 2.10 ug/l | 0.04 lbs/day | 6.5 ug/l | 0.11 lbs/day |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| p-Chloro-m-cresol | | | | | 0.0 | ug/l | 0.00 | lbs/day |
| Chloroform (HM) | 5.70 | ug/l | 0.10 | lbs/day | 470.0 | ug/l | 7.84 | lbs/day |
| 2-Chlorophenol | 120.00 | ug/l | 2.00 | lbs/day | 400.0 | ug/l | 6.67 | lbs/day |
| 1,2-Dichlorobenzene | 2700.00 | ug/l | 45.03 | lbs/day | 17000.0 | ug/l | 283.51 | lbs/day |
| 1,3-Dichlorobenzene | 400.00 | ug/l | 6.67 | lbs/day | 2600.0 | ug/l | 43.36 | lbs/day |
| 1,4-Dichlorobenzene | 400.00 | ug/l | 6.67 | lbs/day | 2600.0 | ug/l | 43.36 | lbs/day |
| 3,3'-Dichlorobenzidine | 0.04 | ug/l | 0.00 | lbs/day | 0.1 | ug/l | 0.00 | lbs/day |
| 1,1-Dichloroethylene | 0.06 | ug/l | 0.00 | lbs/day | 3.2 | ug/l | 0.05 | lbs/day |
| 1,2-trans-Dichloroethyle | 700.00 | ug/l | 11.67 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 2,4-Dichlorophenol | 93.00 | ug/l | 1.55 | lbs/day | 790.0 | ug/l | 13.17 | lbs/day |
| 1,2-Dichloropropane | 0.52 | ug/l | 0.01 | lbs/day | 39.0 | ug/l | 0.65 | lbs/day |
| 1,3-Dichloropropylene | 10.00 | ug/l | 0.17 | lbs/day | 1700.0 | ug/l | 28.35 | lbs/day |
| 2,4-Dimethylphenol | 540.00 | ug/l | 9.01 | lbs/day | 2300.0 | ug/l | 38.36 | lbs/day |
| 2,4-Dinitrotoluene | 0.11 | ug/l | 0.00 | lbs/day | 9.1 | ug/l | 0.15 | lbs/day |
| 2,6-Dinitrotoluene | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 1,2-Diphenylhydrazine | 0.04 | ug/l | 0.00 | lbs/day | 0.5 | ug/l | 0.01 | lbs/day |
| Ethylbenzene | 3100.00 | ug/l | 51.70 | lbs/day | 29000.0 | ug/l | 483.64 | lbs/day |
| Fluoranthene | 300.00 | ug/l | 5.00 | lbs/day | 370.0 | ug/l | 6.17 | lbs/day |
| 4-Chlorophenyl phenyl ether | | | | | | | | |
| 4-Bromophenyl phenyl ether | | | | | | | | |
| Bis(2-chloroisopropyl) e | 1400.00 | ug/l | 23.35 | lbs/day | 170000.0 | ug/l | 2835.12 | lbs/day |
| Bis(2-chloroethoxy) met | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Methylene chloride (HM | 4.70 | ug/l | 0.08 | lbs/day | 1600.0 | ug/l | 26.68 | lbs/day |
| Methyl chloride (HM) | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Methyl bromide (HM) | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Bromoform (HM) | 4.30 | ug/l | 0.07 | lbs/day | 360.0 | ug/l | 6.00 | lbs/day |
| Dichlorobromomethane( | 0.27 | ug/l | 0.00 | lbs/day | 22.0 | ug/l | 0.37 | lbs/day |
| Chlorodibromomethane | 0.41 | ug/l | 0.01 | lbs/day | 34.0 | ug/l | 0.57 | lbs/day |
| Hexachlorobutadiene(c) | 0.44 | ug/l | 0.01 | lbs/day | 50.0 | ug/l | 0.83 | lbs/day |
| Hexachlorocyclopentadi | 240.00 | ug/l | 4.00 | lbs/day | 17000.0 | ug/l | 283.51 | lbs/day |
| Isophorone | 8.40 | ug/l | 0.14 | lbs/day | 600.0 | ug/l | 10.01 | lbs/day |
| Naphthalene | | | | | | | | |
| Nitrobenzene | 17.00 | ug/l | 0.28 | lbs/day | 1900.0 | ug/l | 31.69 | lbs/day |
| 2-Nitrophenol | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4-Nitrophenol | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 2,4-Dinitrophenol | 70.00 | ug/l | 1.17 | lbs/day | 14000.0 | ug/l | 233.48 | lbs/day |
| 4,6-Dinitro-o-cresol | 13.00 | ug/l | 0.22 | lbs/day | 765.0 | ug/l | 12.76 | lbs/day |
| N-Nitrosodimethylamine | 0.00069 | ug/l | 0.00 | lbs/day | 8.1 | ug/l | 0.14 | lbs/day |
| N-Nitrosodiphenylamine | 5.00 | ug/l | 0.08 | lbs/day | 16.0 | ug/l | 0.27 | lbs/day |
| N-Nitrosodi-n-propylami | 0.01 | ug/l | 0.00 | lbs/day | 1.4 | ug/l | 0.02 | lbs/day |
| Pentachlorophenol | 0.28 | ug/l | 0.00 | lbs/day | 8.2 | ug/l | 0.14 | lbs/day |
| Phenol | 2.10E+04 | ug/l | 3.50E+02 | lbs/day | 4.6E+06 | ug/l | 7.67E+04 | lbs/day |
| Bis(2-ethylhexyl)phthala | 1.80 | ug/l | 0.03 | lbs/day | 5.9 | ug/l | 0.10 | lbs/day |
| Butyl benzyl phthalate | 3000.00 | ug/l | 50.03 | lbs/day | 5200.0 | ug/l | 86.72 | lbs/day |
| Di-n-butyl phthalate | 2700.00 | ug/l | 45.03 | lbs/day | 12000.0 | ug/l | 200.13 | lbs/day |
| Di-n-octyl phthlate | | | | | | | | |
| Diethyl phthalate | 23000.00 | ug/l | 383.58 | lbs/day | 120000.0 | ug/l | 2001.26 | lbs/day |
| Dimethyl phthlate | 3.13E+05 | ug/l | 5.22E+03 | lbs/day | 2.9E+06 | ug/l | 4.84E+04 | lbs/day |
| Benzo(a)anthracene (P/ | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(a)pyrene (PAH) | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(b)fluoranthene (F | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(k)fluoranthene (F | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Chrysene (PAH) | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Acenaphthylene (PAH) | | | | | | | | |
| Anthracene (PAH) | 9600.00 | ug/l | 160.10 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Dibenzo(a,h)anthracene | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Indeno(1,2,3-cd)pyrene | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Pyrene (PAH) | 960.00 | ug/l | 16.01 | lbs/day | 11000.0 | ug/l | 183.45 | lbs/day |
| Tetrachloroethylene | 0.80 | ug/l | 0.01 | lbs/day | 8.9 | ug/l | 0.15 | lbs/day |
| Toluene | 6800.00 | ug/l | 113.40 | lbs/day | 200000 | ug/l | 3335.44 | lbs/day |
| Trichloroethylene | 2.70 | ug/l | 0.05 | lbs/day | 81.0 | ug/l | 1.35 | lbs/day |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00 | ug/l | 0.03 | lbs/day | 525.0 | ug/l | 8.76 | lbs/day |
| | | | | | 0.0 | | 0.00 | lbs/day |
| **Pesticides** | | | | | 0.0 | | 0.00 | lbs/day |
| Aldrin | 0.0001 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Dieldrin | 0.0001 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Chlordane | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDT | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDE | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDD | 0.0008 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| alpha-Endosulfan | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| beta-Endosulfan | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| Endosulfan sulfate | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| Endrin | 0.7600 | ug/l | 0.01 | lbs/day | 0.8 | ug/l | 0.01 | lbs/day |
| Endrin aldehyde | 0.7600 | ug/l | 0.01 | lbs/day | 0.8 | ug/l | 0.01 | lbs/day |
| Heptachlor | 0.0002 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Heptachlor epoxide | | | | | | | | |
| **PCB's** | | | | | | | | |
| PCB 1242 (Arochlor 124 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1254 (Arochlor 125 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1221 (Arochlor 122 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1232 (Arochlor 123 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1248 (Arochlor 124 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1260 (Arochlor 126 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1016 (Arochlor 101 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| **Pesticide** | | | | | | | | |
| Toxaphene | 0.000750 | ug/l | 0.00 | | 0.0 | ug/l | 0.00 | lbs/day |
| **Dioxin** | | | | | | | | |
| Dioxin (2,3,7,8-TCDD) | 1.30E-08 | ug/l | 0.00 | lbs/day | 1.40E-08 | | 0.00 | |
| **Metals** | | | | | | | | |
| Antimony | 14.0 | ug/l | 0.23 | lbs/day | | | | |
| Arsenic | 50.0 | ug/l | 0.83 | lbs/day | 4300.00 | ug/l | 71.71 | lbs/day |
| Asbestos | 7.00E+06 | ug/l | 1.17E+05 | lbs/day | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Chromium (III) | | | | | | | | |
| Chromium (VI) | | | | | | | | |
| Copper | | | | | | | | |
| Cyanide | 1.30E+03 | ug/l | 21.68 | lbs/day | 2.2E+05 | ug/l | 3668.98 | lbs/day |
| Lead | 700.0 | ug/l | 11.67 | lbs/day | | | | |
| Mercury | | | | | 0.15 | ug/l | 0.00 | lbs/day |
| Nickel | | | | | 4600.00 | ug/l | 76.72 | lbs/day |
| Selenium | 0.1 | ug/l | 0.00 | lbs/day | | | | |
| Silver | 610.0 | ug/l | 10.17 | lbs/day | | | | |
| Thallium | | | | | 6.30 | ug/l | 0.11 | lbs/day |
| Zinc | | | | | | | | |

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

## VII. Mathematical Modeling of Stream Quality

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

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

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

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

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

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

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

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

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

## VIII. Modeling Information

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

| | Stream Critical Low Flow cfs | Temp. Deg. C | pH | T-NH3 mg/l as N | BOD5 mg/l | DO mg/l | TRC mg/l | TDS mg/l |
|---|---|---|---|---|---|---|---|---|
| Summer (Irrig. Season) | 0.0 | 11.8 | 8.4 | 0.00 | 0.10 | 10.15 | 0.00 | 368.1 |
| Fall | 0.0 | 4.5 | 8.4 | 0.00 | 0.10 | --- | 0.00 | 498.4 |
| Winter | 0.0 | 4.5 | 8.4 | 0.00 | 0.10 | --- | 0.00 | 498.4 |
| Spring | 0.0 | 12.8 | 8.5 | 0.00 | 0.10 | --- | 0.00 | 498.4 |

| Dissolved Metals | Al ug/l | As ug/l | Cd ug/l | CrIII ug/l | CrVI ug/l | Copper ug/l | Fe ug/l | Pb ug/l |
|---|---|---|---|---|---|---|---|---|
| All Seasons | 1.59* | 0.53* | 0.053* | 0.53* | 2.65* | 0.53* | 0.83* | 0.53* |

| Dissolved Metals | Hg ug/l | Ni ug/l | Se ug/l | Ag ug/l | Zn ug/l | Boron ug/l |
|---|---|---|---|---|---|---|
| All Seasons | 0.0000 | 0.53* | 1.06* | 0.1* | 0.053* | 10.0 |

* 1/2 MDL

**Projected Discharge Information**

| Season | Flow, MGD | Temp. | TDS mg/l | TDS tons/day |
|---|---|---|---|---|
| Summer | 2.00000 | 17.2 | 1170.00 | 9.75585 |
| Fall | 2.00000 | 14.5 | | |
| Winter | 2.00000 | 13.1 | | |
| Spring | 2.00000 | 15.4 | | |

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

## IX. Effluent Limitations

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

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

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

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

| Season | Daily Average | |
|---|---|---|
| Summer | 2.000 MGD | 3.094 cfs |
| Fall | 2.000 MGD | 3.094 cfs |
| Winter | 2.000 MGD | 3.094 cfs |
| Spring | 2.000 MGD | 3.094 cfs |

**Flow Requirement or Loading Requirement**

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

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

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

| | | | | |
|---|---|---|---|---|
| WET Requirements | LC50 > | EOP | Effluent | [Acute] |
| | IC25 > | 100.0% | Effluent | [Chronic] |

**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 | 416.9 | lbs/day |
| Fall | 25.0 | mg/l as BOD5 | 416.9 | lbs/day |
| Winter | 25.0 | mg/l as BOD5 | 416.9 | lbs/day |
| Spring | 25.0 | mg/l as BOD5 | 416.9 | 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 | 1.6 | mg/l as N | 26.7 | lbs/day |
| | 1 Hour Avg. - Acute | 6.1 | mg/l as N | 101.1 | lbs/day |
| Fall | 4 Day Avg. - Chronic | 2.9 | mg/l as N | 47.6 | lbs/day |
| | 1 Hour Avg. - Acute | 9.4 | mg/l as N | 157.3 | lbs/day |
| Winter | 4 Day Avg. - Chronic | 2.1 | mg/l as N | 34.6 | lbs/day |
| | 1 Hour Avg. - Acute | 7.4 | mg/l as N | 124.0 | lbs/day |
| Spring | 4 Day Avg. - Chronic | 2.9 | mg/l as N | 0.0 | lbs/day |
| | 1 Hour Avg. - Acute | 9.4 | mg/l as N | 0.0 | lbs/day |

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

**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 | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Fall | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Winter | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Spring | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.00 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.00 | lbs/day |

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

| Season | | Concentration | | Load | |
|---|---|---|---|---|---|
| Summer | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Fall | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Winter | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Spring | 4 Day Avg. - Chronic | 3000.1 | mg/l | 25.02 | tons/day |

Colorado Salinity Forum Limits — Determined by Permitting Section

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 300 mg/l):

| | 4 Day Average | | | | 1 Hour Average | | | |
|---|---|---|---|---|---|---|---|---|
| | Concentration | | Load | | Concentration | | Load | |
| Aluminum | N/A | | N/A | | 750.0 | ug/l | 1.2 | lbs/day |
| Arsenic | 190.01 | ug/l | 2.0 | lbs/day | 340.0 | ug/l | 0.5 | lbs/day |
| Cadmium | 0.61 | ug/l | 0.0 | lbs/day | 6.5 | ug/l | 0.0 | lbs/day |
| Chromium III | 211.93 | ug/l | 2.3 | lbs/day | 4,433.9 | ug/l | 7.2 | lbs/day |
| Chromium VI | 11.00 | ug/l | 0.1 | lbs/day | 16.0 | ug/l | 0.0 | lbs/day |
| Copper | 23.85 | ug/l | 0.3 | lbs/day | 39.4 | ug/l | 0.1 | lbs/day |
| Iron | N/A | | N/A | | 1,000.0 | ug/l | 1.6 | lbs/day |
| Lead | 12.88 | ug/l | 0.1 | lbs/day | 330.6 | ug/l | 0.5 | lbs/day |
| Mercury | 0.01 | ug/l | 0.0 | lbs/day | 2.4 | ug/l | 0.0 | lbs/day |
| Nickel | 132.14 | ug/l | 1.4 | lbs/day | 1,188.5 | ug/l | 1.9 | lbs/day |
| Selenium | 4.60 | ug/l | 0.0 | lbs/day | 20.0 | ug/l | 0.0 | lbs/day |
| Silver | N/A | ug/l | N/A | lbs/day | 25.0 | ug/l | 0.0 | lbs/day |
| Zinc | 303.95 | ug/l | 3.3 | lbs/day | 303.9 | ug/l | 0.5 | lbs/day |
| Cyanide | 5.20 | ug/l | 0.1 | lbs/day | 22.0 | ug/l | 0.0 | lbs/day |

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

| | | | | |
|---|---|---|---|---|
| Summer | 13.8 | Deg. C. | 56.8 | Deg. F |
| Fall | 6.5 | Deg. C. | 43.7 | Deg. F |
| Winter | 6.5 | Deg. C. | 43.7 | Deg. F |
| Spring | 14.8 | Deg. C. | 58.6 | Deg. F |

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

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

| | 4 Day Average | | | | 1 Hour Average | | | |
|---|---|---|---|---|---|---|---|---|
| | Concentration | | Load | | Concentration | | Load | |
| Aldrin | | | | | 1.5E+00 | ug/l | 3.75E-03 | lbs/day |
| Chlordane | 4.30E-03 | ug/l | 7.17E-02 | lbs/day | 1.2E+00 | ug/l | 3.00E-03 | lbs/day |
| DDT, DDE | 1.00E-03 | ug/l | 1.67E-02 | lbs/day | 5.5E-01 | ug/l | 1.38E-03 | lbs/day |
| Dieldrin | 1.90E-03 | ug/l | 3.17E-02 | lbs/day | 1.3E+00 | ug/l | 3.13E-03 | lbs/day |
| Endosulfan | 5.60E-02 | ug/l | 9.34E-01 | lbs/day | 1.1E-01 | ug/l | 2.75E-04 | lbs/day |
| Endrin | 2.30E-03 | ug/l | 3.84E-02 | lbs/day | 9.0E-02 | ug/l | 2.25E-04 | lbs/day |
| Guthion | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 1.0E-02 | ug/l | 2.50E-05 | lbs/day |
| Heptachlor | 3.80E-03 | ug/l | 6.34E-02 | lbs/day | 2.6E-01 | ug/l | 6.50E-04 | lbs/day |
| Lindane | 8.00E-02 | ug/l | 1.33E+00 | lbs/day | 1.0E+00 | ug/l | 2.50E-03 | lbs/day |
| Methoxychlor | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 3.0E-02 | ug/l | 7.50E-05 | lbs/day |
| Mirex | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 1.0E-02 | ug/l | 2.50E-05 | lbs/day |
| Parathion | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 4.0E-02 | ug/l | 1.00E-04 | lbs/day |
| PCB's | 1.40E-02 | ug/l | 2.33E-01 | lbs/day | 2.0E+00 | ug/l | 5.00E-03 | lbs/day |
| Pentachlorophenol | 1.30E+01 | ug/l | 2.17E+02 | lbs/day | 2.0E+01 | ug/l | 5.00E-02 | lbs/day |
| Toxephene | 2.00E-04 | ug/l | 3.34E-03 | lbs/day | 7.3E-01 | ug/l | 1.83E-03 | lbs/day |

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

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

| | **1 Hour Average** | | | |
|---|---|---|---|---|
| | Concentration | | Loading | |
| Gross Beta (pCi/l) | 50.0 | pCi/L | | |
| BOD (mg/l) | 5.0 | mg/l | 8.1 | lbs/day |
| Nitrates as N | 4.0 | mg/l | 6.5 | lbs/day |
| Total Phosphorus as P | 0.05 | mg/l | 0.1 | lbs/day |
| Total Suspended Solids | 90.0 | mg/l | 145.5 | lbs/day |

Note: Pollution indicator targets are for information purposes only.

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

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

| | **Maximum Concentration** | | | |
|---|---|---|---|---|
| | **Concentration** | | **Load** | |
| **Toxic Organics** | | | | |
| Acenaphthene | 1.20E+03 | ug/l | 2.00E+01 | lbs/day |
| Acrolein | 3.20E+02 | ug/l | 5.34E+00 | lbs/day |
| Acrylonitrile | 5.90E-02 | ug/l | 9.84E-04 | lbs/day |
| Benzene | 1.20E+00 | ug/l | 2.00E-02 | lbs/day |
| Benzidine | | ug/l | | lbs/day |
| Carbon tetrachloride | 2.50E-01 | ug/l | 4.17E-03 | lbs/day |
| Chlorobenzene | 6.80E+02 | ug/l | 1.13E+01 | lbs/day |
| 1,2,4-Trichlorobenzene | | | | |
| Hexachlorobenzene | 7.50E-04 | ug/l | 1.25E-05 | lbs/day |
| 1,2-Dichloroethane | 3.80E-01 | ug/l | 6.34E-03 | lbs/day |
| 1,1,1-Trichloroethane | | | | |
| Hexachloroethane | 1.90E+00 | ug/l | 3.17E-02 | lbs/day |
| 1,1-Dichloroethane | | | | |
| 1,1,2-Trichloroethane | 6.10E-01 | ug/l | 1.02E-02 | lbs/day |
| 1,1,2,2-Tetrachloroethane | 1.70E-01 | ug/l | 2.84E-03 | lbs/day |
| Chloroethane | | | | |
| Bis(2-chloroethyl) ether | 3.10E-02 | ug/l | 5.17E-04 | lbs/day |
| 2-Chloroethyl vinyl ether | | | | |
| 2-Chloronaphthalene | 1.70E+03 | ug/l | 2.84E+01 | lbs/day |
| 2,4,6-Trichlorophenol | 2.10E+00 | ug/l | 3.50E-02 | lbs/day |
| p-Chloro-m-cresol | | | | |
| Chloroform (HM) | 5.70E+00 | ug/l | 9.51E-02 | lbs/day |
| 2-Chlorophenol | 1.20E+02 | ug/l | 2.00E+00 | lbs/day |
| 1,2-Dichlorobenzene | 2.70E+03 | ug/l | 4.50E+01 | lbs/day |
| 1,3-Dichlorobenzene | 4.00E+02 | ug/l | 6.67E+00 | lbs/day |
| 1,4-Dichlorobenzene | 4.00E+02 | ug/l | 6.67E+00 | lbs/day |
| 3,3'-Dichlorobenzidine | 4.00E-02 | ug/l | 6.67E-04 | lbs/day |
| 1,1-Dichloroethylene | 5.70E-02 | ug/l | 9.51E-04 | lbs/day |
| 1,2-trans-Dichloroethylene1 | | | | |
| 2,4-Dichlorophenol | 9.30E+01 | ug/l | 1.55E+00 | lbs/day |
| 1,2-Dichloropropane | 5.20E-01 | ug/l | 8.67E-03 | lbs/day |
| 1,3-Dichloropropylene | 1.00E+01 | ug/l | 1.67E-01 | lbs/day |
| 2,4-Dimethylphenol | 5.40E+02 | ug/l | 9.01E+00 | lbs/day |
| 2,4-Dinitrotoluene | 1.10E-01 | ug/l | 1.83E-03 | lbs/day |
| 2,6-Dinitrotoluene | | | | |

| | | | | |
|---|---|---|---|---|
| 1,2-Diphenylhydrazine | 4.00E-02 | ug/l | 6.67E-04 | lbs/day |
| Ethylbenzene | 3.10E+03 | ug/l | 5.17E+01 | lbs/day |
| Fluoranthene | 3.00E+02 | ug/l | 5.00E+00 | lbs/day |
| 4-Chlorophenyl phenyl ether | | | | |
| 4-Bromophenyl phenyl ether | | | | |
| Bis(2-chloroisopropyl) ether | 1.40E+03 | ug/l | 2.33E+01 | lbs/day |
| Bis(2-chloroethoxy) methane | | | | |
| Methylene chloride (HM) | 4.70E+00 | ug/l | 7.84E-02 | lbs/day |
| Methyl chloride (HM) | | | | |
| Methyl bromide (HM) | | | | |
| Bromoform (HM) | 4.30E+00 | ug/l | 7.17E-02 | lbs/day |
| Dichlorobromomethane(HM) | 2.70E-01 | ug/l | 4.50E-03 | lbs/day |
| Chlorodibromomethane (HM) | 4.10E-01 | ug/l | 6.84E-03 | lbs/day |
| Hexachlorocyclopentadiene | 2.40E+02 | ug/l | 4.00E+00 | lbs/day |
| Isophorone | 8.40E+00 | ug/l | 1.40E-01 | lbs/day |
| Naphthalene | | | | |
| Nitrobenzene | 1.70E+01 | ug/l | 2.84E-01 | lbs/day |
| 2-Nitrophenol | | | | |
| 4-Nitrophenol | | | | |
| 2,4-Dinitrophenol | 7.00E+01 | ug/l | 1.17E+00 | lbs/day |
| 4,6-Dinitro-o-cresol | 1.30E+01 | ug/l | 2.17E-01 | lbs/day |
| N-Nitrosodimethylamine | 6.90E-04 | ug/l | 1.15E-05 | lbs/day |
| N-Nitrosodiphenylamine | 5.00E+00 | ug/l | 8.34E-02 | lbs/day |
| N-Nitrosodi-n-propylamine | 5.00E-03 | ug/l | 8.34E-05 | lbs/day |
| Pentachlorophenol | 2.80E-01 | ug/l | 4.67E-03 | lbs/day |
| Phenol | 2.10E+04 | ug/l | 3.50E+02 | lbs/day |
| Bis(2-ethylhexyl)phthalate | 1.80E+00 | ug/l | 3.00E-02 | lbs/day |
| Butyl benzyl phthalate | 3.00E+03 | ug/l | 5.00E+01 | lbs/day |
| Di-n-butyl phthalate | 2.70E+03 | ug/l | 4.50E+01 | lbs/day |
| Di-n-octyl phthlate | | | | |
| Diethyl phthalate | 2.30E+04 | ug/l | 3.84E+02 | lbs/day |
| Dimethyl phthlate | 3.13E+05 | ug/l | 5.22E+03 | lbs/day |
| Benzo(a)anthracene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(a)pyrene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(b)fluoranthene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(k)fluoranthene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Chrysene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Acenaphthylene (PAH) | | | | |
| Anthracene (PAH) | | | | |
| Dibenzo(a,h)anthracene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Indeno(1,2,3-cd)pyrene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Pyrene (PAH) | 9.60E+02 | ug/l | 1.60E+01 | lbs/day |
| Tetrachloroethylene | 8.00E-01 | ug/l | 1.33E-02 | lbs/day |
| Toluene | 6.80E+03 | ug/l | 1.13E+02 | lbs/day |
| Trichloroethylene | 2.70E+00 | ug/l | 4.50E-02 | lbs/day |
| Vinyl chloride | 2.00E+00 | ug/l | 3.34E-02 | lbs/day |
| | | | | |
| **Pesticides** | | | | |
| Aldrin | 1.30E-04 | ug/l | 2.17E-06 | lbs/day |
| Dieldrin | 1.40E-04 | ug/l | 2.33E-06 | lbs/day |
| Chlordane | 5.70E-04 | ug/l | 9.51E-06 | lbs/day |
| 4,4'-DDT | 5.90E-04 | ug/l | 9.84E-06 | lbs/day |
| 4,4'-DDE | 5.90E-04 | ug/l | 9.84E-06 | lbs/day |
| 4,4'-DDD | 8.30E-04 | ug/l | 1.38E-05 | lbs/day |
| alpha-Endosulfan | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| beta-Endosulfan | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| Endosulfan sulfate | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| Endrin | 7.60E-01 | ug/l | 1.27E-02 | lbs/day |
| Endrin aldehyde | 7.60E-01 | ug/l | 1.27E-02 | lbs/day |
| Heptachlor | 2.10E-04 | ug/l | 3.50E-06 | lbs/day |
| Heptachlor epoxide | | | | |

| | | | | |
|---|---|---|---|---|
| **PCB's** | | | | |
| PCB 1242 (Arochlor 1242) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1254 (Arochlor 1254) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1221 (Arochlor 1221) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1232 (Arochlor 1232) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1248 (Arochlor 1248) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1260 (Arochlor 1260) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1016 (Arochlor 1016) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| **Pesticide** | | | | |
| Toxaphene | 7.30E-04 | ug/l | 1.22E-05 | lbs/day |
| **Metals** | | | | |
| Antimony | 14.00 | ug/l | 0.23 | lbs/day |
| Arsenic | 50.00 | ug/l | 0.83 | lbs/day |
| Asbestos | 7.00E+06 | ug/l | 1.17E+05 | lbs/day |
| Beryllium | | | | |
| Cadmium | | | | |
| Chromium (III) | | | | |
| Chromium (VI) | | | | |
| Copper | 1300.04 | ug/l | 21.68 | lbs/day |
| Cyanide | 700.02 | ug/l | 11.67 | lbs/day |
| Lead | 0.00 | | 0.00 | |
| Mercury | 0.14 | ug/l | 0.00 | lbs/day |
| Nickel | 610.02 | ug/l | 10.17 | lbs/day |
| Selenium | 0.00 | | 0.00 | |
| Silver | 0.00 | | 0.00 | |
| Thallium | 1.70 | ug/l | 0.03 | lbs/day |
| Zinc | | | | |
| **Dioxin** | | | | |
| Dioxin (2,3,7,8-TCDD) | 1.30E-08 | ug/l | 2.17E-10 | lbs/day |

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

| | Class 4 Acute Agricultural ug/l | Class 3 Acute Aquatic Wildlife ug/l | Acute Toxics Drinking Water Source ug/l | Acute Toxics Wildlife ug/l | 1C Acute Health Criteria ug/l | Acute Most Stringent ug/l | Class 3 Chronic Aquatic Wildlife ug/l |
|---|---|---|---|---|---|---|---|
| Aluminum | | 750.0 | | | | 750.0 | N/A |
| Antimony | | | 14.0 | 4300.1 | | 14.0 | |
| Arsenic | 100.0 | 340.0 | 50.0 | | 0.0 | 50.0 | 190.0 |
| Barium | | | | | 1000.0 | 1000.0 | |
| Beryllium | | | | | | 0.0 | |
| Cadmium | 10.0 | 6.5 | | | 0.0 | 6.5 | 0.6 |
| Chromium (III) | | 4433.9 | | | 0.0 | 4433.9 | 211.9 |
| Chromium (VI) | 100.0 | 16.0 | | | 0.0 | 16.00 | 11.00 |
| Copper | 200.0 | 39.4 | 1300.0 | | | 39.4 | 23.9 |
| Cyanide | | 22.0 | 220007.1 | | | 22.0 | 5.2 |
| Iron | | 1000.0 | | | | 1000.0 | |
| Lead | 100.0 | 330.6 | | | 0.0 | 100.0 | 12.9 |
| Mercury | | 2.40 | 0.1 | 0.15 | 0.0 | 0.14 | 0.012 |
| Nickel | | 1188.5 | 610.0 | 4600.1 | | 610.0 | 132.1 |
| Selenium | 50.0 | 20.0 | | | 0.0 | 20.0 | 4.6 |
| Silver | | 25.0 | | | 0.0 | 25.0 | |
| Thallium | | | 1.7 | 6.3 | | 1.7 | |
| Zinc | | 303.9 | | | | 303.9 | 303.9 |
| Boron | 750.0 | | | | | 750.0 | |

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

| | WLA Acute ug/l | WLA Chronic ug/l | |
|---|---|---|---|
| Aluminum | 750.0 | N/A | |
| Antimony | 14.00 | | |
| Arsenic | 50.0 | 190.0 | Acute Controls |
| Asbestos | 7.00E+06 | | |
| Barium | | | |
| Beryllium | | | |
| Cadmium | 6.5 | 0.6 | |
| Chromium (III) | 4433.9 | 212 | |
| Chromium (VI) | 16.0 | 11.0 | |
| Copper | 39.4 | 23.9 | |
| Cyanide | 22.0 | 5.2 | |
| Iron | 1000.0 | | |
| Lead | 100.0 | 12.9 | |
| Mercury | 0.140 | 0.012 | |
| Nickel | 610.0 | 132 | |
| Selenium | 20.0 | 4.6 | |
| Silver | 25.0 | N/A | |
| Thallium | 1.7 | | |
| Zinc | 303.9 | 303.9 | |
| Boron | 750.02 | | |

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 was not required.

## XI. Colorado River Salinity Forum Considerations

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

## XII. Summary Comments

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

## XIII. Notice of UPDES Requirement

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

Utah Division of Water Quality
801-538-6052
File Name: DugoutCreek_WLA_4-10-2020.xls

**APPENDIX - Coefficients and Other Model Information**

| CBOD Coeff. (Kd)20 1/day | CBOD Coeff. FORCED (Kd)/day | CBOD Coeff. (Ka)T 1/day | REAER. Coeff. (Ka)20 (Ka)/day | REAER. Coeff. FORCED 1/day | REAER. Coeff. (Ka)T 1/day | NBOD Coeff. (Kn)20 1/day | NBOD Coeff. (Kn)T 1/day |
|---|---|---|---|---|---|---|---|
| 2.000 | 0.000 | 0.799 | 6445.200 | 0.000 | 4011.980 | 0.250 | 0.054 |

| Open Coeff. (K4)20 1/day | Open Coeff. (K4)T 1/day | NH3 LOSS (K5)20 1/day | NH3 (K5)T 1/day | NO2+NO3 LOSS (K6)20 1/day | NO2+NO3 (K6)T 1/day | TRC Decay K(Cl)20 1/day | TRC K(Cl)(T) 1/day |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.000 | 4.000 | 1.597 | 0.000 | 0.000 | 32.000 | 9.985 |

| BENTHIC DEMAND (SOD)20 gm/m2/day | BENTHIC DEMAND (SOD)T gm/m2/day |
|---|---|
| 1.000 | 0.284 |

| K1 CBOD {theta} | K2 Reaer. {theta} | K3 NH3 {theta} | K4 Open {theta} | K5 NH3 Loss {theta} | K6 NO2+3 {theta} | K(Cl) TRC {theta} | S Benthic {theta} |
|---|---|---|---|---|---|---|---|
| 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 |

## Antidegredation 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 any degredation is de minimis in nature and therefore does not require a Level II review.**

DWQ-2020-010957

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

**Date:** **April 30, 2020**

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

**Facility:** **Canyon Fuel Company, LLC - Dugout Canyon Mine**
**UPDES No. UT0025593**

**Receiving water:** **Dugout Creek (2B, 3C, 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.

Main Discharge

Outfall 001: Mine Water Discharge.
Design flow is 2 mgd.

Receiving Water
The receiving water for the main discharge is Dugout Creek.

Per UAC R317-2-13.2(b), Grassy Trail Creek and tributaries from Price River confluence to Grassy Trail Creek Reservoir (UT14060007-012_00) is 2B, 3C and 4.

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

- *Class 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain*

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

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records for Dugout Creek, the average flow measurement was calculated for all the data set on an annual basis. The source of flow data was DOGM. The site names mentioned in Table 1 were used to calculate critical low flow for the period (2000-2019).

**Table 1: Annual critical low flow (cfs)**

| Site Name | Flow Annual (cfs) |
|---|---|
| (G-13) R FK DUGOUT CK AB M (#6) and (G-12) L FK DUGOUT CK AB M (#7) | 0.10 |

TMDL

According to Utah's 2016 303(d) there have been no updates to the 2004 TMDL.

Mixing Zone

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

Based on the results of the mixing zone modeling, plume width was 100% of the creek at 2500 feet. 100% of the seasonal critical flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

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

WET Limits

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

**Table 2: WET Limits for $IC_{25}$ (Outfall 001)**

| Outfall | Percent Effluent |
|---|---|
| 001 | 100% |

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 Appendix A.

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).

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

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

Documents:

WLA Document: *Dugout_WLADoc_04-10-20.docx*
Wasteload Analysis: *Dugout Creek_ WLA_4_10_2020.xlsm*

References:

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

Lewis, B., J. Saunders, and M. Murphy. 2002. *Ammonia Toxicity Model (AMMTOX, Version2): A Tool for Determining Effluent Ammonia Limits*. University of Colorado, Center for Limnology.

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# ATTACHMENT 2

*Reasonable Potential Analysis*

The Initial Screening and RP Outcomes Table is included as this attachment for the parameters of concern (POCs), which are either believed to be present in the mine water discharges, or included because of an existing TMDL. All other metals parameters (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc) are believed to be absent in the mine water discharges but metals monitoring has not been included as part of previous permits requirements.

Initial Screening and RP Outcomes Table
2017-2019 Summary Results of Reasonable Potential Analysis for Dugout Mine (UT0025593)

| Existing Parameters of Concern | No. of Samples | MEC* mg/L | Water Quality Standards MAC** | | | Outcome/Result |
|---|---|---|---|---|---|---|
| | | | WLA mg/L | Acute mg/L | Chronic mg/L | |
| TSS | 75 | 30 | NA | 70 | 25/35 | **MEC > MAC*****|
| TDS | 75 | 1116 | 3000 | NA | NA | MEC < MAC*** |
| Total Iron | 75 | 0.47 | 1.0 | 1.0 | NA | MEC < MAC*** |
| pH | 75 | 8.25 S.U. | 9.0 (max S.U.) | NA | NA | MEC < MAC*** |

NA = not applicable, no specific WQS.

*MEC – Maximum expected effluent concentration as determined from existing data set.

**MAC – Maximum allowable concentration from Water Quality Standards and/or Wasteload Analysis.

***MEC less than MAC. No additional Acute or Chronic limits required.

Based upon the policy "Reasonable Potential Analysis Guidance" developed by the Utah Division of Water Quality on September 10, 2015 and subsequently implemented beginning January 1, 2016 for all new and renewal permits; it was determined not to include any new effluent limits in the 2020 renewal permit. This is because all the data points reviewed were well below the applicable Water Quality Standards, excepting for TSS which already has specific effluent limitations as appropriate. Therefore, no RP currently exists at the mine for the remaining POCs and a more quantitative RP analysis was not necessary at this time. Monitoring for all the remaining metals will be included however, as detailed in the permit for the mine water discharging Outfalls. This will be re-evaluated during the next permit cycle as appropriate.

The results of the RP analysis was Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit. In addition, monitoring requirements will be added in the permit for metals parameters for subsequent RP analyses as described previously.

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

**Date:** **April 30, 2020**

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

**Facility:** **Canyon Fuel Company, LLC - Dugout Canyon Mine**
**UPDES No. UT0025593**

**Receiving water:** **Dugout Creek (2B, 3C, 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.

Main Discharge

Outfall 001: Mine Water Discharge.
Design flow is 2 mgd.

Receiving Water
The receiving water for the main discharge is Dugout Creek.

Per UAC R317-2-13.2(b), Grassy Trail Creek and tributaries from Price River confluence to Grassy Trail Creek Reservoir (UT14060007-012_00) is 2B, 3C and 4.

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

- *Class 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain*

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

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records for Dugout Creek, the average flow measurement was calculated for all the data set on an annual basis. The source of flow data was DOGM. The site names mentioned in Table 1 were used to calculate critical low flow for the period (2000-2019).

**Table 1: Annual critical low flow (cfs)**

| Site Name | Flow Annual (cfs) |
|---|---|
| (G-13) R FK DUGOUT CK AB M (#6) and (G-12) L FK DUGOUT CK AB M (#7) | 0.10 |

TMDL

According to Utah's 2016 303(d) there have been no updates to the 2004 TMDL.

Mixing Zone

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

Based on the results of the mixing zone modeling, plume width was 100% of the creek at 2500 feet. 100% of the seasonal critical flow was used to calculate chronic limits. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

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

WET Limits

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

**Table 2: WET Limits for $IC_{25}$ (Outfall 001)**

| Outfall | Percent Effluent |
|---|---|
| 001 | 100% |

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 Appendix A.

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).

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

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

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

Documents:

WLA Document: *Dugout_WLADoc_04-10-20.docx*
Wasteload Analysis: *Dugout Creek_ WLA_4_10_2020.xlsm*

References:

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

Lewis, B., J. Saunders, and M. Murphy. 2002. *Ammonia Toxicity Model (AMMTOX, Version2): A Tool for Determining Effluent Ammonia Limits*. University of Colorado, Center for Limnology.

DWQ-2020-010955

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

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

| |
|---|
| **10-Apr-20** |
| **4:00 PM** |

**Facilities:** **Canyon Fuel Dugout Mine / Dugout Creek** **UPDES No: UT-UT0025593**
**Discharging to:** **Dugout Creek**

## I. Introduction

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

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

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

## II. Receiving Water and Stream Classification

| | |
|---|---|
| Dugout Creek: | 2B, 3C, 4 |
| Antidegradation Review: | Level I review completed. Level II review not required. |

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

| | | | |
|---|---|---|---|
| Total Ammonia (TNH3) | Varies as a function of Temperature and pH Rebound. See Water Quality Standards | | |
| Chronic Total Residual Chlorine (TRC) | 0.011 | mg/l (4 Day Average) | |
| | 0.019 | mg/l (1 Hour Average) | |
| Chronic Dissolved Oxygen (DO) | 5.00 | mg/l (30 Day Average) | |
| | N/A | mg/l (7Day Average) | |
| | 3.00 | mg/l (1 Day Average | |
| Maximum Total Dissolved Solids | 3000.0 | mg/l | Background |

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

| Parameter | 4 Day Average (Chronic) Standard Concentration | | Load* | | 1 Hour Average (Acute) Standard Concentration | | Load* | |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 87.00 | ug/l** | 0.141 | lbs/day | 750.00 | ug/l | 1.213 | lbs/day |
| Arsenic | 190.00 | ug/l | 0.307 | lbs/day | 340.00 | ug/l | 0.550 | lbs/day |
| Cadmium | 0.61 | ug/l | 0.001 | lbs/day | 6.52 | ug/l | 0.011 | lbs/day |
| Chromium III | 211.92 | ug/l | 0.343 | lbs/day | 4433.76 | ug/l | 7.169 | lbs/day |
| ChromiumVI | 11.00 | ug/l | 0.018 | lbs/day | 16.00 | ug/l | 0.026 | lbs/day |
| Copper | 23.85 | ug/l | 0.039 | lbs/day | 39.41 | ug/l | 0.064 | lbs/day |
| Iron | | | | | 1000.00 | ug/l | 1.617 | lbs/day |
| Lead | 12.88 | ug/l | 0.021 | lbs/day | 330.61 | ug/l | 0.535 | lbs/day |
| Mercury | 0.0120 | ug/l | 0.000 | lbs/day | 2.40 | ug/l | 0.004 | lbs/day |
| Nickel | 132.13 | ug/l | 0.214 | lbs/day | 1188.45 | ug/l | 1.922 | lbs/day |
| Selenium | 4.60 | ug/l | 0.007 | lbs/day | 20.00 | ug/l | 0.032 | lbs/day |
| Silver | N/A | ug/l | N/A | lbs/day | 25.04 | ug/l | 0.040 | lbs/day |
| Zinc | 303.94 | ug/l | 0.491 | lbs/day | 303.94 | ug/l | 0.491 | 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 300 mg/l as CaCO3

**Organics [Pesticides]**

| Parameter | 4 Day Average (Chronic) Standard Concentration | | Load* | | 1 Hour Average (Acute) Standard Concentration | | Load* | |
|---|---|---|---|---|---|---|---|---|
| Aldrin | | | | | 1.500 | ug/l | 0.002 | lbs/day |
| Chlordane | 0.004 | ug/l | 0.072 | lbs/day | 1.200 | ug/l | 0.002 | lbs/day |
| DDT, DDE | 0.001 | ug/l | 0.017 | lbs/day | 0.550 | ug/l | 0.001 | lbs/day |
| Dieldrin | 0.002 | ug/l | 0.032 | lbs/day | 1.250 | ug/l | 0.002 | lbs/day |
| Endosulfan | 0.056 | ug/l | 0.934 | lbs/day | 0.110 | ug/l | 0.000 | lbs/day |
| Endrin | 0.002 | ug/l | 0.038 | lbs/day | 0.090 | ug/l | 0.000 | lbs/day |
| Guthion | | | | | 0.010 | ug/l | 0.000 | lbs/day |
| Heptachlor | 0.004 | ug/l | 0.063 | lbs/day | 0.260 | ug/l | 0.000 | lbs/day |
| Lindane | 0.080 | ug/l | 1.334 | lbs/day | 1.000 | ug/l | 0.002 | 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 | 0.233 | lbs/day | 2.000 | ug/l | 0.003 | lbs/day |
| Pentachlorophenol | 13.00 | ug/l | 216.804 | lbs/day | 20.000 | ug/l | 0.032 | lbs/day |
| Toxephene | 0.0002 | ug/l | 0.003 | lbs/day | 0.7300 | ug/l | 0.001 | lbs/day |

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

| | 4 Day Average (Chronic) Standard | | 1 Hour Average (Acute) Standard | |
|---|---|---|---|---|
| | **Concentration** | **Load*** | **Concentration** | **Load*** |
| Arsenic | | | 100.0 ug/l | lbs/day |
| Boron | | | 750.0 ug/l | 0.61 lbs/day |
| Cadmium | | | 10.0 ug/l | 0.01 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 | | | 3000.0 mg/l | 2.43 tons/day |

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

| | 4 Day Average (Chronic) Standard | | 1 Hour Average (Acute) Standard | |
|---|---|---|---|---|
| **Metals** | **Concentration** | **Load*** | **Concentration** | **Load*** |
| Arsenic | | | 50.0 ug/l | 0.834 lbs/day |
| Barium | | | 1000.0 ug/l | 16.677 lbs/day |
| Cadmium | | | 10.0 ug/l | 0.167 lbs/day |
| Chromium | | | 50.0 ug/l | 0.834 lbs/day |
| Lead | | | 50.0 ug/l | 0.834 lbs/day |
| Mercury | | | 2.0 ug/l | 0.033 lbs/day |
| Selenium | | | 10.0 ug/l | 0.167 lbs/day |
| Silver | | | 50.0 ug/l | 0.834 lbs/day |
| Fluoride (3) | | | 1.4 ug/l | 0.023 lbs/day |
| to | | | 2.4 ug/l | 0.040 lbs/day |
| Nitrates as N | | | 10.0 ug/l | 0.167 lbs/day |
| **Chlorophenoxy Herbicides** | | | | |
| 2,4-D | | | 100.0 ug/l | 1.668 lbs/day |
| 2,4,5-TP | | | 10.0 ug/l | 0.167 lbs/day |
| Endrin | | | 0.2 ug/l | 0.003 lbs/day |
| ocyclohexane (Lindane) | | | 4.0 ug/l | 0.067 lbs/day |
| Methoxychlor | | | 100.0 ug/l | 1.668 lbs/day |
| Toxaphene | | | 5.0 ug/l | 0.083 lbs/day |

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

| | Maximum Conc., ug/l - Acute Standards | | | |
|---|---|---|---|---|
| | **Class 1C** | | **Class 3A, 3B** | |
| **Toxic Organics** | [2 Liters/Day for 70 Kg Person over 70 Yr.] | | [6.5 g for 70 Kg Person over 70 Yr.] | |
| Acenaphthene | 1200.00 ug/l | 20.01 lbs/day | 2700.0 ug/l | 45.03 lbs/day |
| Acrolein | 320.00 ug/l | 5.34 lbs/day | 780.0 ug/l | 13.01 lbs/day |
| Acrylonitrile | 0.06 ug/l | 0.00 lbs/day | 0.7 ug/l | 0.01 lbs/day |
| Benzene | 1.20 ug/l | 0.02 lbs/day | 71.0 ug/l | 1.18 lbs/day |
| Benzidine | 0.00012 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| Carbon tetrachloride | 0.25 ug/l | 0.00 lbs/day | 4.4 ug/l | 0.07 lbs/day |
| Chlorobenzene | 680.00 ug/l | 11.34 lbs/day | 21000.0 ug/l | 350.22 lbs/day |
| 1,2,4-Trichlorobenzene | | | | |
| Hexachlorobenzene | 0.00075 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| 1,2-Dichloroethane | 0.38 ug/l | 0.01 lbs/day | 99.0 ug/l | 1.65 lbs/day |
| 1,1,1-Trichloroethane | | | | |
| Hexachloroethane | 1.90 ug/l | 0.03 lbs/day | 8.9 ug/l | 0.15 lbs/day |
| 1,1-Dichloroethane | | | | |
| 1,1,2-Trichloroethane | 0.61 ug/l | 0.01 lbs/day | 42.0 ug/l | 0.70 lbs/day |
| 1,1,2,2-Tetrachloroetha | 0.17 ug/l | 0.00 lbs/day | 11.0 ug/l | 0.18 lbs/day |
| Chloroethane | | | 0.0 ug/l | 0.00 lbs/day |
| Bis(2-chloroethyl) ether | 0.03 ug/l | 0.00 lbs/day | 1.4 ug/l | 0.02 lbs/day |
| 2-Chloroethyl vinyl ethe | 0.00 ug/l | 0.00 lbs/day | 0.0 ug/l | 0.00 lbs/day |
| 2-Chloronaphthalene | 1700.00 ug/l | 28.35 lbs/day | 4300.0 ug/l | 71.71 lbs/day |
| 2,4,6-Trichlorophenol | 2.10 ug/l | 0.04 lbs/day | 6.5 ug/l | 0.11 lbs/day |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| p-Chloro-m-cresol | | | | | 0.0 | ug/l | 0.00 | lbs/day |
| Chloroform (HM) | 5.70 | ug/l | 0.10 | lbs/day | 470.0 | ug/l | 7.84 | lbs/day |
| 2-Chlorophenol | 120.00 | ug/l | 2.00 | lbs/day | 400.0 | ug/l | 6.67 | lbs/day |
| 1,2-Dichlorobenzene | 2700.00 | ug/l | 45.03 | lbs/day | 17000.0 | ug/l | 283.51 | lbs/day |
| 1,3-Dichlorobenzene | 400.00 | ug/l | 6.67 | lbs/day | 2600.0 | ug/l | 43.36 | lbs/day |
| 1,4-Dichlorobenzene | 400.00 | ug/l | 6.67 | lbs/day | 2600.0 | ug/l | 43.36 | lbs/day |
| 3,3'-Dichlorobenzidine | 0.04 | ug/l | 0.00 | lbs/day | 0.1 | ug/l | 0.00 | lbs/day |
| 1,1-Dichloroethylene | 0.06 | ug/l | 0.00 | lbs/day | 3.2 | ug/l | 0.05 | lbs/day |
| 1,2-trans-Dichloroethyle | 700.00 | ug/l | 11.67 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 2,4-Dichlorophenol | 93.00 | ug/l | 1.55 | lbs/day | 790.0 | ug/l | 13.17 | lbs/day |
| 1,2-Dichloropropane | 0.52 | ug/l | 0.01 | lbs/day | 39.0 | ug/l | 0.65 | lbs/day |
| 1,3-Dichloropropylene | 10.00 | ug/l | 0.17 | lbs/day | 1700.0 | ug/l | 28.35 | lbs/day |
| 2,4-Dimethylphenol | 540.00 | ug/l | 9.01 | lbs/day | 2300.0 | ug/l | 38.36 | lbs/day |
| 2,4-Dinitrotoluene | 0.11 | ug/l | 0.00 | lbs/day | 9.1 | ug/l | 0.15 | lbs/day |
| 2,6-Dinitrotoluene | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 1,2-Diphenylhydrazine | 0.04 | ug/l | 0.00 | lbs/day | 0.5 | ug/l | 0.01 | lbs/day |
| Ethylbenzene | 3100.00 | ug/l | 51.70 | lbs/day | 29000.0 | ug/l | 483.64 | lbs/day |
| Fluoranthene | 300.00 | ug/l | 5.00 | lbs/day | 370.0 | ug/l | 6.17 | lbs/day |
| 4-Chlorophenyl phenyl ether | | | | | | | | |
| 4-Bromophenyl phenyl ether | | | | | | | | |
| Bis(2-chloroisopropyl) e | 1400.00 | ug/l | 23.35 | lbs/day | 170000.0 | ug/l | 2835.12 | lbs/day |
| Bis(2-chloroethoxy) met | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Methylene chloride (HM | 4.70 | ug/l | 0.08 | lbs/day | 1600.0 | ug/l | 26.68 | lbs/day |
| Methyl chloride (HM) | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Methyl bromide (HM) | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Bromoform (HM) | 4.30 | ug/l | 0.07 | lbs/day | 360.0 | ug/l | 6.00 | lbs/day |
| Dichlorobromomethane( | 0.27 | ug/l | 0.00 | lbs/day | 22.0 | ug/l | 0.37 | lbs/day |
| Chlorodibromomethane | 0.41 | ug/l | 0.01 | lbs/day | 34.0 | ug/l | 0.57 | lbs/day |
| Hexachlorobutadiene(c) | 0.44 | ug/l | 0.01 | lbs/day | 50.0 | ug/l | 0.83 | lbs/day |
| Hexachlorocyclopentadi | 240.00 | ug/l | 4.00 | lbs/day | 17000.0 | ug/l | 283.51 | lbs/day |
| Isophorone | 8.40 | ug/l | 0.14 | lbs/day | 600.0 | ug/l | 10.01 | lbs/day |
| Naphthalene | | | | | | | | |
| Nitrobenzene | 17.00 | ug/l | 0.28 | lbs/day | 1900.0 | ug/l | 31.69 | lbs/day |
| 2-Nitrophenol | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4-Nitrophenol | 0.00 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 2,4-Dinitrophenol | 70.00 | ug/l | 1.17 | lbs/day | 14000.0 | ug/l | 233.48 | lbs/day |
| 4,6-Dinitro-o-cresol | 13.00 | ug/l | 0.22 | lbs/day | 765.0 | ug/l | 12.76 | lbs/day |
| N-Nitrosodimethylamine | 0.00069 | ug/l | 0.00 | lbs/day | 8.1 | ug/l | 0.14 | lbs/day |
| N-Nitrosodiphenylamine | 5.00 | ug/l | 0.08 | lbs/day | 16.0 | ug/l | 0.27 | lbs/day |
| N-Nitrosodi-n-propylami | 0.01 | ug/l | 0.00 | lbs/day | 1.4 | ug/l | 0.02 | lbs/day |
| Pentachlorophenol | 0.28 | ug/l | 0.00 | lbs/day | 8.2 | ug/l | 0.14 | lbs/day |
| Phenol | 2.10E+04 | ug/l | 3.50E+02 | lbs/day | 4.6E+06 | ug/l | 7.67E+04 | lbs/day |
| Bis(2-ethylhexyl)phthala | 1.80 | ug/l | 0.03 | lbs/day | 5.9 | ug/l | 0.10 | lbs/day |
| Butyl benzyl phthalate | 3000.00 | ug/l | 50.03 | lbs/day | 5200.0 | ug/l | 86.72 | lbs/day |
| Di-n-butyl phthalate | 2700.00 | ug/l | 45.03 | lbs/day | 12000.0 | ug/l | 200.13 | lbs/day |
| Di-n-octyl phthlate | | | | | | | | |
| Diethyl phthalate | 23000.00 | ug/l | 383.58 | lbs/day | 120000.0 | ug/l | 2001.26 | lbs/day |
| Dimethyl phthlate | 3.13E+05 | ug/l | 5.22E+03 | lbs/day | 2.9E+06 | ug/l | 4.84E+04 | lbs/day |
| Benzo(a)anthracene (P/ | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(a)pyrene (PAH) | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(b)fluoranthene (F | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Benzo(k)fluoranthene (F | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Chrysene (PAH) | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Acenaphthylene (PAH) | | | | | | | | |
| Anthracene (PAH) | 9600.00 | ug/l | 160.10 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Dibenzo(a,h)anthracene | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Indeno(1,2,3-cd)pyrene | 0.0028 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Pyrene (PAH) | 960.00 | ug/l | 16.01 | lbs/day | 11000.0 | ug/l | 183.45 | lbs/day |
| Tetrachloroethylene | 0.80 | ug/l | 0.01 | lbs/day | 8.9 | ug/l | 0.15 | lbs/day |
| Toluene | 6800.00 | ug/l | 113.40 | lbs/day | 200000 | ug/l | 3335.44 | lbs/day |
| Trichloroethylene | 2.70 | ug/l | 0.05 | lbs/day | 81.0 | ug/l | 1.35 | lbs/day |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 2.00 | ug/l | 0.03 | lbs/day | 525.0 | ug/l | 8.76 | lbs/day |
| | | | | | 0.0 | | 0.00 | lbs/day |
| **Pesticides** | | | | | 0.0 | | 0.00 | lbs/day |
| Aldrin | 0.0001 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Dieldrin | 0.0001 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Chlordane | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDT | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDE | 0.0006 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| 4,4'-DDD | 0.0008 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| alpha-Endosulfan | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| beta-Endosulfan | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| Endosulfan sulfate | 0.9300 | ug/l | 0.02 | lbs/day | 2.0 | ug/l | 0.03 | lbs/day |
| Endrin | 0.7600 | ug/l | 0.01 | lbs/day | 0.8 | ug/l | 0.01 | lbs/day |
| Endrin aldehyde | 0.7600 | ug/l | 0.01 | lbs/day | 0.8 | ug/l | 0.01 | lbs/day |
| Heptachlor | 0.0002 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| Heptachlor epoxide | | | | | | | | |
| **PCB's** | | | | | | | | |
| PCB 1242 (Arochlor 124 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1254 (Arochlor 125 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1221 (Arochlor 122 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1232 (Arochlor 123 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1248 (Arochlor 124 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1260 (Arochlor 126 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| PCB-1016 (Arochlor 101 | 0.000044 | ug/l | 0.00 | lbs/day | 0.0 | ug/l | 0.00 | lbs/day |
| **Pesticide** | | | | | | | | |
| Toxaphene | 0.000750 | ug/l | 0.00 | | 0.0 | ug/l | 0.00 | lbs/day |
| **Dioxin** | | | | | | | | |
| Dioxin (2,3,7,8-TCDD) | 1.30E-08 | ug/l | 0.00 | lbs/day | 1.40E-08 | | 0.00 | |
| **Metals** | | | | | | | | |
| Antimony | 14.0 | ug/l | 0.23 | lbs/day | | | | |
| Arsenic | 50.0 | ug/l | 0.83 | lbs/day | 4300.00 | ug/l | 71.71 | lbs/day |
| Asbestos | 7.00E+06 | ug/l | 1.17E+05 | lbs/day | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Chromium (III) | | | | | | | | |
| Chromium (VI) | | | | | | | | |
| Copper | | | | | | | | |
| Cyanide | 1.30E+03 | ug/l | 21.68 | lbs/day | 2.2E+05 | ug/l | 3668.98 | lbs/day |
| Lead | 700.0 | ug/l | 11.67 | lbs/day | | | | |
| Mercury | | | | | 0.15 | ug/l | 0.00 | lbs/day |
| Nickel | | | | | 4600.00 | ug/l | 76.72 | lbs/day |
| Selenium | 0.1 | ug/l | 0.00 | lbs/day | | | | |
| Silver | 610.0 | ug/l | 10.17 | lbs/day | | | | |
| Thallium | | | | | 6.30 | ug/l | 0.11 | lbs/day |
| Zinc | | | | | | | | |

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

## VII. Mathematical Modeling of Stream Quality

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

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

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

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

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

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

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

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

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

## VIII. Modeling Information

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

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

**Other Conditions**

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

**Model Inputs**

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

**Current Upstream Information**

| | Stream Critical Low Flow cfs | Temp. Deg. C | pH | T-NH3 mg/l as N | BOD5 mg/l | DO mg/l | TRC mg/l | TDS mg/l |
|---|---|---|---|---|---|---|---|---|
| Summer (Irrig. Season) | 0.0 | 11.8 | 8.4 | 0.00 | 0.10 | 10.15 | 0.00 | 368.1 |
| Fall | 0.0 | 4.5 | 8.4 | 0.00 | 0.10 | --- | 0.00 | 498.4 |
| Winter | 0.0 | 4.5 | 8.4 | 0.00 | 0.10 | --- | 0.00 | 498.4 |
| Spring | 0.0 | 12.8 | 8.5 | 0.00 | 0.10 | --- | 0.00 | 498.4 |

| Dissolved Metals | Al ug/l | As ug/l | Cd ug/l | CrIII ug/l | CrVI ug/l | Copper ug/l | Fe ug/l | Pb ug/l |
|---|---|---|---|---|---|---|---|---|
| All Seasons | 1.59* | 0.53* | 0.053* | 0.53* | 2.65* | 0.53* | 0.83* | 0.53* |

| Dissolved Metals | Hg ug/l | Ni ug/l | Se ug/l | Ag ug/l | Zn ug/l | Boron ug/l |
|---|---|---|---|---|---|---|
| All Seasons | 0.0000 | 0.53* | 1.06* | 0.1* | 0.053* | 10.0 |

* 1/2 MDL

**Projected Discharge Information**

| Season | Flow, MGD | Temp. | TDS mg/l | TDS tons/day |
|---|---|---|---|---|
| Summer | 2.00000 | 17.2 | 1170.00 | 9.75585 |
| Fall | 2.00000 | 14.5 | | |
| Winter | 2.00000 | 13.1 | | |
| Spring | 2.00000 | 15.4 | | |

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

## IX. Effluent Limitations

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

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

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

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

| Season | Daily Average | |
|---|---|---|
| Summer | 2.000 MGD | 3.094 cfs |
| Fall | 2.000 MGD | 3.094 cfs |
| Winter | 2.000 MGD | 3.094 cfs |
| Spring | 2.000 MGD | 3.094 cfs |

**Flow Requirement or Loading Requirement**

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

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

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

| | | | | |
|---|---|---|---|---|
| WET Requirements | LC50 > | EOP | Effluent | [Acute] |
| | IC25 > | 100.0% | Effluent | [Chronic] |

**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 | 416.9 | lbs/day |
| Fall | 25.0 | mg/l as BOD5 | 416.9 | lbs/day |
| Winter | 25.0 | mg/l as BOD5 | 416.9 | lbs/day |
| Spring | 25.0 | mg/l as BOD5 | 416.9 | 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 | 1.6 | mg/l as N | 26.7 | lbs/day |
| | 1 Hour Avg. - Acute | 6.1 | mg/l as N | 101.1 | lbs/day |
| Fall | 4 Day Avg. - Chronic | 2.9 | mg/l as N | 47.6 | lbs/day |
| | 1 Hour Avg. - Acute | 9.4 | mg/l as N | 157.3 | lbs/day |
| Winter | 4 Day Avg. - Chronic | 2.1 | mg/l as N | 34.6 | lbs/day |
| | 1 Hour Avg. - Acute | 7.4 | mg/l as N | 124.0 | lbs/day |
| Spring | 4 Day Avg. - Chronic | 2.9 | mg/l as N | 0.0 | lbs/day |
| | 1 Hour Avg. - Acute | 9.4 | mg/l as N | 0.0 | lbs/day |

Acute limit calculated with an Acute Zone of Initial Dilution (ZID) to be equal to 100.%.

**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 | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Fall | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Winter | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.18 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.32 | lbs/day |
| Spring | 4 Day Avg. - Chronic | 0.011 | mg/l | 0.00 | lbs/day |
| | 1 Hour Avg. - Acute | 0.019 | mg/l | 0.00 | lbs/day |

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

| Season | | Concentration | | Load | |
|---|---|---|---|---|---|
| Summer | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Fall | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Winter | Maximum, Acute | 3000.1 | mg/l | 25.02 | tons/day |
| Spring | 4 Day Avg. - Chronic | 3000.1 | mg/l | 25.02 | tons/day |

Colorado Salinity Forum Limits — Determined by Permitting Section

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

In-stream criteria of downstream segments for Dissolved Metals will be met with an effluent limitation as follows (based upon a hardness of 300 mg/l):

| | 4 Day Average | | | | 1 Hour Average | | | |
|---|---|---|---|---|---|---|---|---|
| | Concentration | | Load | | Concentration | | Load | |
| Aluminum | N/A | | N/A | | 750.0 | ug/l | 1.2 | lbs/day |
| Arsenic | 190.01 | ug/l | 2.0 | lbs/day | 340.0 | ug/l | 0.5 | lbs/day |
| Cadmium | 0.61 | ug/l | 0.0 | lbs/day | 6.5 | ug/l | 0.0 | lbs/day |
| Chromium III | 211.93 | ug/l | 2.3 | lbs/day | 4,433.9 | ug/l | 7.2 | lbs/day |
| Chromium VI | 11.00 | ug/l | 0.1 | lbs/day | 16.0 | ug/l | 0.0 | lbs/day |
| Copper | 23.85 | ug/l | 0.3 | lbs/day | 39.4 | ug/l | 0.1 | lbs/day |
| Iron | N/A | | N/A | | 1,000.0 | ug/l | 1.6 | lbs/day |
| Lead | 12.88 | ug/l | 0.1 | lbs/day | 330.6 | ug/l | 0.5 | lbs/day |
| Mercury | 0.01 | ug/l | 0.0 | lbs/day | 2.4 | ug/l | 0.0 | lbs/day |
| Nickel | 132.14 | ug/l | 1.4 | lbs/day | 1,188.5 | ug/l | 1.9 | lbs/day |
| Selenium | 4.60 | ug/l | 0.0 | lbs/day | 20.0 | ug/l | 0.0 | lbs/day |
| Silver | N/A | ug/l | N/A | lbs/day | 25.0 | ug/l | 0.0 | lbs/day |
| Zinc | 303.95 | ug/l | 3.3 | lbs/day | 303.9 | ug/l | 0.5 | lbs/day |
| Cyanide | 5.20 | ug/l | 0.1 | lbs/day | 22.0 | ug/l | 0.0 | lbs/day |

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

| | | | | |
|---|---|---|---|---|
| Summer | 13.8 | Deg. C. | 56.8 | Deg. F |
| Fall | 6.5 | Deg. C. | 43.7 | Deg. F |
| Winter | 6.5 | Deg. C. | 43.7 | Deg. F |
| Spring | 14.8 | Deg. C. | 58.6 | Deg. F |

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

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

| | 4 Day Average | | | | 1 Hour Average | | | |
|---|---|---|---|---|---|---|---|---|
| | Concentration | | Load | | Concentration | | Load | |
| Aldrin | | | | | 1.5E+00 | ug/l | 3.75E-03 | lbs/day |
| Chlordane | 4.30E-03 | ug/l | 7.17E-02 | lbs/day | 1.2E+00 | ug/l | 3.00E-03 | lbs/day |
| DDT, DDE | 1.00E-03 | ug/l | 1.67E-02 | lbs/day | 5.5E-01 | ug/l | 1.38E-03 | lbs/day |
| Dieldrin | 1.90E-03 | ug/l | 3.17E-02 | lbs/day | 1.3E+00 | ug/l | 3.13E-03 | lbs/day |
| Endosulfan | 5.60E-02 | ug/l | 9.34E-01 | lbs/day | 1.1E-01 | ug/l | 2.75E-04 | lbs/day |
| Endrin | 2.30E-03 | ug/l | 3.84E-02 | lbs/day | 9.0E-02 | ug/l | 2.25E-04 | lbs/day |
| Guthion | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 1.0E-02 | ug/l | 2.50E-05 | lbs/day |
| Heptachlor | 3.80E-03 | ug/l | 6.34E-02 | lbs/day | 2.6E-01 | ug/l | 6.50E-04 | lbs/day |
| Lindane | 8.00E-02 | ug/l | 1.33E+00 | lbs/day | 1.0E+00 | ug/l | 2.50E-03 | lbs/day |
| Methoxychlor | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 3.0E-02 | ug/l | 7.50E-05 | lbs/day |
| Mirex | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 1.0E-02 | ug/l | 2.50E-05 | lbs/day |
| Parathion | 0.00E+00 | ug/l | 0.00E+00 | lbs/day | 4.0E-02 | ug/l | 1.00E-04 | lbs/day |
| PCB's | 1.40E-02 | ug/l | 2.33E-01 | lbs/day | 2.0E+00 | ug/l | 5.00E-03 | lbs/day |
| Pentachlorophenol | 1.30E+01 | ug/l | 2.17E+02 | lbs/day | 2.0E+01 | ug/l | 5.00E-02 | lbs/day |
| Toxephene | 2.00E-04 | ug/l | 3.34E-03 | lbs/day | 7.3E-01 | ug/l | 1.83E-03 | lbs/day |

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

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

| | **1 Hour Average** | | | |
|---|---|---|---|---|
| | Concentration | | Loading | |
| Gross Beta (pCi/l) | 50.0 | pCi/L | | |
| BOD (mg/l) | 5.0 | mg/l | 8.1 | lbs/day |
| Nitrates as N | 4.0 | mg/l | 6.5 | lbs/day |
| Total Phosphorus as P | 0.05 | mg/l | 0.1 | lbs/day |
| Total Suspended Solids | 90.0 | mg/l | 145.5 | lbs/day |

Note: Pollution indicator targets are for information purposes only.

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

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

| | **Maximum Concentration** | | | |
|---|---|---|---|---|
| | **Concentration** | | **Load** | |
| **Toxic Organics** | | | | |
| Acenaphthene | 1.20E+03 | ug/l | 2.00E+01 | lbs/day |
| Acrolein | 3.20E+02 | ug/l | 5.34E+00 | lbs/day |
| Acrylonitrile | 5.90E-02 | ug/l | 9.84E-04 | lbs/day |
| Benzene | 1.20E+00 | ug/l | 2.00E-02 | lbs/day |
| Benzidine | | ug/l | | lbs/day |
| Carbon tetrachloride | 2.50E-01 | ug/l | 4.17E-03 | lbs/day |
| Chlorobenzene | 6.80E+02 | ug/l | 1.13E+01 | lbs/day |
| 1,2,4-Trichlorobenzene | | | | |
| Hexachlorobenzene | 7.50E-04 | ug/l | 1.25E-05 | lbs/day |
| 1,2-Dichloroethane | 3.80E-01 | ug/l | 6.34E-03 | lbs/day |
| 1,1,1-Trichloroethane | | | | |
| Hexachloroethane | 1.90E+00 | ug/l | 3.17E-02 | lbs/day |
| 1,1-Dichloroethane | | | | |
| 1,1,2-Trichloroethane | 6.10E-01 | ug/l | 1.02E-02 | lbs/day |
| 1,1,2,2-Tetrachloroethane | 1.70E-01 | ug/l | 2.84E-03 | lbs/day |
| Chloroethane | | | | |
| Bis(2-chloroethyl) ether | 3.10E-02 | ug/l | 5.17E-04 | lbs/day |
| 2-Chloroethyl vinyl ether | | | | |
| 2-Chloronaphthalene | 1.70E+03 | ug/l | 2.84E+01 | lbs/day |
| 2,4,6-Trichlorophenol | 2.10E+00 | ug/l | 3.50E-02 | lbs/day |
| p-Chloro-m-cresol | | | | |
| Chloroform (HM) | 5.70E+00 | ug/l | 9.51E-02 | lbs/day |
| 2-Chlorophenol | 1.20E+02 | ug/l | 2.00E+00 | lbs/day |
| 1,2-Dichlorobenzene | 2.70E+03 | ug/l | 4.50E+01 | lbs/day |
| 1,3-Dichlorobenzene | 4.00E+02 | ug/l | 6.67E+00 | lbs/day |
| 1,4-Dichlorobenzene | 4.00E+02 | ug/l | 6.67E+00 | lbs/day |
| 3,3'-Dichlorobenzidine | 4.00E-02 | ug/l | 6.67E-04 | lbs/day |
| 1,1-Dichloroethylene | 5.70E-02 | ug/l | 9.51E-04 | lbs/day |
| 1,2-trans-Dichloroethylene1 | | | | |
| 2,4-Dichlorophenol | 9.30E+01 | ug/l | 1.55E+00 | lbs/day |
| 1,2-Dichloropropane | 5.20E-01 | ug/l | 8.67E-03 | lbs/day |
| 1,3-Dichloropropylene | 1.00E+01 | ug/l | 1.67E-01 | lbs/day |
| 2,4-Dimethylphenol | 5.40E+02 | ug/l | 9.01E+00 | lbs/day |
| 2,4-Dinitrotoluene | 1.10E-01 | ug/l | 1.83E-03 | lbs/day |
| 2,6-Dinitrotoluene | | | | |

| | | | | |
|---|---|---|---|---|
| 1,2-Diphenylhydrazine | 4.00E-02 | ug/l | 6.67E-04 | lbs/day |
| Ethylbenzene | 3.10E+03 | ug/l | 5.17E+01 | lbs/day |
| Fluoranthene | 3.00E+02 | ug/l | 5.00E+00 | lbs/day |
| 4-Chlorophenyl phenyl ether | | | | |
| 4-Bromophenyl phenyl ether | | | | |
| Bis(2-chloroisopropyl) ether | 1.40E+03 | ug/l | 2.33E+01 | lbs/day |
| Bis(2-chloroethoxy) methane | | | | |
| Methylene chloride (HM) | 4.70E+00 | ug/l | 7.84E-02 | lbs/day |
| Methyl chloride (HM) | | | | |
| Methyl bromide (HM) | | | | |
| Bromoform (HM) | 4.30E+00 | ug/l | 7.17E-02 | lbs/day |
| Dichlorobromomethane(HM) | 2.70E-01 | ug/l | 4.50E-03 | lbs/day |
| Chlorodibromomethane (HM) | 4.10E-01 | ug/l | 6.84E-03 | lbs/day |
| Hexachlorocyclopentadiene | 2.40E+02 | ug/l | 4.00E+00 | lbs/day |
| Isophorone | 8.40E+00 | ug/l | 1.40E-01 | lbs/day |
| Naphthalene | | | | |
| Nitrobenzene | 1.70E+01 | ug/l | 2.84E-01 | lbs/day |
| 2-Nitrophenol | | | | |
| 4-Nitrophenol | | | | |
| 2,4-Dinitrophenol | 7.00E+01 | ug/l | 1.17E+00 | lbs/day |
| 4,6-Dinitro-o-cresol | 1.30E+01 | ug/l | 2.17E-01 | lbs/day |
| N-Nitrosodimethylamine | 6.90E-04 | ug/l | 1.15E-05 | lbs/day |
| N-Nitrosodiphenylamine | 5.00E+00 | ug/l | 8.34E-02 | lbs/day |
| N-Nitrosodi-n-propylamine | 5.00E-03 | ug/l | 8.34E-05 | lbs/day |
| Pentachlorophenol | 2.80E-01 | ug/l | 4.67E-03 | lbs/day |
| Phenol | 2.10E+04 | ug/l | 3.50E+02 | lbs/day |
| Bis(2-ethylhexyl)phthalate | 1.80E+00 | ug/l | 3.00E-02 | lbs/day |
| Butyl benzyl phthalate | 3.00E+03 | ug/l | 5.00E+01 | lbs/day |
| Di-n-butyl phthalate | 2.70E+03 | ug/l | 4.50E+01 | lbs/day |
| Di-n-octyl phthlate | | | | |
| Diethyl phthalate | 2.30E+04 | ug/l | 3.84E+02 | lbs/day |
| Dimethyl phthlate | 3.13E+05 | ug/l | 5.22E+03 | lbs/day |
| Benzo(a)anthracene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(a)pyrene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(b)fluoranthene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Benzo(k)fluoranthene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Chrysene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Acenaphthylene (PAH) | | | | |
| Anthracene (PAH) | | | | |
| Dibenzo(a,h)anthracene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Indeno(1,2,3-cd)pyrene (PAH) | 2.80E-03 | ug/l | 4.67E-05 | lbs/day |
| Pyrene (PAH) | 9.60E+02 | ug/l | 1.60E+01 | lbs/day |
| Tetrachloroethylene | 8.00E-01 | ug/l | 1.33E-02 | lbs/day |
| Toluene | 6.80E+03 | ug/l | 1.13E+02 | lbs/day |
| Trichloroethylene | 2.70E+00 | ug/l | 4.50E-02 | lbs/day |
| Vinyl chloride | 2.00E+00 | ug/l | 3.34E-02 | lbs/day |
| | | | | |
| **Pesticides** | | | | |
| Aldrin | 1.30E-04 | ug/l | 2.17E-06 | lbs/day |
| Dieldrin | 1.40E-04 | ug/l | 2.33E-06 | lbs/day |
| Chlordane | 5.70E-04 | ug/l | 9.51E-06 | lbs/day |
| 4,4'-DDT | 5.90E-04 | ug/l | 9.84E-06 | lbs/day |
| 4,4'-DDE | 5.90E-04 | ug/l | 9.84E-06 | lbs/day |
| 4,4'-DDD | 8.30E-04 | ug/l | 1.38E-05 | lbs/day |
| alpha-Endosulfan | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| beta-Endosulfan | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| Endosulfan sulfate | 9.30E-01 | ug/l | 1.55E-02 | lbs/day |
| Endrin | 7.60E-01 | ug/l | 1.27E-02 | lbs/day |
| Endrin aldehyde | 7.60E-01 | ug/l | 1.27E-02 | lbs/day |
| Heptachlor | 2.10E-04 | ug/l | 3.50E-06 | lbs/day |
| Heptachlor epoxide | | | | |

| | | | | |
|---|---|---|---|---|
| **PCB's** | | | | |
| PCB 1242 (Arochlor 1242) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1254 (Arochlor 1254) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1221 (Arochlor 1221) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1232 (Arochlor 1232) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1248 (Arochlor 1248) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1260 (Arochlor 1260) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| PCB-1016 (Arochlor 1016) | 4.40E-05 | ug/l | 7.34E-07 | lbs/day |
| **Pesticide** | | | | |
| Toxaphene | 7.30E-04 | ug/l | 1.22E-05 | lbs/day |
| **Metals** | | | | |
| Antimony | 14.00 | ug/l | 0.23 | lbs/day |
| Arsenic | 50.00 | ug/l | 0.83 | lbs/day |
| Asbestos | 7.00E+06 | ug/l | 1.17E+05 | lbs/day |
| Beryllium | | | | |
| Cadmium | | | | |
| Chromium (III) | | | | |
| Chromium (VI) | | | | |
| Copper | 1300.04 | ug/l | 21.68 | lbs/day |
| Cyanide | 700.02 | ug/l | 11.67 | lbs/day |
| Lead | 0.00 | | 0.00 | |
| Mercury | 0.14 | ug/l | 0.00 | lbs/day |
| Nickel | 610.02 | ug/l | 10.17 | lbs/day |
| Selenium | 0.00 | | 0.00 | |
| Silver | 0.00 | | 0.00 | |
| Thallium | 1.70 | ug/l | 0.03 | lbs/day |
| Zinc | | | | |
| **Dioxin** | | | | |
| Dioxin (2,3,7,8-TCDD) | 1.30E-08 | ug/l | 2.17E-10 | lbs/day |

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

| | Class 4 Acute Agricultural ug/l | Class 3 Acute Aquatic Wildlife ug/l | Acute Toxics Drinking Water Source ug/l | Acute Toxics Wildlife ug/l | 1C Acute Health Criteria ug/l | Acute Most Stringent ug/l | Class 3 Chronic Aquatic Wildlife ug/l |
|---|---|---|---|---|---|---|---|
| Aluminum | | 750.0 | | | | 750.0 | N/A |
| Antimony | | | 14.0 | 4300.1 | | 14.0 | |
| Arsenic | 100.0 | 340.0 | 50.0 | | 0.0 | 50.0 | 190.0 |
| Barium | | | | | 1000.0 | 1000.0 | |
| Beryllium | | | | | | 0.0 | |
| Cadmium | 10.0 | 6.5 | | | 0.0 | 6.5 | 0.6 |
| Chromium (III) | | 4433.9 | | | 0.0 | 4433.9 | 211.9 |
| Chromium (VI) | 100.0 | 16.0 | | | 0.0 | 16.00 | 11.00 |
| Copper | 200.0 | 39.4 | 1300.0 | | | 39.4 | 23.9 |
| Cyanide | | 22.0 | 220007.1 | | | 22.0 | 5.2 |
| Iron | | 1000.0 | | | | 1000.0 | |
| Lead | 100.0 | 330.6 | | | 0.0 | 100.0 | 12.9 |
| Mercury | | 2.40 | 0.1 | 0.15 | 0.0 | 0.14 | 0.012 |
| Nickel | | 1188.5 | 610.0 | 4600.1 | | 610.0 | 132.1 |
| Selenium | 50.0 | 20.0 | | | 0.0 | 20.0 | 4.6 |
| Silver | | 25.0 | | | 0.0 | 25.0 | |
| Thallium | | | 1.7 | 6.3 | | 1.7 | |
| Zinc | | 303.9 | | | | 303.9 | 303.9 |
| Boron | 750.0 | | | | | 750.0 | |

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

| | WLA Acute ug/l | WLA Chronic ug/l | |
|---|---|---|---|
| Aluminum | 750.0 | N/A | |
| Antimony | 14.00 | | |
| Arsenic | 50.0 | 190.0 | Acute Controls |
| Asbestos | 7.00E+06 | | |
| Barium | | | |
| Beryllium | | | |
| Cadmium | 6.5 | 0.6 | |
| Chromium (III) | 4433.9 | 212 | |
| Chromium (VI) | 16.0 | 11.0 | |
| Copper | 39.4 | 23.9 | |
| Cyanide | 22.0 | 5.2 | |
| Iron | 1000.0 | | |
| Lead | 100.0 | 12.9 | |
| Mercury | 0.140 | 0.012 | |
| Nickel | 610.0 | 132 | |
| Selenium | 20.0 | 4.6 | |
| Silver | 25.0 | N/A | |
| Thallium | 1.7 | | |
| Zinc | 303.9 | 303.9 | |
| Boron | 750.02 | | |

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 was not required.

## XI. Colorado River Salinity Forum Considerations

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

## XII. Summary Comments

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

## XIII. Notice of UPDES Requirement

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

Utah Division of Water Quality
801-538-6052
File Name: DugoutCreek_WLA_4-10-2020.xls

**APPENDIX - Coefficients and Other Model Information**

| CBOD Coeff. (Kd)20 1/day | CBOD Coeff. FORCED (Kd)/day | CBOD Coeff. (Ka)T 1/day | REAER. Coeff. (Ka)20 (Ka)/day | REAER. Coeff. FORCED 1/day | REAER. Coeff. (Ka)T 1/day | NBOD Coeff. (Kn)20 1/day | NBOD Coeff. (Kn)T 1/day |
|---|---|---|---|---|---|---|---|
| 2.000 | 0.000 | 0.799 | 6445.200 | 0.000 | 4011.980 | 0.250 | 0.054 |

| Open Coeff. (K4)20 1/day | Open Coeff. (K4)T 1/day | NH3 LOSS (K5)20 1/day | NH3 (K5)T 1/day | NO2+NO3 LOSS (K6)20 1/day | NO2+NO3 (K6)T 1/day | TRC Decay K(Cl)20 1/day | TRC K(Cl)(T) 1/day |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.000 | 4.000 | 1.597 | 0.000 | 0.000 | 32.000 | 9.985 |

| BENTHIC DEMAND (SOD)20 gm/m2/day | BENTHIC DEMAND (SOD)T gm/m2/day |
|---|---|
| 1.000 | 0.284 |

| K1 CBOD {theta} | K2 Reaer. {theta} | K3 NH3 {theta} | K4 Open {theta} | K5 NH3 Loss {theta} | K6 NO2+3 {theta} | K(Cl) TRC {theta} | S Benthic {theta} |
|---|---|---|---|---|---|---|---|
| 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 |

## Antidegredation 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 any degredation is de minimis in nature and therefore does not require a Level II review.**

DWQ-2020-010957

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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMIT

Minor Industrial Permit No. **UT0025593**

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

**CANYON FUEL COMPANY, LLC – DUGOUT CANYON MINE**

is hereby authorized to discharge from its facility to receiving waters named **Dugout Creek, Pace Creek, and an unnamed tributary of Grassy Trail Creek** (all tributaries to the Colorado River System),

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

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

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

Signed this 20th day of July, 2020.

Erica Brown Gaddis, PhD
Director

DWQ-2020-011054

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## I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

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

| Outfall Number(s) | Location of Discharge Outfall(s) |
|---|---|
| 001 | Mine water discharge to Dugout Creek. Latitude 39° 41' 01", Longitude 110° 32' 44". |
| 002 | Sedimentation pond discharge to Dugout Creek. Latitude 39° 40' 56", Longitude 110° 32' 52". |
| 003 | Storage water discharge to Dugout Creek. Latitude 39° 41' 18", Longitude 110° 32' 29". |
| 004 | Sedimentation pond (waste rock site) discharge to an unknown tributary of Grassy Trail Creek. Latitude 39° 36' 40", Longitude 110° 36' 43". |
| 005 | Pace Canyon fan portal breakout, mine water discharge to Pace Creek. Latitude 39° 40' 17.772", Longitude 110° 30' 29.051". |
| 006 | Sediment trap culvert discharge to Pace Creek. Latitude 39° 40' 14.3553", Longitude 110° 30' 32.3161". |
| 007 | Sedimentation pond (waste rock site) discharge to an unknown tributary of Grassy Trail Creek. Latitude 39° 36' 42", Longitude 110° 36' 39". |

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 the duration of this permit, the permittee is authorized to discharge from Outfalls 001, 002, 003, 004, 005, 006, and 007 as described above. Such discharges shall be limited and monitored by the permittee as specified below:

| Parameter, Units | Effluent Limitations *a | | | |
|---|---|---|---|---|
| | Maximum Monthly Average | Maximum Weekly Average | Daily Minimum | Daily Maximum |
| Total Effluent Flow, MGD, *b | 2.0 | -- | -- | Report |
| Total Iron, mg/L | -- | -- | -- | 1.1 |
| Total Suspended Solids (TSS), mg/L | 25 | 35 | -- | 70 |
| Total Dissolved Solids (TDS), mg/L, *c | Report | -- | -- | 2,400 |
| TDS, tons/day, *c | -- | -- | -- | 1.0 *c |
| pH, Standard Units(SU) | -- | -- | 6.5 | 9.0 |
| Oil & Grease, mg/L, *d | -- | -- | -- | 10 |

mg/L – milligrams per liter; MGD – million gallons per day

| Self-Monitoring and Reporting Requirements *a | | | |
|---|---|---|---|
| Parameter | Frequency | Sample Type | Units |
| Total Flow, *b | Twice Monthly | Measured | MGD |
| Total Iron | Twice Monthly | Grab | mg/L |
| TSS | Twice Monthly | Grab | mg/L |
| TDS, *c | Twice Monthly | Grab | mg/L & tons/day |
| pH | Twice Monthly | Grab | SU |
| Oil & Grease, *d | Twice Monthly | Visual, Grab | Yes/No, mg/L |
| Total Metals, *e | Quarterly | Grab | mg/L |

There shall be no visible sheen or floating solids or visible foam in other than trace amounts upon any discharges and there shall be no discharge of any sanitary wastes at any time.

*a See Definitions, *Part V.A*, for definition of terms.

*b The maximum monthly average of 2.0 MGD applies to mine water discharging Outfalls 001 & 005 only. The remaining outfalls shall report the maximum monthly average upon discharging. Flows from all outfalls shall be from either a continuous recorder, or measured at least twice per month upon discharging. If the rate of discharge is controlled, such as from intermittent discharging outfalls, the rate and duration of discharge shall be reported.

*c The TDS concentration from each of the outfalls shall not exceed 2400 mg/L

as a daily maximum limit. No tons per day TDS loading limit will be applied if the concentration of TDS in the discharge is equal to or less than 500 mg/L as a thirty-day average. However, if the 30-day average concentration exceeds 500 mg/L, then the permittee cannot discharge more than 1.0 ton per day as a sum from all discharge points. If the permittee is not able to meet the 500 mg/L 30-day average, or the 1.0 ton per day loading limit, then the permittee is required to continue to participate in and/or fund a salinity offset project to include the TDS offset credits as appropriate.

The salinity-offset project shall include an approved plan with TDS credits on a ton-for-ton basis for which the permittee is over the 1.0 ton per day loading limit. The permittee has an approved salinity offset plan already in place, which includes tracking the TDS credits for each monthly monitoring period during the life of this permit. Any changes to the salinity offset plan must be approved by the Director and upon approval shall be appended to this permit.

*d Oil and grease monitoring shall initially be a visual test. If any oil and/or grease sheens are observed visually, or there is any other reason to believe that oil and/or grease may be present in the discharge, then a grab sample of the effluent must be immediately taken and this sample shall not exceed 10 mg/L.

*e Quarterly total metals monitoring is required from mine water discharges at Outfalls 001 & 005 and includes arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, silver, selenium and zinc.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: at all outfalls prior to mixing with the receiving water.

3. Any overflow, increase in volume of a discharge or discharge from a bypass system caused by precipitation within a 24-hour period less than or equal to the 10-year, 24-hour precipitation event (or snow-melt of equivalent volume) at outfalls 002, 004, 006, and 007 may comply with the following limitation instead of the otherwise applicable limitations (for TSS) contained in Part I.D.1:

| Effluent Characteristic | Daily Maximum |
|---|---|
| Settleable Solids | 0.5 mL/L |

In addition to the monitoring requirements specified under Part I.D.1., all effluent samples collected during storm water discharge events may also be analyzed for settleable solids. Such analyses shall be conducted by grab samples.

4. The operator shall have the burden of proof that the discharge or increase in discharge was caused by the applicable precipitation event described in Part I.D.3. The alternate limitations in Parts I.D.3 shall not apply to treatment systems that treat underground mine water only.

D. Reporting of Monitoring Results. Monitoring results obtained during the previous month shall be summarized for each month and reported on a Discharge Monitoring Report Form

(EPA No. 3320-1)* or by NetDMR, post-marked or entered into NetDMR no later than the 28th day of the month following the completed reporting period. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part V.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

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

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

## II. 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.

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. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

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

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

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

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part III.G, Bypass of Treatment Facilities.)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part III.H, Upset Conditions*.); or,

   d. Violation of a daily discharge limitation for any of the pollutants listed in the permit; or.

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 II.H.3*

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

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

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

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

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, any ground or surface waters at the permitted sites; and,

5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance so that 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.

## III. 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 III.G, Bypass of Treatment Facilities* and *Part III.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.

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.

G. Bypass of Treatment Facilities.

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

2. Prohibition of Bypass.

a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;

(2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and

(3) The permittee submitted notices as required under *section III.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 III.G.2.a (1), (2) and (3)*.

3. Notice.

a. *Anticipated bypass*. Except as provided above in *section III.G.2* and below in *section III.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 III.G.3.a.(1) through (6)* to the extent practicable.

c. *Unanticipated bypass*. The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part III.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 II.H, Twenty-four Hour Notice of Noncompliance Reporting*; and,

   d. The permittee complied with any remedial measures required under *Part III.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.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of *The Water Quality Act of 1987* for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

J. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/L);

   b. Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(7)* or (10); or,

   d. The level established by the Director in accordance with *UAC R317-8-4.2(6)*.

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 ug/L);

b. One milligram per liter (1 mg/L) for antimony:

c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with *UAC R317-8-3.4(9)*; or,

d. The level established by the Director in accordance with *UAC R317-8-4.2(6).*

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

## IV. GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position

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

3. Changes to authorization. If an authorization under *paragraph IV.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 IV.G.2.* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. Revisions to the current CWA § 208 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. 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;

4. Toxicity is detected, as per *Part I.C.*of this permit, during the duration of this permit.

5. 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.

6. 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.

7. 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.

## V. DEFINITIONS

A. Wastewater.

1. The "7-day (and weekly) average" is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. 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" is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. 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. "Bypass," means the diversion of waste streams from any portion of a treatment facility.

5. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

   a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

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

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

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

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

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

8. "Daily Minimum" ("Daily Min.") is the minimum value allowable in any single sample or instantaneous measurement.

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

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

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

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

13. "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.

14. "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.