COLORADO
Department of Public Health & Environment

Colorado Discharge Permit System (CDPS)
Fact Sheet to Permit Number CO0048241
TOWN OF EAGLE, EAGLE WWTF, EAGLE COUNTY

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Public Notice Draft
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I. INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) permit was created by Congress as the implementation tool under the Clean Water Act for the restriction of the quantity, rate, and concentration of pollutants that the point sources may discharge into water. The division, as the delegated authority for development and issuance of NPDES permits for the state of Colorado, is obligated to develop and issue NPDES permits in a manner that meets federal statutory requirements (the Clean Water Act, 33 U.S.C. § 1251 et seq.), state statutory requirements (the Colorado Water Quality Control Act, 25-8-101 et seq.) and state and federal regulations.

Routine review is an integral aspect of the NPDES and the Colorado Discharge Permitting System (CDPS) program.
The Clean Water Act incorporates a finite term for NPDES permits in order to allow for routine review of permit terms and conditions; the Colorado Water Quality Control Act similarly recognizes that the periodic renewal of permits is required. Routine review of CDPS permits provides a mechanism for the division and the public to scrutinize the existing conditions of the permit; to upgrade the permit requirements to reflect changing knowledge, law, or advances in science and technology; to ensure that the permit limits are protective of the most recent water quality classifications, standards, and antidegradation designations established by the Water Quality Control Commission; and, if necessary, to protect against human error by the permit writer introduced into previous permits. Routine review often results in the incorporation of new or different permit limitations or approaches.

This fact sheet includes factors explaining the need for the proposed permit requirements, and presents evidence supporting the need for the proposed requirements, including information regarding pollutant potential and available controls, incidents of environmental damage, and permit violations. This fact sheet also includes some background information to provide context for the statutory and regulatory direction as to how permit terms and conditions are established.

II. TYPE OF PERMIT

A. Permit Type: Renewal

B. Discharge To: Surface Water

III. FACILITY INFORMATION

A. SIC Code: 4952 Sewerage Systems

B. Facility Location: 185 Violet Lane, Eagle, CO 81631,
Latitude: 39.64842° N, Longitude: 106.84416° W

C. Permitted Feature: Outfall 001A, following disinfection and prior to mixing with the receiving stream, 39.64842° N, 106.84416° W

UST1A is an in-stream ambient sampling location located upstream from the facility discharge and in the same water body segment to collect continuous ambient temperature data. The location for this permitted feature will be approximately at 39.648461° North latitude, 106.843839° longitude West, which is within 50 yards upstream from the outfall 001A.

The location(s) provided above will serve as the point(s) of compliance for this permit and are appropriate as they are located after all treatment and prior to discharge to the receiving water.

D. Facility Flows: 1.65 MGD

E. Major Changes From Last Renewal:

- Requirements for continuous ambient temperature monitoring have been added in order to collect adequate temperature data in accordance with the Division's policy, Procedures for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits (WQP-23). For ambient temperature data, the Division will require the facility to establish an in-stream monitoring station within a mile or two upstream (the most suitable and representative location) from the facility discharge to collect ambient temperature data to be used in the next renewal. The permittee may provide an alternate location for this outfall during the public notice period. The collected ambient temperature data will be reported under outfall UST1A in the permit.
- Numeric limitations for TRC, TIN, Nitrite, Total Recoverable Arsenic, Cyanide Total Recoverable Iron and Total Mercury have been added to the Permitted Feature/Limit Set 001A Table is Part I.A.2. of the Permit.
- The new E. coli limitations are less stringent than the E. coli limitations in the previous permit. The incorrect limitations in the previous permit were caused by a calculation error. This error has been corrected and is reflected in the new E. coli limitations.
- Report requirements for Temperature, Total Recoverable Cadmium, Potentially Dissolved Trivalent Chromium, Total Recoverable Lead, Total Recoverable Molybdenum, Total Recoverable Nickel, Total Recoverable Uranium, Dissolved Uranium, Chloride, Sulfate, Nonylphenol, Acrylamide and TPH have been added to the Permitted Feature/Limit Set 001A Table is Part I.A.2. of the Permit.
- A special study to conduct annual Purgeables by GC/MS and Base/Neutrals and Acids by GC/MS analyses has been added to Part I.A.4. of the Permit.
- Compliance schedules to meet final TRC, Total Ammonia, TIN, Nitrite, Cyanide, Total Recoverable Iron, Total Mercury and Total Recoverable Arsenic limitations have been added to Part I.B.6. of the Permit.
- An I/I study has been added to Part I.A.4 of the Permit.

IV. RECEIVING STREAM

A. Waterbody Identification: COUCEA09c, The Eagle River

B. Water Quality Assessment:

An assessment of the stream standards, low flow data, and ambient stream data has been performed to determine the assimilative capacities for the Eagle River for potential pollutants of concern. This information, which is contained in the Water Quality Assessment (WQA) for this receiving stream(s), also includes an antidegradation review, where appropriate. The Division's Permits Section has reviewed the assimilative capacities to determine the appropriate water quality-based effluent limitations as well as potential limits based on the antidegradation evaluation, where applicable. The limitations based on the assessment and other evaluations conducted as part of this fact sheet can be found in Part I.A of the permit.

Permitted Feature 001A will be the authorized discharge point to the receiving stream.

V. FACILITY DESCRIPTION

A. Collection System

The permittee operates a separate sewer system that conveys wastewater to the WWTF. Infiltration and inflow (I/I) into the collection system has been evaluated for this renewal.

Inflow is water, other than wastewater, that enters a sewer system from sources such as roof leaders, cellar drains, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross sections between storm drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters or other drainage. Inflow does not include, and is distinguished from, infiltration. (40 CFR 35.2005 Definitions)

Infiltration is water other than wastewater that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow. (40 CFR 35.2005 Definitions)

I/I is assessed by calculating the gallons per capita per day. Gallons per capita per day is calculated by using the daily average influent flows for the three maximum flow months during the past calendar year, reported in Part D of the facility's permit application. If the data on the application is outdated or not reported in the application, the three maximum 30-day average influent flows for the past calendar year may be used instead. The facility reports the total estimated flows for residential, industrial, commercial, and also the population of the service area in Part C of the permit application. The calculation to determine gallons per capita per day is:

$$gallons\ per\ capita\ per\ day = \frac{gal.per\ day}{population}\ X\ \%residential\ flows$$

$$\%\ residential\ flows = \frac{residential\ flows}{residential + commercial\ + industrial\ flows}\ X\ 100\%$$

For this facility the average of the daily average influent flows for the maximum three flow months is 607,066 gallons per day. Based on data submitted in the permit application, the facility's percent of residential flows is 95%. Based on the service area population of 6,500, the estimated influent flow is 85 gallons per capita per day.

The facility evaluation indicates I/I or potential I/I. An I/I study requirement that includes specific benchmarks to repair potential I/I in the collection system has been added to the permit. Influent flow data submitted by the facility show spikes in flows during the runoff season months, which may be indicative of groundwater infiltration in the collection system. This may be due to gaps or cracks in the collection system that may allow groundwater to enter or allow sewage to leak out and can contribute to contamination of groundwater by sewage. Therefore, conditions have been included in the permit for an I/I study and reduction.

B. Lift Stations

Table IV-1 summarizes the information provided in the renewal application for the lift stations in the service area.

Table IV-1 – Lift Station Summary

Station Name/#	Firm Pump Capacity (gpm)	Peak Flows (gpd)*	% Capacity (based on peak flow)
Lift Station 001	2 @ 1,000	600,000	21%

C. Chemical Usage

The permittee stated in the application that they utilize one chemical in their treatment process. The MSDS sheets have been reviewed and the following chemicals have been approved for use and are summarized in the following table.

Table IV-2 – Chemical Additives

Chemical Name	Purpose	Constituents of Concern
CLARIFLOC C-6262	***Dewatering solids***	*Acrylamide, WET, organics (hydrocarbons)*

Chemicals deemed acceptable for use in waters that will or may be discharged to waters of the State are acceptable only when used in accordance with all state and federal regulations, and in strict accordance with the manufacturer's site-specific instructions.

D. Treatment Facility, Facility Modifications and Capacities

The facility consists of screening, grit removal, conventional activated sludge, clarification and UV disinfection. The permittee has not performed any construction at this facility that would change the hydraulic capacity of 1.65 MGD or the organic capacity of 3450 lbs BOD_5/day, which were specified in Site Approval #4938. That document should be referred to for any additional information.

Pursuant to Section 100.5.2 of the Water and Wastewater Facility Operator Certification Requirements, this facility will require a certified operator. If the facility has a question on the level of the certified operator it needs then the facility will need to contact the Engineering Section of the Division.

E. Biosolids Treatment and Disposal

Biosolids are treated in an aerobic digester. Then, the Town of Eagle WWTF's biosolids are hauled to the Climax Reclamation area for beneficial use.

1. EPA Regulation

   The Facility is required under the Direct Enforceability provision of 40 CFR §503.3(b) to meet the applicable requirements of the regulation.

2. Biosolids Regulation (Regulation No. 64, Colorado Water Quality Control Commission)

   Colorado facilities that land apply biosolids must comply with requirements of Regulation No. 64, such as the submission of annual reports as discussed later in this fact sheet.

VI. PERFORMANCE HISTORY

A. Monitoring Data

1. Discharge Monitoring Reports – The following tables summarize the effluent data reported on the Discharge Monitoring Reports (DMRs) for the previous permit term, from February 2011 through April 2020.

Table V-1 – Summary of DMR Data for Permitted Feature 001A

Parameter	*# Samples or Reporting Periods*	*Reported Average Concentrations Avg/Min/Max*	*Reported Maximum Concentrations Avg/Min/Max*	*AD 2-Year Average Avg/Min/Max*	*Previous Avg/Max/AD Permit Limit*	*Number of Limit Excursions*
Influent Flow (MGD)	*111*	*25/0.42/2686*	*32/0.47/3513*		*Report/Report*	
Effluent Flow (MGD)	*111*	*0.5/0.4/0.68*	*0.64/0.48/5.5*		*NA/NA*	
*pH (su)**	*111*	*6.9/6.4/7.5*	*7.3/6.9/7.7*		*NA - 6.5-9*	*1*
*E. coli (#/100 ml)***	*111*	*52/1.7/542*	*111/3/980*	*NA/NA/NA*	*640/1280*	
Total Inorganic Nitrogen as N (mg/l)	*111*	*14/0.67/31*	*14/0.67/31*	*14/7.9/24*	*Report/NA/Report*	
NH3 as N, Tot (mg/l) Jan	*9*	*6.4/3.1/12*	*10/5/16*	*6.4/4.1/9.8*	*28.7/34.1/8*	*1*
NH3 as N, Tot (mg/l) Feb	*8*	*7/1.2/17*	*9.9/1.9/27*	*7.1/2.2/17*	*26.1/24.5/8*	*4*
NH3 as N, Tot (mg/l) Mar	*10*	*5/0.2/12*	*7.4/0.22/16*	*5.4/2.5/9.1*	*30.5/38/7*	*1*
NH3 as N, Tot (mg/l) Apr	*10*	*3.3/0.18/8.9*	*5.4/0.22/15*	*3.6/0.86/7.3*	*39.2/46.5/14*	
NH3 as N, Tot (mg/l) May	*9*	*4.1/0.13/11*	*6.9/0.38/18*	*4.8/0.81/8.8*	*78/70/20*	
NH3 as N, Tot (mg/l) Jun	*7*	*3.7/0.54/8.2*	*7.2/0.99/21*	*4.2/0.88/7.8*	*83/55/10*	
NH3 as N, Tot (mg/l) Jul	*7*	*2.1/0.41/6.2*	*3.7/0.53/9.7*	*2.2/0.44/5.3*	*50/46/11.8*	
NH3 as N, Tot (mg/l) Aug	*7*	*2.6/0.32/11*	*4.9/0.48/24*	*2.6/0.36/7.3*	*42/45/19.9*	
NH3 as N, Tot (mg/l) Sep	*9*	*2/0.24/6.2*	*3.1/0.35/11*	*1.8/0.32/4*	*44/43/18*	
NH3 as N, Tot (mg/l) Oct	*7*	*1.5/0.34/4.3*	*2.7/0.42/6*	*2.8/0.37/11*	*43/44/11.4*	
NH3 as N, Tot (mg/l) Nov	*9*	*3.9/0.4/17*	*7.2/0.53/28*	*4/0.52/12*	*30/31/10.5*	*1*
NH3 as N, Tot (mg/l) Dec	*7*	*3.9/0.68/11*	*7.8/1.1/29*	*4.6/1.4/7*	*26/28/9*	*1*
BOD5 (mg/l)	*111*	*7.5/1.2/17*	*11/3/42*		*30/45/*	
BOD5, influent (mg/l)	*111*	*311/193/616*	*380/201/901*		*NA/NA/*	
BOD5, influent (lbs/day)	*111*	*1303/97/2548*	*1821/132/20066*		*NA/NA/*	
BOD5, effluent (mg/l)	*111*	*7.5/1.2/17*	*11/3/42*		*30/45/*	
BOD5 (% removal)	*111*	*97/94/99*	*NA/NA/NA*		*85/NA/*	*1*
TSS (mg/l)	*111*	*8.8/2.3/25*	*14/3.2/65*		*NA/NA/*	
TSS, influent (mg/l)	*111*	*357/161/997*	*503/163/2073*		*NA/NA/*	
TSS, effluent (mg/l)	*111*	*8.8/2.3/25*	*14/3.2/65*		*30/45/*	*2*
TSS (% removal)	*111*	*97/86/99*	*NA/NA/NA*		*85/NA/*	
Oil and Grease (mg/l)	*95*	*NA/NA/NA*	*0//0*		*NA/10/*	
TDS (mg/l)		*//*	*//*		*NA/NA/*	
PWS intake (mg/l)	*111*	*297/102/1050*	*NA/NA/NA*	*NA/NA/NA*	*Report/NA/*	
WWTF effluent (mg/l)	*111*	*635/3.4/1296*	*NA/NA/NA*	*NA/NA/NA*	*Report/NA/*	
As, TR (µg/l)	*110*	*1.5//97*	*NA/NA/NA*	*0.87/0.34/7.2*	*Report/NA/Report*	

As, Dis (µg/l)	*110*	*NA/NA/NA*	*1.2//79*	*1/0.44/3.7*	*NA/Report/Report*	
Cd, Dis (µg/l)	*109*	*0.026//0.26*	*0.026//0.26*	*0.027//0.088*	*Report/Report/Report*	
Cr+3, TR (µg/l)	*110*	*NA/NA/NA*	*0.26//14*	*0.0015//0.006*	*NA/Report/Report*	
Cr+6, Dis (µg/l)	*110*	*0.46//10*	*0.46//10*	*0.1//0.83*	*Report/Report/Report*	
Cu, Dis (µg/l)	*108*	*6.6//17*	*6.6//17*	*6.3/5.1/7.9*	*Report/Report/Report*	
CN, Free (µg/l)	*110*	*NA/NA/NA*	*0.76//13*	*0.71//17*	*NA/Report/Report*	
Fe, Dis (µg/l)	*109*	*70//656*	*NA/NA/NA*	*58/14/176*	*Report/NA/Report*	
Fe, TR (µg/l)	*110*	*100//717*	*NA/NA/NA*	*472/5.5/34496*	*Report/NA/Report*	
Pb, Dis (µg/l)	*110*	*0.19//14*	*0.19//14*	*0.22//0.77*	*Report/Report/Report*	
Mn, Dis (µg/l)	*110*	*15/3.7/100*	*15/3.7/100*	*14/7.9/21*	*Report/Report/Report*	
Hg, Tot (µg/l)	*37*	*4.3//82*	*4.3//82*	*2.4//10*	*Report/Report/Report*	
Ni, Dis (µg/l)	*110*	*3.1//13*	*3.1//13*	*3.3/2/5.5*	*Report/Report/Report*	
Se, Dis (µg/l)	*110*	*0.52//2.4*	*0.52//2.4*	*0.48//1.3*	*Report/Report/Report*	
Ag, Dis (µg/l)	*110*	*0.011//0.42*	*0.011//0.42*	*0.011//0.17*	*Report/Report/Report*	
Zn, Dis (µg/l)	*110*	*75/10/159*	*75/10/159*	*72/59/90*	*Report/Report/Report*	
Wet, acute						
pimephales, LC50	*37*	*//*	*100/100/100*	*//*	*LC50≥IWC*	
ceriodaphnia LC50	*37*	*//*	*100/100/100*	*//*		
**The pH data shows the minimum reported values in the "average" column, and the maximum reported values in the "maximum column*						

** Geometric mean

2. Additional Data –The following table summarizes data Reg. 85 Nitrite effluent data.

Table V-2 – Summary of Reg. 85 Nitrite Data for Permitted Feature 001A

Collection Date	Nitrite as N (mg/l)
1/5/2016	0.49
12/8/2015	17
11/3/2015	8.6
10/6/2015	12
9/1/2015	8
8/4/2015	6.4
7/7/2015	9.1
6/9/2015	2.2
5/26/2015	3
4/21/2015	13
3/3/2015	16
1/6/2015	3.1
12/1/2014	1.6
11/12/2014	1.7
10/7/2014	1.2
9/9/2014	2.1
8/6/2014	1.9
7/8/2014	1.1
6/3/2014	0.87
5/6/2014	1.7
4/2/2014	1.8
3/11/2014	1.5
1/7/2014	1.1

B. Compliance With Terms and Conditions of Previous Permit

1. Effluent Limitations – The data shown in the preceding table(s) indicate apparent violations of the permit.

   pH (minimum) – The exceedance occurred on July 31, 2011. This occurrence seems to be an isolated event and does not represent a trend indicating future excursions.

   Ammonia (January, February, March, November and December) – The facility has had issues with meeting ammonia limitations during the winter months. The facility is making improvements to ensure ammonia limitations can be met during the winter months in the future.

   BOD5 (% removal) – The exceedance occurred on June 30, 2011. This occurrence seems to be an isolated event and does not represent a trend indicating future excursions.

   TSS, effluent (mg/l) – The exceedances occurred on May 31, 2018 and October 31, 2018. These occurrences seem to be isolated events and do not represent a trend indicating future excursions.

   In accordance with 40 CFR Part 122.41(a), any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

2. Other Permit Requirements – The permittee has been in compliance with all other aspects of the previous permit.

VII. DISCUSSION OF EFFLUENT LIMITATIONS

A. Regulatory Basis for Limitations

1. Technology Based Limitations

   a. Federal Effluent Limitation Guidelines – The Federal Effluent Limitation Guidelines for domestic wastewater treatment facilities are the secondary treatment standards. These standards have been adopted into, and are applied out of, Regulation 62, the Regulations for Effluent Limitations.

   b. Regulation 62: Regulations for Effluent Limitations – These Regulations include effluent limitations that apply to all discharges of wastewater to State waters and are shown in Section VIII of the WQA. These regulations are applicable to the discharge from the Town of Eagle WWTF.

2. Numeric Water Quality Standards - The WQA contains the evaluation of pollutants limited by water quality standards. The mass balance equation shown in Section VI of the WQA was used for most pollutants to calculate the potential water quality based effluent limitations (WQBELs), M_2, that could be discharged without causing the water quality standard to be violated. For ammonia, the AMMTOX Model was used to determine the maximum assimilative capacity of the receiving stream. A detailed discussion of the calculations for the maximum allowable concentrations for the relevant parameters of concern is provided in Section VI of the Water Quality Assessment developed for this permitting action.

   The maximum allowable pollutant concentrations determined as part of these calculations represent the calculated effluent limits that would be protective of water quality. These are also known as the water quality-based effluent limits (WQBELs). Both acute and chronic WQBELs may be calculated based on acute and chronic standards, and these may be applied as daily maximum (acute) or 30-day average (chronic) limits.

3. Narrative Water Quality Standards - Section 31.11(1)(a)(iv) of The Basic Standards and Methodologies for Surface Waters (Regulation No. 31) includes the narrative standard that State surface waters shall be free of substances that are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.

   a. Whole Effluent Toxicity - The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for

Surface Waters. The requirements for WET testing are being implemented in accordance with Division policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010).

4. Water Quality Regulations, Policies, and Guidance Documents

a. Antidegradation - Since the receiving water is Undesignated, an antidegradation review is required pursuant to Section 31.8 of The Basic Standards and Methodologies for Surface Water. As set forth in Section VII of the WQA, an antidegradation evaluation was conducted for pollutants when water quality impacts occurred and when the impacts were significant. Based on the antidegradation requirements and the reasonable potential analysis discussed below, antidegradation-based average concentrations (ADBACs) may be applied.

According to Division procedures, the facility has three options related to antidegradation-based effluent limits: (1) the facility may accept ADBACs as permit limits (see Section VII of the WQA); (2) the facility may select permit limits based on their non-impact limit (NIL), which would result in the facility not being subject to an antidegradation review and thus the antidegradation-based average concentrations would not apply (the NILs are also contained in Section VII of the WQA); or (3) the facility may complete an alternatives analysis as set forth in Section 31.8(3)(d) of the regulations which would result in alternative antidegradation-based effluent limitations.

The effluent must not cause or contribute to an exceedance of a water quality standard and therefore the WQBEL must be selected if it is lower than the NIL. Where the WQBEL is not the most restrictive, the discharger may choose between the NIL or the ADBAC: the NIL results in no increased water quality impact; the ADBAC results in an "insignificant" increase in water quality impact. The ADBAC limits are imposed as two-year average limits.

b. Antibacksliding – As the receiving water is designated Reviewable or Outstanding, and the Division has performed an antidegradation evaluation, in accordance with the Antidegradation Guidance, the antibacksliding requirements in Regulation 61.10 have been met.

c. Determination of Total Maximum Daily Loads (TMDLs) –The receiving stream to which the Town of Eagle WWTF discharges is currently listed on the State's 303(d) list for development of TMDLs for Nitrite and Total Recoverable Arsenic. However, the TMDL has not yet been finalized. Although this permit establishes limits for these pollutants, they do not represent the TMDLs and waste load allocations, and are therefore subject to change upon finalization of an approved TMDL for this segment.

d. Colorado Mixing Zone Regulations – Pursuant to section 31.10 of The Basic Standards and Methodologies for Surface Water, a mixing zone determination is required for this permitting action. The Colorado Mixing Zone Implementation Guidance, dated April 2002, identifies the process for determining the meaningful limit on the area impacted by a discharge to surface water where standards may be exceeded (i.e., regulatory mixing zone). This guidance document provides for certain exclusions from further analysis under the regulation, based on site-specific conditions.

The Eagle WWTF was required to complete a mixing zone study during their previous permit cycle. On a letter dated May 25, 2017, Mott Macdonald, consultant for the Town of Eagle WWTF indicated that "The study was inconclusive due to the unique mixing characteristics of the Eagle River adjacent to the WWTP discharge. Brush Creek, which flows into the Eagle River approximately 130 feet upstream of the WWTP discharge, does not appear to mix in with the Eagle River for hundreds of feet. Instead, the Brush Creek flow appears to hug the south bank of the river. The conductance in the Brush Creek portion of the flow is much different than the Eagle River and led to an inconclusive passive tracer study." After further correspondence with the facility, Brush Creek accounts for approximately 20% of the flow of the Eagle River at low flows immediately downstream of the confluence. Therefore, the Eagle WWTF received 20% of the low flow of the determined Eagle River low flows in the WQA.

e. Salinity Regulations – In compliance with the Colorado River Salinity Standards and the Colorado Discharge Permit System Regulations, the permittee shall monitor for total dissolved solids on a Monthly basis. Samples shall be taken at Permitted Feature 001A.

The net increase for TDS loading is less than 400 mg/l, and therefore the facility is exempt from further requirements other than monitoring for TDS.

g. Reasonable Potential Analysis – Using the assimilative capacities contained in the WQA, an analysis must be performed to determine whether to include the calculated assimilative capacities as WQBELs in the permit. This reasonable potential (RP) analysis is based on the Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, dated December, 2002. This guidance document utilizes both quantitative and qualitative approaches to

establish RP depending on the amount of available data.

A qualitative determination of RP may be made where ancillary and/or additional treatment technologies are employed to reduce the concentrations of certain pollutants. Because it may be anticipated that the limits for a parameter could not be met without treatment, and the treatment is not coincidental to the movement of water through the facility, limits may be included to assure that treatment is maintained.

A qualitative RP determination may also be made where a federal ELG exists for a parameter, and where the results of a quantitative analysis results in no RP. As the federal ELG is typically less stringent than a limitation based on the WQBELs, if the discharge was to contain concentrations at the ELG (above the WQBEL), the discharge may cause or contribute to an exceedance of a water quality standard.

To conduct a quantitative RP analysis, a minimum of 10 effluent data points from the previous 5 years, should be used. The equations set out in the guidance for normal and lognormal distribution, where applicable, are used to calculate the maximum estimated pollutant concentration (MEPC). For data sets with non-detect values, and where at least 30% of the data set was greater than the detection level, MDLWIN software is used consistent with Division guidance to generate the mean and standard deviation, which are then used to establish the multipliers used to calculate the MEPC. If the MDLWIN program cannot be used the Division's guidance prescribes the use of best professional judgment.

For some parameters, recent effluent data or an appropriate number of data points may not be available, or collected data may be in the wrong form (dissolved vs total) and therefore may not be available for use in conducting an RP analysis. Thus, consistent with Division procedures, monitoring will be required to collect samples to support a RP analysis and subsequent decisions for a numeric limit. A compliance schedule may be added to the permit to require the request of an RP analysis once the appropriate data have been collected.

For other parameters, effluent data may be available to conduct a quantitative analysis, and therefore an RP analysis will be conducted to determine if there is RP for the effluent discharge to cause or contribute to exceedances of ambient water quality standards. The guidance specifies that if the MEPC exceeds the maximum allowable pollutant concentration (MAPC), limits must be established and where the MEPC is greater than half the MAPC (but less than the MAPC), monitoring must be established. Table VI-1 contains the calculated MEPC compared to the corresponding MAPC, and the results of the reasonable potential evaluation, for those parameters that met the data requirements. The RP determination is discussed for each parameter in the text below.

Table VI-1 - Quantitative Reasonable Potential Analysis

Parameter	30-Day Average			7-Day Ave or Daily Max			Antideg (2 Year Roll. Ave)		
	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	ADBAC (MAPC)	Reasonable Potential
Nitrate as N (mg/l)				20	12	Yes			
Nitrite as N (mg/l)				26	0.05	Yes			
As, TR (µg/l)	2.6	0.02	Yes						
As, Dis (µg/l)				2.5	1909	No	0.81	337	No
Cd, Dis (µg/l)	0.29	8.8	No	0.29	23	No	0.097	0.23	No
Cr+3, TR (µg/l)				0.01	281	No	0.0066	42	No
Cr+6, Dis (µg/l)	0.0099	79	No	0.0099	90	No	0.0066	12	No
Cu, Dis (µg/l)	15	126	No	15	173	No	7.6	16	No
CN, Free (µg/l)				0.0066	28	No	18	4.2	Yes
Fe, Dis (µg/l)	722	1820	No						
Fe, TR (µg/l)	789	6083	No				37946	4130	Yes
Pb, Dis (µg/l)	15	51	No	15	1016	No	0.84	7.9	No
Mn, Dis (µg/l), WS*	51	173	No	51	22969	No			
Mn, Dis (µg/l), AQ**	51	16083	No	51	22969	No	19	2777	No
Hg, Tot (µg/l)	165	0.072	Yes				16	0.011	Yes
Ni, Dis (µg/l)	12	837	No	12	5941	No	4.8	129	No
Se, Dis (µg/l)	2.6	33	No	2.6	103	No	1.4	4.9	No

Ag, Dis (µg/l)	0.18	2.8	No	0.18	62	No	0.19	0.42	No
Zn, Dis (µg/l)	135	1953	No	135	2059	No	86	443	No

*The RP analysis was done using the Water Supply standard for Dissolved Manganese
**The RP analysis was conducted using the Aquatic Life Standard for Dissolved Manganese

B. Parameter Evaluation

BOD_5 - The BOD_5 concentrations in Reg. 62 are the most stringent effluent limits and are therefore applied. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

Total Suspended Solids - The TSS concentrations in Reg. 62 are the most stringent effluent limits and are therefore applied. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

Oil and Grease – The oil and grease limitations from the Regulations for Effluent Limitations are applied as they are the most stringent limitations. This limitation is the same as those contained in the previous permit and is imposed upon the effective date of this permit.

pH - This parameter is limited by the water quality standards of 6.5-9.0 s.u., as this range is more stringent than other applicable standards. This limitation is the same as that contained in the previous permit and is imposed upon the effective date of this permit.

E. Coli – The limitation for E. Coli is based upon the WQBEL as described in the WQA. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter. Previous monitoring as shown in Table V-1 indicate that this limitation can be met and is therefore imposed upon the effective date of the permit.

Total Residual Chlorine (TRC) - The limitation for TRC is based upon the WQBEL as described in the WQA. A qualitative determination of RP has been made as chlorine may be used in the treatment process. In the previous Fact Sheet for the Town of Eagle WWTF (issued 12/30/2010), the RP section states that the Town of Eagle WWTF would be given a TRC limit based off the NIL determined from the facility's September 2000 permit limit for TRC.

This limit was erroneously left of the Permit issued to the Town of Eagle WWTF on 12/30/2010. Therefore, this is a new limitation and it is unknown if the permittee can meet the limit. A compliance schedule has been added to the permit to give the permittee time to meet this limitation.

Total Inorganic Nitrogen - The RP analysis for TIN was based upon the NIL as described in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the Daily Maximum MEPC. The MEPC (20 mg/l) was greater than the MAPC (12 mg/l) and therefore limitations are required. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. An interim limit was determined from the facility's effluent data from the past five years (18 mg/l). The interim limit is effective until the completion of the compliance schedule.

Nitrite – The RP analysis for Nitrite was based upon the WQBEL as described in the WQA. With the available data the log-normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC (26 mg/l) was greater than the MAPC (0.05 mg/l), therefore limitations are required and a daily maximum requirement has been added to the permit.

The receiving stream is on the 303(d) list for Nitrite therefore limitations are required and according to the facility's Reg. 85 Nitrite data submitted to the division, the permittee may not be able to consistently meet this limitation. A compliance schedule has been added to the permit to give the permittee time to meet this limitation. The highest concentration of Nitrite from the data found in Table V-2 (17 mg/l) will be given as an interim limit for the duration of the compliance schedule.

Ammonia - The limitation for ammonia is based upon the 30-day average WQBEL, the daily maximum WQBEL and the ADBAC for all months, except for January, as described in the WQA. The 30-day average limitation for ammonia for the month of January is based is based upon the NIL and the daily maximum limitation is based upon the WQBEL. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter.

Previous monitoring as shown in Table V-1 indicate the 30-day average limitations can be met for the months of May, June, July, August, September and October and are therefore effective immediately. Previous monitoring as shown in Table V-1 indicate the Daily Maximum limitations can be met for the months of May, June, July, August, September and October and are therefore effective immediately.

The 30-day average limitations for the months of January, February, March April, November and December, the Daily Maximum limitations for the months of January, February, March, April, Novemberand December, and the 2-year rolling average limitations for all months (except January) are more stringent than the previous limits and the permittee may not be able to consistently meet these limitations. A compliance schedule has been added to the permit to give the permittee time to meet these limitations. The facility will be given the previous permit limits for those months as interim limitations for the duration of the compliance schedule.

Total Recoverable Arsenic – The RP analysis for Total Recoverable Arsenic was based upon the WQBEL as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC (2.6 µg/l) was greater than the MAPC (0.02 µg/l), therefore limitations are required and a 30-day average requirement has been added to the permit.

The receiving stream is on the 303(d) list for Total Recoverable Arsenic therefore limitations are required. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. However, because of the temporary modification (As (ch) = hybrid), an interim limit was determined from the facility's effluent data from the past five years (2.4 µg/l). The interim limit is effective until the completion of the compliance schedule, which begins after the expiration of the temporary modification on 12/31/2024.

Potentially Dissolved Arsenic – The RP analysis for Potentially Dissolved Arsenic was based upon the Daily Maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the 2-year rolling average MEPC and the MDLWIN program was used to determine Daily Maximum MEPC. The MEPC (2.5 µg/l for Daily Maximum and 0.81 µg/l for 2-year rolling average) was less than half of the MAPC for both the Daily Maximum WQBEL (1909 µg/l) and the ADBAC (337 µg/l) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Cadmium – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Cadmium - The RP analysis for Dissolved Cadmium was based upon the 30-day average WQBEL, the Daily Maximum WQBEL and the ADBAC as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average, Daily Maximum and 2-year Average MEPC. The 30-day average and Daily Maximum MEPC (0.29 µg/l 30-day average and 0.29 µg/l Daily Maximum) was less than half of the MAPC (8.8 µg/l 30-day average and 23 µg/l Daily Maximum) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

The 2-year rolling average MEPC (0.097 µg/l) was less than half of the MAPC (0.23 µg/l) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Trivalent Chromium - The RP analysis for Total Recoverable Trivalent Chromium was based upon the Daily Maximum WQBEL and ADBAC as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the MEPC for the daily maximum limitation. The MEPC (0.010 µg/l) was less than half of the MAPC (281 µg/l). Therefore limitations are not necessary at this time, however monitoring is included for future RP analysis.

A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis for the 2-year rolling average limitation. Sample results for were as high as 0.006 µg/l, compared to the ADBAC of 42 µg/l. A qualitative determination of no RP has been made as the potential limitation is significantly greater than the sample results therefore limitations and monitoring are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Potentially Dissolved Trivalent Chromium - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Dissolved Hexavalent Chromium - The RP analysis for Dissolved Hexavalent Chromium was based upon the 30-day average WQBEL, the Daily Maximum WQBEL and the ADBAC as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average and Daily Maximum MEPC. The 30-day average and Daily Maximum MEPC (0.0099 µg/l 30-day average and 0.0099 µg/l Daily Maximum) was less than half of the MAPC (79 µg/l 30-day average and 90 Daily Maximum) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Sample results for were as high as 0.006 µg/l, compared to the ADBAC of 12 µg/l. A qualitative determination of no RP has been made as the potential limitation is significantly greater than the sample results therefore limitations and monitoring are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Potentially Dissolved Copper - The RP analysis for Dissolved Copper was based upon the 30-day average WQBEL, the Daily Maximum WQBEL and the ADBAC as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average and Daily Maximum MEPC and the normal program was used to determine appropriate statistics to determine the 2-year rolling average MEPC. The 30-day average, Daily Maximum and 2-year rolling average MEPC (15 µg/l 30-day average, 15 µg/l Daily Maximum and 7.6 µg/l 2-year rolling average) was less than half of the MAPC (126 µg/l 30-day average, 173 Daily Maximum and 16 2-year rolling average) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Cyanide (WAD) – The RP analysis for Cyanide was based on the Daily Maximum WQBEL and the ADBAC as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the Daily Maximum MEPC. The Daily Maximum MEPC (0.0066 µg/l) was less than half of the MAPC (28 µg/l) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

With the available data the normal program was used to determine the appropriate statistics to determine the 2-year rolling average MEPC. The 2-year rolling average MEPC (18.2 µg/l) was greater than the MAPC (4.2 µg/l) and therefore limitations are required. A 2-year rolling average requirement has been added to the permit. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. An interim limit was determined from the facility's effluent data from the past five years (17 µg/l). The interim limit is effective until the completion of the compliance schedule.

Dissolved Iron – The RP analysis for Dissolved Iron was based upon the 30-day average WQBEL as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC (722 µg/l) was less than half of the MAPC (1820 µg/l) therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Iron – The RP analysis for Total Recoverable Iron was based upon the 30-day average WQBEL and the ADBAC as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average MEPC. The MEPC (789 µg/l) was less than half of the MAPC (17319 µg/l) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

With the available data the normal program was used to determine the appropriate statistics to determine the 2-year rolling average MEPC. The 2-year rolling average MEPC (37946 µg/l) was greater than the MAPC (4130 µg/l) and therefore limitations are required. A 2-year rolling average requirement has been added to the permit. An erroneous 2-year rolling average data point is causing the MEPC to exceed the MAPC, therefore a 2-year rolling average Total Recoverable Iron limit has been added to the permit. A compliance schedule was added to the permit to give the facility time to address this issue. An interim limit of report is effective until the completion of the compliance schedule.

Total Recoverable Lead – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Lead – The RP analysis for Dissolved Lead was based upon the 30-day average WQBEL, the Daily Maximum WQBEL and the ADBAC as described in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average and Daily Maximum MEPC. The 30-day average and Daily Maximum MEPC (15 µg/l 30-day average and 15 µg/l Daily Maximum) was less than half of the MAPC (51 µg/l 30-day average and 1016 µg/l 30-day average) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

A qualitative RP analysis was conducted on the 2-year rolling average data as there was not enough data to conduct a quantitative RP analysis. Sample results for were as high as 0.77 µg/l, compared to the ADBAC of 7.9 µg/l. A qualitative determination of no RP has been made as the potential limitation is significantly greater than the sample results therefore limitations and monitoring are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Dissolved Manganese (Water Supply) – The RP analysis for Dissolved Manganese (Water Supply) was based upon the 30-day average WQBEL and the daily maximum WQBEL as calculated in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the 30-day average and daily maximum MEPC. The MEPC (51 µg/l 30-day average and 51 µg/l Daily Maximum) was less than half of the MAPC (173 µg/l 30-day average and 98384 µg/l Daily Maximum) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Potentially Dissolved Manganese (Aquatic Life) – The RP analysis for Potentially Dissolved Manganese (Aquatic Life) was based upon the 30-day average WQBEL, the daily maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the normal program was used to determine the appropriate statistics to determine the 30-day average, daily maximum and 2-year rolling average MEPC. The 30-day average, daily maximum and 2-year rolling average MEPC (51 µg/l 30-day average, 51 µg/l Daily Maximum, and 19 µg/l 2-year rolling average) was less than half of the 30-day average, daily maximum and 2-year rolling average MAPC (16083 µg/l 30-day average, 22969 µg/l Daily Maximum and 2777 µg/l 2-year rolling average) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Molybdenum – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Total Mercury (low level) – The RP analysis for Total Mercury was based upon the 30-day average WQBEL and the ADBAC as described in the WQA. With the available data the log-normal program was used to determine the appropriate statistics to determine the 30-day average MEPC. The 30-day average MEPC (165 µg/l) was greater than the MAPC (0.072 µg/l) and therefore limitations are required and a 30-day average requirement has been added to the permit. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. The maximum 30-day average concentration of Total Mercury from the facility's last five years of effluent data will be used as an interim limit (82 µg/l) during the duration of the compliance schedule.

With the available data the normal program was used to determine the appropriate statistics to determine the 2-year rolling average MEPC. The 2-year rolling average MEPC (16 µg/l) was greater than the MAPC (0.011 µg/l) and therefore limitations are required and a 2-year rolling average requirement has been added to the permit. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. The maximum 2-year rolling average concentration of Total Mercury from the facility's last five years of effluent data will be used as an interim limit (10 µg/l) during the duration of the compliance schedule.

Total Recoverable Nickel – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Nickel – The RP analysis for Dissolved Nickel was based upon the 30-day average WQBEL, the daily maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average and the daily maximum MEPC and the normal program was used to determine the 2-year rolling average MEPC. The 30-day average, daily maximum and 2-year rolling average MEPC (12 µg/l 30-day average, 12 µg/l Daily Maximum and 4.8 µg/l 2-year rolling average) was less than half of the 30-day average, daily maximum and 2-year rolling average MAPC (837 µg/l 30-day average, 5941 µg/l Daily Maximum and 129 µg/l 2-year rolling average) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Potentially Dissolved Selenium – The RP analysis for Dissolved Selenium was based upon the 30-day average WQBEL the daily maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average, the daily maximum and the 2-year rolling average MEPC. The 30-day average, daily maximum and 2-year rolling average MEPC (2.6 µg/l 30-day average, 2.6 µg/l Daily Maximum and 1.4 µg/l 2-year rolling average) was less than half of the 30-day average, daily maximum and 2-year rolling average MAPC (33 µg/l 30-day average, 103 µg/l Daily Maximum and 4.9 µg/l 2-year rolling average) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Dissolved Silver – The RP analysis for Dissolved Silver was based upon the 30-day average WQBEL the daily maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the MDLWIN program was used to determine the appropriate statistics to determine the 30-day average and the daily maximum MEPC. The 30-day average and daily maximum MEPC (0.18 µg/l 30-day average and

0.18 µg/l Daily Maximum) was less than half of the 30-day average daily maximum MAPC 2.8 µg/l 30-day average and 62 µg/l Daily Maximum) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

A qualitative RP analysis was conducted as there was not enough 2-year rolling average data to conduct a quantitative RP analysis. Sample results for were as high as 0.18 µg/l, compared to the ADBAC of 0.42 µg/l. A qualitative determination of no RP has been made as the sample results are less than half of the potential limitation therefore limitations and monitoring are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Uranium – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Dissolved Uranium – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Dissolved Zinc – The RP analysis for Dissolved Zinc was based upon the 30-day average WQBEL the daily maximum WQBEL and the ADBAC as calculated in the WQA. With the available data the LogNormal program was used to determine the appropriate statistics to determine the 30-day average and the daily maximum MEPC and the normal program was used to determine the 2-year rolling average MEPC. The 30-day average, daily maximum and 2-year rolling average MEPC (135 µg/l 30-day average, 135 µg/l Daily Maximum and 86 µg/l 2-year rolling average) was less than half of the 30-day average, daily maximum and 2-year rolling average MAPC (1953 µg/l 30-day average, 2059 µg/l Daily Maximum and 443 µg/l 2-year rolling average) and therefore limitations are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Chloride – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Sulfate – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Nonylphenol – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Acrylamide – The Clarifloc C-6262 chemical used in treating the facility's wastewater contains acrylamide, which the permittee indicates there to be a concentration of 0 µg/l in the effluent compared to a WQBEL of 0.46 µg/l. A qualitative determination of no RP has been made as the potential limitation is significantly greater than the expected concentration of acrylamide in the facility's effluent therefore limitations and monitoring are not necessary at this time. However, a monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Organics – The Clarifloc C-6262 chemical used in treating the facility's wastewater contains an organic component (hydrotreated light distillates [petroleum]). There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

In addition, because the TPH method does not identify the specific hydrocarbons present, the division added a special study to conduct annual Purgeables by GC/MS and Base/Neutrals and Acids by GC/MS analyses at Outfall 001A for the permit term. The division will use data obtained from the required organics analyses for an RP analysis in the subsequent permit renewal.

Temperature- The MWAT is the maximum weekly average temperature, as determined by a seven day rolling average, using at least 3 equally spaced temperature readings in a 24-hour day (at least every 8 hours for a total of at least 21 data points).

The daily maximum is defined as the maximum 2 hour average, with a minimum of 12 equally spaced measurements throughout the day. As both of these temperature requirements will likely require the use of automated temperature measurements and recordings, the permittee is given until August 1, 2021, to have the proper equipment in place to take the required readings.

No effluent temperature data is available for this discharge. Therefore a requirement to collect effluent temperature data on a continuous basis has been added to the permit. In order to determine the available assimilative capacity for temperature, continuous ambient water quality data is needed directly upstream of the discharge. Continuous instream temperature data directly upstream of the discharge is currently not available. Therefore a requirement to collect instream temperature data on a continuous basis at a

location directly upstream of the discharge has been added to the permit. As both of these temperature requirements will likely require the use of automated temperature measurements and recordings, the temperature monitoring requirements in the permit have a delayed effective date in order to give to have the proper equipment in place to take the required readings.

Whole Effluent Toxicity (WET) Testing – For this facility, acute WET testing has been determined to be applicable based on the instream waste concentrations calculated in the WQA.

This is a major facility (1.65 MGD) that is expected to discharge metals that may have toxic effects to fish and other aquatic life. Further, this facility discharges chlorine and ammonia, both of which can cause toxicity at low concentrations. On this basis, the Division believes there is reasonable potential for the discharger to interfere with attainment of applicable water quality classifications or standards and therefore, an acute toxicity limit has been incorporated into the permit.

The permittee should read the WET testing section of Part I of the permit carefully, as this information has been updated in accordance with the Division's updated policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010) . The permit outlines the test requirements and the required follow-up actions the permittee must take to resolve a toxicity incident. The permittee should also read the above mentioned policy which is available on the Permit Section website. The permittee should be aware that some of the conditions outlined above may be subject to change if the facility experiences a change in discharge, as outlined in Part II.A.2. of the permit. Such changes shall be reported to the Division immediately.

C. Parameter Speciation

Total / Total Recoverable Metals
For standards based upon the total and total recoverable methods of analysis, the limitations are based upon the same method as the standard.

Total / Total Recoverable Arsenic
For total recoverable arsenic, the analysis may be performed using a graphite furnace, however, this method may produce erroneous results and may not be available to the permittee. Therefore, the total method of analysis will be specified instead of the total recoverable method. An August 19, 1998 EPA memo states that the terms "total metals" and "total recoverable metals" are synonymous. Total metals and total recoverable metals are used to describe methods of hard mineral acid digestion.

Total Mercury
Until recently there has not been an effective method for monitoring low-level total mercury concentrations in either the receiving stream or the facility effluent. Monitoring for total mercury has been accomplished as part of past permit conditions and analytical results have been found at less than detectable limits. Detection levels as low as 0.0014 µg/l compared to a total mercury WQBEL limit of 0.32 µg/l and an ADBAC limit of 0.048 µg/l. To ensure that adequate data are gathered to show compliance with the limitation and consistent with Division initiatives for mercury, quarterly effluent monitoring for total mercury at low-level detection methods will be required by the permit.

Dissolved Metals / Potentially Dissolved
For metals with aquatic life-based dissolved standards, effluent limits and monitoring requirements are typically based upon the potentially dissolved method of analysis, as required under Regulation 31, Basic Standards and Methodologies for Surface Water. Thus, effluent limits and/or monitoring requirements for these metals will be prescribed as the "potentially dissolved" form.

Dissolved Iron and Dissolved Manganese if WS based
The dissolved iron and chronic manganese standards are drinking water-based standards. Thus, sample measurements for these two parameters must reflect the dissolved fraction of the metals.

Cyanide
For cyanide, the acute standard is in the form of "free" cyanide concentrations. Historically, analytical procedures were not readily available for measuring the concentration of free cyanide in a complex effluent therefore the Division required weak acid dissociable cyanide to be reported instead. Even though methods are now available to measure free cyanide, weak acid dissociable cyanide will be still required as this analytical procedure will detect free cyanide plus those forms of complex cyanide that are most readily converted to free cyanide. Therefore, ASTM (American Society for Testing and Materials) analytical procedure **D2036-09, Method C,** will be used to measure weak acid dissociable cyanide in the effluent.

TR Trivalent Chromium/Total Chromium
For total recoverable trivalent chromium, the regulations indicate that standard applies to the total of both the trivalent and hexavalent forms. Therefore, monitoring for total recoverable chromium will be required.

Dissolved Hexavalent Chromium
For hexavalent chromium, samples must be appropriately buffered. Dissolved concentrations will be measured rather than potentially dissolved concentrations.

VIII. ADDITIONAL TERMS AND CONDITIONS

A. Monitoring

Effluent Monitoring – Effluent monitoring will be required as shown in the permit document. Refer to the permit for locations of monitoring points. Monitoring requirements have been established in accordance with the frequencies and sample types set forth in the Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities. This policy includes the methods for reduced monitoring frequencies based upon facility compliance as well as for considerations given in exchange for instream monitoring programs initiated by the permittee. Table VII-1 shows the results of the reduced monitoring frequency analysis for Permitted Feature 001A, based upon compliance with the previous permit.

The quarterly monitoring frequency for mercury is imposed consistent with the Divisions' recent initiative to include quarterly monitoring for mercury because of the changes in analytical procedure that will allow total mercury to be quantified at much lower concentrations.

Table VII-1 – Monitoring Reduction Evaluation

Parameter	*Proposed Permit Limit*	*Average of 30-Day (or Daily Max) Average Conc.*	*Standard Deviation*	*Long Term Characterization (LTC)*	*Reduction Potential*
E. coli (#/100 ml)	*733*	*13*	*18*	*49*	*3 Levels*
Total Inorganic Nitrogen as N (mg/l)	*145*	*9.2*	*3.4*	*16*	*3 Levels*
*Oil and Grease (mg/l)**	*10*	*0*	*0*	*0*	*3 Levels*
As, Dis (µg/l)	*8186*	*0.46*	*0.26*	*0.98*	*3 Levels*
Cd, Dis (µg/l)	*19*	*0.048*	*0.064*	*0.18*	*3 Levels*
Cr+3, TR (µg/l)	*1204*	*0.0031*	*0.0041*	*0.011*	*3 Levels*
Cr+6, Dis (µg/l)	*354*	*0.0031*	*0.0041*	*0.011*	*3 Levels*
Cu, Dis (µg/l)	*559*	*5.9*	*1.9*	*9.7*	*3 Levels*
CN, Free (µg/l)	*120*	*0.0013*	*0.0018*	*0.0049*	*3 Levels*
Fe, Dis (µg/l)	*7995*	*107*	*129*	*365*	*3 Levels*
Fe, TR (µg/l)	*26733*	*153*	*169*	*491*	*3 Levels*
Pb, Dis (µg/l)	*228*	*0.14*	*0.26*	*0.66*	*3 Levels*
Mn, Dis (µg/l)	*72183*	*17*	*9.7*	*36*	*3 Levels*
Ni, Dis (µg/l)	*3762*	*3*	*3.1*	*9.2*	*3 Levels*
Se, Dis (µg/l)	*148*	*1.2*	*0.66*	*2.5*	*3 Levels*
Ag, Dis (µg/l)	*13*	*0.0088*	*0.016*	*0.041*	*3 Levels*
Zn, Dis (µg/l)	*8703*	*70*	*13*	*96*	*3 Levels*

*Although oil & grease shows a 3-*level reduction, this will not be applied. Since only visual observation is required for oil & grease, the permit frequency will be 5 Days/Week, which is the same frequency as the most frequently monitored parameter.*

B. Reporting

1. Discharge Monitoring Report – The permittee must submit Discharge Monitoring Reports (DMRs) on a monthly basis to the Division. These reports should contain the required summarization of the test results for all parameters and monitoring frequencies shown in Part I.A.2 of the permit. See the permit, Part I.D for details on such submission.

2. Special Reports – Special reports are required in the event of an upset, bypass, or other noncompliance. Please refer to Part II.A. of the permit for reporting requirements. As above, submittal of these reports to the US Environmental Protection Agency Region VIII is no longer required.

C. Signatory and Certification Requirements

Signatory and certification requirements for reports and submittals are discussed in Part I.D.8. of the permit.

D. Compliance Schedules

The following compliance schedules are included in the permit:

- Activities to meet TRC final limits
- Activities to meet Total Ammonia, Total Inorganic Nitrogen and Nitrite final limits
- Activities to meet Cyanide final limits
- Activities to meet Total Mercury final limits
- Activities to meet Total Recoverable Arsenic final limits

The following compliance schedules are included in the permit. As discussed in the Colorado WQCD Compliance Schedule Policy CW-3 and federal requirements, the Division evaluates the need for compliance schedules for discharges that are not new on the basis of what is necessary, appropriate, and whether the compliance schedule will achieve compliance with the underlying water quality based effluent limit "as soon as possible."

Necessary
"Necessity" for a compliance schedule is determined on the basis of whether associated effluent limits can be met upon the effective date of the permit. A compliance schedule is necessary if there is information in the permit record that shows that the discharger cannot immediately comply with the underlying permit limits. A compliance schedule is only necessary if the effluent limitations are being added to the permit for the first time or if more stringent effluent limits are being added to a renewal permit based on a change in water quality standards. If water quality data exists to establish a level of water quality that can be achieved, then it is also necessary to establish an interim limit in the permit for the pollutant of concern. If data does not exist, then a report-only requirement should be included in the permit. A compliance schedule is not necessary if it is being proposed for a new discharger, if the compliance schedule is being issued to meet federal technology-based effluent limitation guidelines, or if a compliance schedule is based solely on the time needed to develop a use attainability analysis, site specific standard, alternatives analysis for antidegradation or a discharger specific variance.

The division has evaluated the necessity of a permit compliance schedule for Total Ammonia, TIN, Nitrite, TRC, Cyanide, Total Recoverable Arsenic and Total Mercury in Section VII.B of the Fact Sheet. Based on this review, the division has determined that a compliance schedule for Total Ammonia, TIN, Nitrite, TRC, Cyanide, Total Recoverable Arsenic and Total Mercury is "necessary" as the permittee cannot meet the effluent limitations in the permit upon the effective date.

Appropriate
Once necessity has been determined, the Division evaluates the "appropriateness" of a compliance schedule. Factors relevant to whether a compliance schedule in a specific permit is "appropriate" under 40 C.F.R. § 122.47(a) include: how much time the discharger has already had to meet the WQBEL(s) under prior permits; the extent to which the discharger has made good faith efforts to comply with the WQBELs and other requirements in its prior permit(s); whether there is any need for modifications to treatment facilities, operations or measures to meet the WQBELs and if so, how long would it take to implement the modifications to treatment, operations or other measures; or whether the discharger would be expected to use the same treatment facilities, operations or other measures to meet the WQBEL as it would have used to meet the WQBEL in its prior permit. The compliance schedule proposed must be an enforceable sequence of events that contains milestones. If the compliance schedule lasts longer than one year, the milestones must be no more than one year apart and must describe how the compliance schedule will lead to compliance with the underlying permit limit at the end of the compliance schedule. The final effluent limits must contained in the permit and should be included at the end of the compliance schedule.

In this case, the division has determined that the compliance schedule is appropriate. The discharger is being subject to the TRC, TIN, Nitrite, Cyanide, Total Recoverable Arsenic and Total Mercury permit limits for the first time, and may need to make modifications to the treatment facilities, operations or other measures in order to meet the new effluent limits. Additionally, the new Total Ammonia limitations are more stringent that Total Ammonia limitations found in the previous permit. The discharger may need to make modifications to treatment facilities, operations or other measures in order to meet the new effluent limits.

As soon as possible
Once the Division determines that a compliance schedule is necessary and appropriate, the Division then uses information to develop a permit compliance schedule with enforceable milestones appropriate for the type of actions that are anticipated to be conducted to attain the underlying permit limits that ensure that compliance with the effluent limitations is achieved "as soon as possible." In determining the duration of the compliance schedule to meet the underlying permit limits, the division intends to provide adequate time to conduct the actions needed leading to

compliance with the limits, including the steps necessary to modify or install treatment facilities, retaining expertise, securing funding, characterizing sources, identifying control alternatives, and/or planning, designing and implementing the preferred alternative.

The division has evaluated the timelines for each parameter in the compliance schedule proposed in Part I.B.6 of the permit and has determined that the schedule will ensure compliance "as soon as possible".

For TRC, a one year compliance schedule is an appropriate amount of time to retain expertise to characterize water quality and make adjustments to water quality treatment to meet underlying effluent limitations for TRC. The previous permit erroneously left out the TRC limitation outlined in the previous fact sheet. The duration of the schedule until 12/31/2021 allows time to plan and implement strategies to control sources.

For Total Recoverable Iron and Total Mercury, a one year compliance schedule is an appropriate amount of time to retain expertise to characterize water quality and make adjustments to water quality treatment to meet underlying effluent limitations for Total Mercury. There appears to be recent reporting errors in the facility's DMR submissions for Total Mercury, therefore the Total Mercury limit should be attainable within this timeframe. The duration of the schedule until 12/31/2021 allows time to plan and implement strategies to control sources.

For Cyanide,two-and-a-half years is an appropriate amount of time to retain expertise to characterize water quality and make adjustments to water quality treatment to meet underlying effluent limitations for Cyanide. The duration of the schedule until 6/30/2023 for Cyanide allows time to plan and implement strategies to control sources.

For Total Recoverable Arsenic, three years is an appropriate amount of time to retain expertise to characterize water quality and make adjustments to water quality treatment to meet underlying effluent limitations for Total Recoverable Arsenic. The duration of the schedule until 12/31/2027 (three years following the expiration of the temporary modification on 1/1/2025) allows time to plan and implement strategies to control sources.

For Total Ammonia, Total Inorganic Nitrogen, and Nitrite, a four-and-a-half year compliance schedule is an appropriate amount of time to retain expertise to characterize water quality and make adjustments to water quality treatment to meet underlying effluent limitations for Total Ammonia, Total Inorganic Nitrogen and Nitrite. The duration of the schedule until 6/30/2025 for Total Ammonia, Total Inorganic Nitrogen and Nitrite allows time to plan and implement strategies to control sources.

E. Stormwater

Pursuant to 5 CCR 1002-61.3(2), wastewater treatment facilities with a design flow of 1.0 mgd or more, or that are required to have an approved pretreatment program, are specifically required to obtain stormwater discharge permit coverage or a Stormwater No Exposure Certification, in order to discharge stormwater from their facilities to state waters. The stormwater discharge permit applicable to wastewater treatment facilities is the CDPS General Permit for Stormwater Discharges Associated with Non-Extractive Industrial Activity.

Division records indicate that the Town of Eagle applied for and obtained coverage under a Stormwater No Exposure Certification for the Town of Eagle WWTF. The No Exposure Certification number is CONOXO0391.

F. Additional Permit Requirements

The Use of the Pretreatment Framework to identify, characterize, and control sources of pollutants to POTWs

The Division reviewed the pretreatment framework and its implementation in Colorado, and determined that this framework is the most appropriate tool to identify, characterize, and control sources of pollutants to the POTW. The Division reviewed both the ***TOWN OF EAGLE*** permit provisions, and the Division's standard permit provisions to ensure that the requirements are equivalent to those provided by EPA (EPA implements the federal pretreatment program in Colorado because the state has not been delegated its own pretreatment program).

Permit provisions differ for POTWs required to maintain a pretreatment program and for POTWs not required to maintain a pretreatment program. The Division found that the provisions for POTWs that are required to maintain a pretreatment program met these requirements, and therefore there is no need to change these provisions in Colorado's permits. These POTWs are required to identify and locate all possible industrial users ("IUs"), identify the character and volume of pollutants, maintain current information regarding IUs and conduct periodic pollutant scans of both influent and effluent for a list of parameters. The permit provisions also conformed to those provided by EPA for inclusion in Division issued permits.

POTWs not required to maintain a pretreatment program are not held to this level of requirement, and as such are less likely to generate the level of information described in the statement of basis and purpose. These POTWs are required to submit information in their permit applications regarding industrial discharges. EPA as the pretreatment authority also notifies POTWs without pretreatment programs to conduct a comprehensive industrial user survey, as needed, to further evaluate these POTWs for development of a program. EPA also recommends that permits for all POTWs require periodic pollutant scans of effluent.

EPA has provided the following permit language for POTWs without approved programs.

The Permittee shall sample and analyze the effluent for the following pollutants:

Total Arsenic	Total Nickel
Total Cadmium	Total Selenium
Total Chromium	Total Silver
Total Copper	Total Zinc
Total Lead	Total Cyanide
Total Mercury	Total Phenols
Total Molybdenum	

The sampling shall commence within thirty (30) days of the effective date of this permit and continue at the following frequency:

Sampling Schedule for Non-Approved Programs:
Majors (above 1 MGD) 1 per year

G. Economic Reasonableness Evaluation

Section 25-8-503(8) of the revised (June 1985) Colorado Water Quality Control Act required the Division to "determine whether or not any or all of the water quality standard based effluent limitations are reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons, and are in furtherance of the policies set forth in sections 25-8-102 and 25-8-104."

The Colorado Discharge Permit System Regulations, Regulation No. 61, further define this requirement under 61.11 and state: "Where economic, environmental, public health and energy impacts to the public and affected persons have been considered in the classifications and standards setting process, permits written to meet the standards may be presumed to have taken into consideration economic factors unless:

a. A new permit is issued where the discharge was not in existence at the time of the classification and standards rulemaking, or

b. In the case of a continuing discharge, additional information or factors have emerged that were not anticipated or considered at the time of the classification and standards rulemaking."

The evaluation for this permit shows that the Water Quality Control Commission, during their proceedings to adopt the Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Regulation 33), considered economic reasonableness.

Furthermore, this is not a new discharger and no new information has been presented regarding the classifications and standards. Therefore, the water quality standard-based effluent limitations of this permit are determined to be reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons and are in furtherance of the policies set forth in Sections 25-8-102 and 104. If any party disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, that party should submit all pertinent information to the Division during the public notice period.

H. Opportunities for public comment, public meetings, and administrative adjudication

1. **Opportunity to Submit Public Comment on the Draft Permit**

Interested persons may submit written comments to the Division on this draft permit and fact sheet during the term of the public comment period. Note that if you do not identify an issue in your comments on the draft permit, you may not be allowed to raise that issue in an administrative adjudication.

2. Opportunity to Request an Extension to the Public Comment Period

Interested persons may also request an extension of the comment period. This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period. The request should include specific reasons why the extension is needed.

3. Opportunity to Request a Responsive Public Comment Period

Interested persons may also request a responsive period of public comment in which any person may file a written response to the material filed by any other person during the comment period . This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period or within 10 days of the close of the public comment period. If the division grants a responsive comment period, there will also be a 10-day rebuttal period immediately following the close of the deadline for responsive comments. Filing of rebuttal comments is optional.

4. Opportunity to Request a Public Meeting

Interested persons, states, agencies, and groups may request a public meeting on the terms of the draft permit in accordance with 61.5(3). This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period. The request should discuss the degree of public interest regarding the draft, including the reasons why a public meeting is warranted. The Division shall hold a meeting if there is a significant degree of public interest.

5. Opportunity for Administrative Adjudication

Once the final permit is issued, the applicant or any other person affected or aggrieved by the Division's final determination may request an adjudicatory hearing within thirty (30) calendar days of the date of issuance, under 5 CCR 1002-61 (Colorado Discharge Permit System Regulations), Regulation 61.7. Any request must comply with the Water Quality Control Act, 24-4-101, C.R.S., et seq. and the Water Quality Control Commission's regulations, including Regulation 61.7 and 5 CCR 1002-21 (Procedural Rules), Regulation 21.4(B). Failure to contest any term and condition of the permit in this request for an adjudicatory hearing constitutes consent to the condition by the permittee.

IX. REFERENCES

A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0048241.

B. "Design Criteria Considered in the Review of Wastewater Treatment Facilities", Policy 96-1, Colorado Department of Public Health and Environment, Water Quality Control Commission, April 2007.

C. Basic Standards and Methodologies for Surface Water, Regulation No. 31, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 31, 2018.

D. Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River (Planning Region 12), Regulation No. 33, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective December 31, 2019.

E. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective December 31, 2018.

F. Regulations for Effluent Limitations, Regulation No. 62, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective July 30, 2012.

G. Pretreatment Regulations, Regulation No. 63, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 1, 2017.

H. Biosolids Regulation, Regulation No. 64, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 30, 2014.

I. Colorado River Salinity Standards, Regulation No. 39, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective May 9, 2007.

J. Section 303(d) List of Water Quality Limited Segments Requiring TMDLs, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 2, 2018.

K. Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 2, 2018.

L. Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2001.

M. Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 23, 2002.

N. Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, Policy Number CW-1, Colorado Department of Public Health and Environment, Water Quality Control Division, effective November 18, 2013.

O. The Colorado Mixing Zone Implementation Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 2002.

P. Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Domestic and Industrial Wastewater Treatment Facilities, Water Quality Control Division Policy WQP-20, May 1, 2007.

Q. Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Water Quality Control Division Policy WQP-24, March 10, 2008.

R. Implementing Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (WET) Testing. Colorado Department of Public Health and Environment, Water Quality Control Division Policy Permits-1, September 30, 2010.

S. Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department of Public Health and Environment, Water Quality Control Division, Policy Number WQP-23, effective July 3, 2008.

T. Permit Compliance Schedules, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number CW-3, effective March 4, 2014.

U. Procedural Regulations for Site Applications for Domestic Wastewater Treatment Works, Regulation No. 22, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective September 30, 2009.

V. Regulation Controlling discharges to Storm Sewers, Regulation No. 65, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective May 30, 2008.

W. Water and Wastewater Facility Operator Certification Requirements, Regulation No. 100, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective August 31, 2017.

IX. ATTACHMENTS

Attachment 1: Final Water Quality Assessment for the Eagle River – COUCEA09c (10/8/2020).

FOR DIVISION USE ONLY	
G04	Sewage Sludge/Biosolids Annual Program Reports
G07	Pretreatment Program Reports
G09	Sewer Overflow/Bypass Event Reports
G3A	DMRs: Regular Submission Frequency
G8B	SIU Compliance Reports (State is Control Authority)

Attachment 1
Water Quality Assessment
The Eagle River
Town of Gypsum, Gypsum WWTF
Nathan Bradley
10/8/2020

Table of Contents

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd

I. Water Quality Assessment Summary

Table A-1 includes summary information related to this WQA. This summary table includes key regulatory starting points used in development of the WQA such as: receiving stream information; threatened and endangered species; 303(d) and Monitoring and Evaluation listings; low flow and facility flow summaries; and a list of parameters evaluated.

Table A-1
WQA Summary

Facility Information

Facility Name	Permit Number	Design Flow (max 30-day ave, MGD)	Design Flow (max 30-day ave, CFS)
F1. Eagle WWTF	CO0048241	1.65	2.6
F2. Gypsum WWTF	CO0048830	0.96	1.5

Receiving Stream Information

Receiving Stream Name	Segment ID	Designation	Classification(s)
The Eagle River	COUCEA09c	Reviewable	Aquatic Life Cold 1, Recreation Class E, Agriculture, Water Supply

Low Flows (cfs)

Receiving Stream Name	1E3 (1-day)	7E3 (7-day)	30E3 (30-day)	Ratio of 30E3 to the Design Flow (cfs)
S1. The Eagle River at the Eagle WWTF	12	14	16	6:1
S2. The Eagle River at the Gypsum WWTF	74*	85*	100*	67:1*

Regulatory Information

T&E Species	303(d) (Reg 93)	Monitor and Eval (Reg 93)	Existing TMDL	Temporary Modification(s)	Control Regulation
No	As (Total), Nitrite	No	No	As (ch) = Hybrid. Expiration Date 12/31/2024	Reg. 39, Reg. 85

Pollutants Evaluated

F1. Ammonia, E. Coli, TRC, Nitrite, TIN, Metals, Salinity, Nonylphenol, Nutrients
F2. Ammonia, E. Coli, TRC, Nitrite, TIN, Arsenic, Mercury, Salinity, Nutrients**

*Low flows provided here are used for non-conservative parameters and WET analysis for the Gypsum WWTF. The Eagle and Gypsum facilities are modeled together for conservative parameters, using the low flows in the Eagle River available to the Eagle WWTF (F1/S1).
**Please note that the only metals evaluated for Gypsum WWTF are mercury (due to industrial contributors) and arsenic (due to 303d listing). Other metals are not evaluated at this time because it is division practice to not consider metals as POCs for minor facilities.

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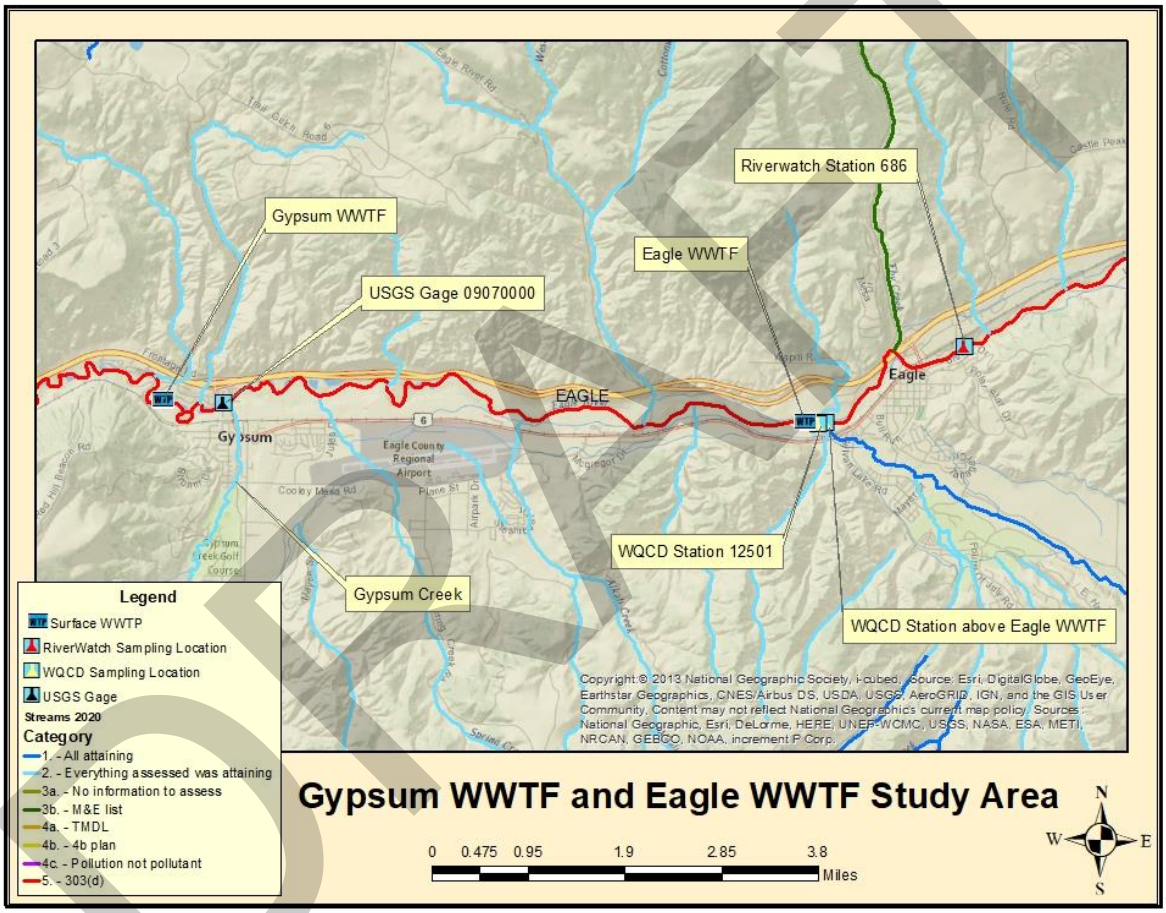
II. Introduction

The water quality assessment (WQA) of the Eagle River near the Eagle WWTF and the Gypsum WWTF located in Eagle County, is intended to determine the assimilative capacities available for pollutants found to be of concern. This WQA describes how the water quality based effluent limits (WQBELs) are developed. These parameters may or may not appear in the permit with limitations or monitoring requirements, subject to other determinations such as reasonable potential analysis, evaluation of federal effluent limitation guidelines, implementation of state-based technology based limits, mixing zone analyses, 303(d) listings, threatened and endangered species listing, or other requirements as discussed in the permit rationale. Figure A-1 contains a map of the study area evaluated as part of this WQA.

FIGURE A-1



The Eagle WWTF also discharges to the Eagle River, which is stream segment COUCEA09c. This means the Upper Colorado Basin, Eagle Sub-basin, Stream Segment 09c. This segment is composed of the "Mainstem of the Eagle River from a point immediately below the confluence with Rube Creek to the confluence with the Colorado River." Stream segment COUCEA09c is classified for Aquatic Life Cold 1, Recreation Class E, Water Supply and Agriculture.

The Gypsum WWTF discharges to the Eagle River, which is stream segment COUCEA09c. This means the Upper Colorado Basin, Eagle Sub-basin, Stream Segment 09c. This segment is composed of the "Mainstem of the Eagle River from a point immediately below the confluence with Rube Creek to the confluence with the Colorado River." Stream segment COUCEA09c is classified for Aquatic Life Cold 1, Recreation Class E, Water Supply and Agriculture.

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Information used in this assessment includes data gathered from the Gypsum WWTF, the Division, the Colorado Division of Water Resources (DWR) and the U.S. Geological Survey (USGS). The data used in the assessment consist of the best information available at the time of preparation of this WQA analysis.

III. Water Quality Standards

Narrative Standards

Narrative Statewide Basic Standards have been developed in Section 31.11(1) of the regulations, and apply to any pollutant of concern, even where there is no numeric standard for that pollutant. Waters of the state shall be free from substances attributable to human-caused point source or nonpoint source discharges in amounts, concentrations or combinations which:

for all surface waters except wetlands;

(i) can settle to form bottom deposits detrimental to the beneficial uses. Depositions are stream bottom buildup of materials which include but are not limited to anaerobic sludge, mine slurry or tailings, silt, or mud; or (ii) form floating debris, scum, or other surface materials sufficient to harm existing beneficial uses; or (iii) produce color, odor, or other conditions in such a degree as to create a nuisance or harm existing beneficial uses or impart any undesirable taste to significant edible aquatic species or to the water; or (iv) are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; or (v) produce a predominance of undesirable aquatic life; or (vi) cause a film on the surface or produce a deposit on shorelines; and

for surface waters in wetlands;

(i) produce color, odor, changes in pH, or other conditions in such a degree as to create a nuisance or harm water quality dependent functions or impart any undesirable taste to significant edible aquatic species of the wetland; or (ii) are toxic to humans, animals, plants, or aquatic life of the wetland.

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for any parameter of concern could be put in CDPS discharge permits.

Standards for Organic Parameters and Radionuclides

Radionuclides: Statewide Basic Standards have been developed in Section 31.11(2) and (3) of The Basic Standards and Methodologies for Surface Water to protect the waters of the state from radionuclides and organic chemicals.

In no case shall radioactive materials in surface waters be increased by any cause attributable to municipal, industrial, or agricultural practices or discharges to as to exceed the following levels, unless alternative site-specific standards have been adopted. Standards for radionuclides are shown in Table A-2.

Table A-2
Radionuclide Standards

Parameter	Picocuries per Liter
Americium 241*	0.15
Cesium 134	80
Plutonium 239, and 240*	0.15
Radium 226 and 228*	5
Strontium 90*	8
Thorium 230 and 232*	60
Tritium	20,000

*Samples for these materials should be analyzed using unfiltered (total) samples. These Human Health based standards are 30-day average values.

Organics: The organic pollutant standards contained in the Basic Standards for Organic Chemicals Table are applicable to all surface waters of the state for the corresponding use classifications, unless alternative site-specific standards have been adopted. These standards have been adopted as "interim standards" and will remain in effect until alternative permanent standards are adopted by the Commission. These interim standards shall not be considered final or permanent standards subject to antibacksliding or downgrading restrictions. Although not reproduced in this WQA, the specific standards for organic chemicals can be found in Regulation 31.11(3).

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for radionuclides, organics, or any other parameter of concern could be put in CDPS discharge permits.

The aquatic life standards for organics apply to all stream segments that are classified for aquatic life. The water supply standards apply only to those segments that are classified for water supply. The water + fish standards apply to those segments that have a Class 1 aquatic life and a water supply classification. The fish ingestion standards apply to Class 1 aquatic life segments that do not have a water supply designation. The water + fish and the fish ingestion standards may also apply to Class 2 aquatic life segments, where the Water Quality Control Commission has made such determination.

Because the Eagle River is classified for Aquatic Life Cold 1, with a water supply designation, the water + fish, and aquatic life standards apply to this discharge.

Salinity and Nutrients

Salinity: Regulation 61.8(2)(l) contains requirements regarding salinity for any discharges to the Colorado River Watershed. For industrial dischargers and for the discharge of intercepted groundwater, this is a no-salt discharge requirement. However, the regulation states that this requirement may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 350 tons per year. The Division may permit the discharge of salt upon a satisfactory demonstration that it is not practicable to prevent the discharge of all salt. See Regulation 61.8(2)(l)(i)(A)(1) for industrial discharges and 61.8(2)(l)(iii) for discharges of intercepted groundwater for more information regarding this demonstration.

For municipal dischargers, an incremental increase of 400 mg/l above the flow weighted averaged salinity of the intake water supply is allowed. This may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 366 tons per year. The Division may permit the discharge of salt in excess of the 400 mg/l incremental increase, upon a satisfactory demonstration that it is not practicable to attain this limit. See Regulation 61.8(2)(l)(vi)(A)(1) for more information regarding this demonstration.

In addition, the Division's policy, Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, may be applied to discharges where an agricultural water intake exists downstream of a discharge point. Limitations for electrical conductivity and sodium absorption ratio may be applied in accordance with this policy.

Nutrients

Phosphorus and Total Inorganic Nitrogen: Regulation 85, the *Nutrients Management Control Regulation* has been adopted by the Water Quality Control Commission and became effective September 30, 2012. This regulation contains requirements for phosphorus and Total Inorganic Nitrogen (TIN) concentrations for some point source dischargers. Limitations for phosphorus and TIN may be applied in accordance with this regulation.

Temperature

Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed deleterious to the resident aquatic life. This standard shall not be interpreted or applied in a manner inconsistent with section 25-8-104, C.R.S.

Segment Specific Numeric Standards

Numeric standards are developed on a basin-specific basis and are adopted for particular stream segments by the Water Quality Control Commission. The standards in Table A-3a have been assigned to stream segment COUCEA09c in accordance with the Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River. Additionally, the parameters in Table A-3b are also being evaluated as they are parameters of concern for this facility type. These parameters are being included based on the numeric standards in Regulation 31.

Table A-3a **In-stream Standards for Stream Segment COUCEA09c**
Physical and Biological
Dissolved Oxygen (DO) = 6 mg/l, minimum (7 mg/l, minimum during spawning)
pH 6.5- 9.0
E. coli chronic = 126 colonies/100 ml
Temperature April-Oct = 18.3° C MWAT and 24.3° C DM
Temperature Nov-March = 9° C MWAT and 13° C DM
Inorganic
Total Ammonia acute and chronic = TVS
Chlorine acute = 0.019 mg/l
Chlorine chronic = 0.011 mg/l
Free Cyanide acute = 0.005 mg/l
Sulfide chronic = 0.002 mg/l
Boron chronic = 0.75 mg/l
Nitrite acute = 0.05 mg/l
Nitrate acute = 10 mg/l
Chloride chronic = 250 mg/l
Sulfate chronic WS = The greater of ambient water quality as of January 1, 2000 or 250 mg/l
Metals
Dissolved Arsenic acute = 340 µg/l
Total Recoverable Arsenic chronic = 0.02 µg/l
Temporary modification: Arsenic chronic = hybrid; expiration date 12/31/24
Dissolved Cadmium acute for trout and Dissolved Cadmium chronic = TVS
Total Recoverable Trivalent Chromium acute = 50 µg/l
Dissolved Trivalent Chromium chronic = TVS
Dissolved Hexavalent Chromium acute and chronic = TVS
Dissolved Copper acute and chronic = TVS
Dissolved Iron chronic WS = The greater of ambient water quality as of January 1, 2000, or 300 µg/l
Total Recoverable Iron chronic = 1000 µg/l
Dissolved Lead acute and chronic = TVS

Dissolved Manganese chronic WS = The greater of ambient water quality as of January 1, 2000, or 50 µg/l
Dissolved Manganese acute and chronic = TVS
Total Recoverable Molybdenum chronic = 150 µg/l
Total Mercury chronic = 0.01 µg/l
Dissolved Nickel acute and chronic = TVS
Dissolved Selenium acute and chronic = TVS
Dissolved Silver acute and Dissolved Silver chronic for trout = TVS
Uranium acute and chronic = varies*
Dissolved Zinc acute and chronic = TVS

* Regulation 33.5(3) states:

1. Uranium level in surface waters shall be maintained at the lowest practical level.
2. In no case shall uranium levels in waters assigned a water supply classification be increased by any cause attributable to municipal, industrial, or agricultural discharges so as to exceed 16.8-30 µg/l or naturally-occurring concentrations (as determined by the State of Colorado), whichever is greater.

Acrylamide is being considered as a pollutant of concern for the Eagle WWTF because the facility is requesting permit coverage for the use of Clarifloc C-6262, chemical that is known to contain acrylamide.

Table A-3b **Additional Standards Being Evaluated Based on Regulation 31**
Acrylamide chronic = 0.022 µg/l*
Nonylphenol acute = 28 µg/l
Nonylphenol chronic = 6.6 µg/l

Note that the temporary modification for chronic arsenic is specificied 'hybrid', which applies "current condition" to discharges existing on or before 6/1/2013. This is further described in the Statement of Basis and Purpose, Regulation No. 33, June, 2019.

Table Value Standards and Hardness Calculations

Standards for metals are generally shown in the regulations as Table Value Standards (TVS), and these often must be derived from equations that depend on the receiving stream hardness or species of fish present; for ammonia, standards are discussed further in Section IV of this WQA. The Classification and Numeric Standards documents for each basin include a specification for appropriate hardness values to be used. Specifically, the regulations state that:

> The hardness values used in calculating the appropriate metal standard should be based on the lower 95% confidence limit of the mean hardness value at the periodic low flow criteria as determined from a regression analysis of site-specific data. Where insufficient site-specific data exists to define the mean hardness value at the periodic low flow criteria, representative regional data shall be used to perform the regression analysis. Where a regression analysis is not appropriate, a site-specific method should be used.

Hardness data for the Eagle River near the point of discharge of the Eagle WWTF were insufficient to conduct a regression analysis based on the low flow. Therefore, the Division's alternative approach to calculating hardness was used, which involves computing a mean hardness.

The mean hardness was computed to be 262 mg/l based on sampling data from USGS Gage 09069000 (Eagle River at Gypsum, CO) located on the Eagle River 6.8 miles downstream from the Eagle WWTF. Also, sampling data was collected from WQCD Station 52 (Eagle River at Gypsum) located on the Eagle River 6.7 miles downstream from the Eagle WWTF. This hardness value and the formulas contained in the TVS were used to calculate the in-stream water quality standards for metals, with the results shown in Table A-4.

Table A-4

TVS-Based Metals Water Quality Standards for CO0048241
Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 33*

Parameter	*In-Stream Water Quality Standard*		*TVS Formula: Hardness (mg/l) as CaCO3 =* 262
Cadmium, Dissolved	Acute	4.4 µg/l	$[1.136672-0.041838\ln(\text{hardness})]e^{(0.9789(\ln(\text{hardness}))-3.866)}$
	Chronic	1.5 µg/l	$[1.101672-0.041838\ln(\text{hardness})]e^{(0.7977(\ln(\text{hardness}))-3.909)}$
Trivalent Chromium, Dissolved	Acute	1254 µg/l	$e^{(0.819(\ln(\text{hardness}))+2.5736)}$
	Chronic	163 µg/l	$e^{(0.819(\ln(\text{hardness}))+0.5340)}$
Hexavalent Chromium, Dissolved	Acute	16 µg/l	Numeric standards provided, formula not applicable
	Chronic	11 µg/l	Numeric standards provided, formula not applicable
Copper, Dissolved	Acute	33 µg/l	$e^{(0.9422(\ln(\text{hardness}))-1.7408)}$
	Chronic	20 µg/l	$e^{(0.8545(\ln(\text{hardness}))-1.7428)}$
Lead, Dissolved	Acute	181 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-1.46)}]$
	Chronic	7.1 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-4.705)}]$
Manganese, Dissolved	Acute	4115 µg/l	$e^{(0.3331(\ln(\text{hardness}))+6.4676)}$
	Chronic	2274 µg/l	$e^{(0.3331(\ln(\text{hardness}))+5.8743)}$
Nickel, Dissolved	Acute	1058 µg/l	$e^{(0.846(\ln(\text{hardness}))+2.253)}$
	Chronic	117 µg/l	$e^{(0.846(\ln(\text{hardness}))+0.0554)}$
Selenium, Dissolved	Acute	18.4 µg/l	Numeric standards provided, formula not applicable
	Chronic	4.6 µg/l	Numeric standards provided, formula not applicable
Silver, Dissolved	Acute	11 µg/l	$\frac{1}{2}\ e^{(1.72(\ln(\text{hardness}))-6.52)}$
	Chronic	0.39 µg/l	$e^{(1.72(\ln(\text{hardness}))-10.51)}$
	Chronic	1.7 µg/l	$e^{(1.72(\ln(\text{hardness}))-9.06)}$
Uranium, Dissolved	Acute	6944 µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.7088)}$
	Chronic	4338 µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.2382)}$
Zinc, Dissolved	Acute	384 µg/l	$0.978e^{(0.9094(\ln(\text{hardness}))+0.9095)}$
	Chronic	291 µg/l	$0.986\ e^{(0.9094(\ln(\text{hardness}))+0.6235)}$

Total Maximum Daily Loads and Regulation 93 – Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List

This stream segment is on the 303(d) list of water quality impacted streams for Total Arsenic and Nitrite.

For a receiving water placed on this list, the Restoration and Protection Unit is tasked with developing the Total Maximum Daily Loads (TMDLs) and the Waste Load Allocation (WLAs) to be distributed to the affected facilities. WLAs for Total Arsenic have not yet been established and the allowable concentration calculated in the following sections may change upon further evaluation by the Division.

IV. Receiving Stream Information

Low Flow Analysis

The Colorado Regulations specify the use of low flow conditions when establishing water quality based effluent limitations, specifically the acute and chronic low flows. The acute low flow, referred to as 1E3, represents the one-day low flow recurring in a three-year interval, and is used in developing limitations based on an acute standard. The 7-day average low flow, 7E3, represents the seven-day average low flow recurring in a 3 year interval, and is used in developing limitations based on a Maximum Weekly Average Temperature standard (MWAT). The chronic low flow, 30E3, represents the 30-day average low flow recurring in a three-year interval, and is used in developing limitations based on a chronic standard.

To determine the low flows available to the Eagle WWTF, a flow gage measurement immediately upstream of the facility should be used. Because there were no flow gages immediately upstream of the Town of Eagle WWTF, a downstream gage station was used. Daily flows from the USGS gage station 09070000 (Eagle River below Gypsum, CO), located approximately six miles downstream of the Town of Eagle WWTF, were obtained and the annual 1E3 and 30E3 low flows were calculated using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides a calculated acute and chronic low flows for each month.

To estimate the low flows at the Town of Eagle WWTF discharge point, the ratio of the watershed area above Town of Eagle WWTF to the watershed area above the gage station was determined. The area of the watershed above the Town of Eagle WWTF was calculated to be 793 square miles using the USGS StreamStats application. The Eagle River watershed above the USGS gage station 09070000 (Eagle River below Gypsum, CO) was determined by the USGS to be 944.6 square miles. The low flow calculated at the gage station was multiplied by the ratio of watershed areas and the Eagle WWTF design flow was subtracted from those flows to determine low flows available for the Town of Eagle WWTF. Flow data from November 25, 2008 through November 25, 2018 were available from the gage station. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

The Eagle WWTF was required to complete a mixing zone study during their previous permit cycle. On a letter dated May 25, 2017, Mott Macdonald, consultant for the Town of Eagle WWTF indicated that "The study was inconclusive due to the unique mixing characteristics of the Eagle River adjacent to the WWTP discharge. Brush Creek, which flows into the Eagle River approximately 130 feet upstream of the WWTP discharge, does not appear to mix in with the Eagle River for hundreds of feet. Instead, the Brush Creek flow appears to hug the south bank of the river. The conductance in the Brush Creek portion of the flow is much different than the Eagle River and led to an inconclusive passive tracer study." After further correspondence with the facility, Brush Creek accounts for approximately 20% of the flow of the Eagle River at low flows immediately downstream of the confluence. Therefore, the facility will receive 20% of the low flow of the determined Eagle River low flows. Reduced flows are shown below in Table A-5b.

Based on the low flow analysis described previously, the full upstream low flows available to the Eagle WWTF were calculated and are presented in Table A-5a.

Table A-5a

Low Flows for the Eagle River at the Eagle WWTF

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	60	69	90	82	105	139	167	103	78	61	65	83	60
7E3 Chronic	69	78	96	94	101	139	167	103	81	69	69	85	70

Table A-5a Low Flows for the Eagle River at the Eagle WWTF													
30E3 Chronic	81	81	96	102	105	139	167	103	81	81	81	85	81

During the months of April, May, June and July, the acute low flow calculated by DFLOW exceeded the chronic low flow. During the months of February, May, June, July, August and November, the 7E3 chronic low flow calculated by DFLOW exceeded the 30E3 chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the full low flow of the Eagle River to the Eagle WWTF design flow is 31:1.

Based on the low flow analysis described previously, 20 percent of the upstream low flows available to the Eagle WWTF were calculated and are presented in Table A-5b.

Table A-5b Reduced Low Flows for the Eagle River at the Eagle WWTF													
Low Flow (cfs)	***Annual***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***
1E3 Acute	12	14	18	16	21	28	33	21	16	12	13	17	12
7E3 Chronic	14	16	19	19	20	28	33	21	16	14	14	17	14
30E3 Chronic	16	16	19	20	21	28	33	21	16	16	16	17	16

During the months of April, May, June and July, the acute low flow calculated by DFLOW exceeded the chronic low flow. During the months of February, May, June, July, August and November, the 7E3 chronic low flow calculated by DFLOW exceeded the 30E3 chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of 20 percent of the low flow of the Eagle River to the Eagle WWTF design flow is 6:1.

Gypsum WWTF:
To determine the low flows available to the Gypsum WWTF, USGS gage station 09070000 (Eagle River below Gypsum, CO) was used. This flow gage provides a representative measurement of upstream flow because it is located about 1 mile upstream of the Gypsum WWTF.

Daily flows from the USGS Gage Station 09070000 (Eagle River below Gypsum, CO) were obtained and the annual 1E3 and 30E3 low flows were calculated using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides calculated acute and chronic low flows for each month.

Flow data from November 25, 2008 through November 25, 2018 were available from the gage station. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Based on the low flow analysis described previously, the upstream low flows available to the Gypsum WWTF were calculated and are presented in Table A-5b.

Table A-5b Low Flows for the Eagle River at the Gypsum WWTF													
Low Flow (cfs)	***Annual***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***
1E3 Acute	74	85	110	100	128	169	202	126	95	75	80	102	74
7E3 Chronic	85	96	117	114	123	169	202	126	100	85	85	105	87
30E3 Chronic	100	100	117	125	128	169	202	126	100	100	100	105	100

During the months of April, May, June and July, the acute low flow calculated by DFLOW exceeded the chronic low flow. During the months of February, May, June, July, August and November, the 7E3 chronic low flow calculated by DFLOW exceeded the 30E3 chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the low flow of the Eagle River to the Gypsum WWTF design flow is 67:1.

Mixing Zones

The amount of the available assimilative capacity (dilution) that may be used by the permittee for the purposes of calculating the WQBELs may be limited in a permitting action based upon a mixing zone analysis or other factor. These other factors that may reduce the amount of assimilative capacity available in a permit are: presence of other dischargers in the vicinity; the presence of a water diversion downstream of the discharge (in the mixing zone); the need to provide a zone of passage for aquatic life; the likelihood of bioaccumulation of toxins in fish or wildlife; habitat considerations such as fish spawning or nursery areas; the presence of threatened and endangered species; potential for human exposure through drinking water or recreation; the possibility that aquatic life will be attracted to the effluent plume; the potential for adverse effects on groundwater; and the toxicity or persistence of the substance discharged.

Unless a facility has performed a mixing zone study during the course of the previous permit, and a decision has been made regarding the amount of the assimilative capacity that can be used by the facility, the Division assumes that the full assimilative capacity can be allocated. Note that the review of mixing study considerations, exemptions and perhaps performing a new mixing study (due to changes in low flow, change in facility design flow, channel geomorphology or other reason) is evaluated in every permit and permit renewal.

If a mixing zone study has been performed and a decision regarding the amount of available assimilative capacity has been made, the Division may calculate the water quality based effluent limitations (WQBELs) based on this available capacity. In addition, the amount of assimilative capacity may be reduced by T&E implications.

For the Eagle WWTF, as described in the Low Flow section above, 20% of the available assimilative capacity of the Eagle River may be used due to the results of the mixing zone study and correspondence with the facility.

For the Gypsum WWTF, 100% of the available assimilative capacity may be used as the facility has not had to perform a mixing zone study and the discharge is not to a T&E stream segment, and is not expected to have an influence on any of the other factors listed above.

Ambient Water Quality

The Division evaluates ambient water quality based on a variety of statistical methods as prescribed in Section 31.8(2)(a)(i) and 31.8(2)(b)(i)(B) of the *Colorado Department of Public Health and Environment Water Quality Control Commission Regulation No. 31*, and as outlined in the Division's Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits (WQP-19). Ambient water quality is evaluated in this WQA analysis for use in determining assimilative capacities and in completing antidegradation reviews for pollutants of concern, where applicable.

To conduct an assessment of the ambient water quality upstream of the Eagle WWTF, data were gathered from three upstream sampling stations. WQCD Station CO0048241 (Eagle River Upstream of CO0048241 Eagle WWTF), located just upstream from the Eagle WWTF discharge point, provided data from January 2014 through December 2015. These data were supplemented with data from Riverwatch Station 686 (Hwy 6 Bridge), located approximately two miles upstream from the Eagle WWTF discharge point. Data from this location were available from October 2007 through October 2012. These data were also supplemented with data from WQCD Station 12501 (Eagle River above Confluence with Brush Creek at the Eagle WWTF), located approximately ¼ mile upstream from the Eagle WWTF discharge point. Data from this location were available from September 2009. These data are summarized in Table A-6.

Table A-6

Ambient Water Quality for the Eagle River segment COUCEA09c above the Eagle WWTF

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Maximum*	*Chronic Stream Standard*	*Notes*
E. coli (#/100 ml)	1	12	12	12	12	12	126	1
Total Inorganic Nitrogen as N (mg/l)	21	0.088	0.31	0.8	0.42	1.2	10	
Nitrite as N (mg/l)	23	0	0.046	0.32	0.17	0.96	0.05	2,3
Nitrate+Nitrite as N (mg/l)	21	0.088	0.31	0.8	0.42	1.2	NA	
NH_3 as N, Tot (mg/l) Jan	1	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Feb	1	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Mar	1	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Apr	2	0.009	0.03	0.051	0.03	0	TVS	
NH_3 as N, Tot (mg/l) May	2	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Jun	2	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Jul	1	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Aug	1	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Sep	2	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Oct	2	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Nov	5	0	0	0.008	0.004	0	TVS	2
NH_3 as N, Tot (mg/l) Dec	1	0	0	0	0	0	TVS	2
As, TR (µg/l)	46	0	0	0	0	0	0.02	2
As, Dis (µg/l)	46	0	0	0	0	0	340	2
Cd, TR (µg/l)	46	0	0.22	0.41	0.21	0.9	NA	2
Cd, Dis (µg/l)	47	0	0	0.31	0.11	0.42	0.88	2
Cu, Dis (µg/l)	47	0	1.5	2.7	1.5	7.9	20	2
CN, Tot (µg/l)	0	0	0	0	0	0	NA	2
Fe, Dis (µg/l)	47	0	25	53	31	130	300	
Fe, TR (µg/l)	47	82	174	1313	886	10607	1000	
Pb, TR (µg/l)	46	0	0	5.8	2	17	NA	2

Pb, Dis (µg/l)	47	0	0	0	0.46	4	7.10	2
Mn, Dis (µg/l)	47	6.3	8.6	30	17	190	50	
Se, Dis (µg/l)	47	0	0	0	4	190	4.6	2
Ag, TR (µg/l)	0	0	0	0	0	0	NA	2
Ag, Dis (µg/l)	1	0	0	0	0	0	0.39	2
Zn, Dis (µg/l)	47	7.1	12	21	15	60	291	
Note 1: The calculated mean is the geometric mean. Note that for summarization purposes, the value of one was used where there was no detectable amount because the geometric mean cannot be calculated using a value equal to zero.								
Note 2: When sample results were below detection levels, the value of zero was used in accordance with the Division's standard approach for summarization and averaging purposes.								
Note 3: The ambient water quality exceeds the water quality standards for these parameters.								

V. Facility Information and Pollutants Evaluated

Facility Information

The Eagle WWTF is located at 185 Violet Lane, Eagle, CO; at 39.647406° latitude North and 106.843914° longitude West in Eagle County. The current design capacity of the facility is 1.65 MGD (2.6 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

The Gypsum WWTF is located at 437 Porphyry Road, Gypsum, CO; at 39.6522° latitude North and 106.9623° longitude West in Eagle County. The current design capacity of the facility is 0.96 MGD (1.5 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

The nearest surface water dischargers were:

- Avon WWTF (CO0024431), which discharges to the Eagle River about 20 miles upstream from the Eagle WWTF. The facility has a design flow of 4.3 MGD.
- Edwards WWTF (CO0037311), which discharges to the Eagle River about 16 miles upstream from the Eagle WWTF. The facility has a design flow of 2.83 MGD.

Due to the distance between facilities, the influence of tributaries between the Eagle WWTF and the Gypsum WWTF and the other facilities, it was not necessary to model Avon and Edwards WWTF together with Eagle and Gypsum WWTF.

Three downstream facilities are covered by general permits and have limitations set at the water quality standards. These downstream facilities were not modeled in this WQA as they have a minimal impact on the ambient water quality.

Since the Eagle WWTF receives only 20% of the available dilution in the Eagle River the facility is being evaluated separately for all parameters except Ammonia, and will only be given the reduced assimilative capacity as described in the Low Flow Section above, and in Table A-5b. The Eagle WWTF and the Gypsum WWTF are located in areas of similar land development with similar land uses and are located six miles apart, the Gypsum WWTF is evaluated along with the Eagle WWTF for non-consevative parameters (TIN, Nitrite and Ammonia) and for conservative parameters (Metals, Chloride, Sulfate and Nonylphenol), as well as E. coli due to stream segment COUCEA09c being used for recreational activities.

The Eagle WWTF and the Gypsum WWTF are evaluated separately for non-conservative parameters (TRC) and for WET analysis. Please note that temperature is a shared pollutant of concern, but due to the non-conservative nature, the distance between the two facilities and because of both facility's dilution ratios the Eagle WWTF and Gypsum WWTF are not modelled together for temperature.

Pollutants of Concern

Pollutants of concern may be determined by one or more of the following: facility type; effluent characteristics and chemistry; effluent water quality data; receiving water quality; presence of federal effluent limitation guidelines; or other information. Parameters evaluated in this WQA may or may not appear in a permit with limitations or monitoring requirements, subject to other determinations such as a reasonable potential analysis, mixing zone analyses, 303(d) listings, threatened and endangered species listings or other requirement as discussed in a permit rationale.

There are no site-specific in-stream water quality standards for BOD_5 or $CBOD_5$, TSS, percent removal, and oil and grease for this receiving stream. Thus, assimilative capacities were not determined for these parameters. The applicable limitations for these pollutants can be found in Regulation No. 62 and will be applied in the permits for the Eagle WWTF and the Gypsum WWTF.

The following parameters were identified by the Division as pollutants to be evaluated for the Eagle WWTF:

- Total Residual Chlorine
- *E. coli*
- Total Inorganic Nitrogen/Nitrite
- Ammonia
- Temperature
- Acrylamide
- Metals, Uranium and Cyanide
- Chloride
- Sulfate
- Nonylphenol
- TDS
- Nutrients

It is the Division's standard procedure to consider metals and cyanide as potential pollutants of concern for all major domestic WWTFs, therefore these parameters will be evaluated for the Eagle WWTF. Since the Eagle WWTF receives only 20% of the available dilution in the Eagle River the facility is being evaluated separately for all parameters except Ammonia, and will only be given the reduced assimilative capacity as described in the Low Flow Section above, and in Table A-5b.

According to the *Rationale for Classifications, Standards and Designations of the Upper Colorado River Basin and North Platte River*, stream segment COUCEA09c is designated a water supply.

Effective December 31, 2022 Regulation 31 requires implementation of a nitrate water supply standard of 10 mg/l (as Total Inorganic Nitrogen) in segment COUCEA09c, regardless of the presence or the location of domestic water supply wells within the segment. This is based on the results of the June 2016 Water Quality Control Commission (WQCC) hearing, during which the WQCC repealed footnote 4 to Table II (Inorganic Parameters) of Regulation 31 with an effective date of December 31, 2022. The removal of footnote 4 will result in a requirement to calculate permit limits to implement the nitrate water supply standard of 10 mg/l for any discharge to a segment designated as water supply, and to apply the standard either at the point of discharge or, where a mixing zone is allowable, at the end of the mixing zone. The WQCC chose the delayed effective date to allow time to thoroughly evaluate the receiving water below outfalls to determine whether there is an actual existing Water Supply use and to propose modifications of the segments or standards if warranted.

An evaluation of the Division of Water Resources Colorado's Decision Support System indicates that there is least one drinking water well and/or surface water intakes identified on the segment that are used for water supply located downgradient from the facility discharge location, as follows:

Well Permit No.	Well Receipt No. (Delete column if not needed)	Description (include depth)
280639	9504466	Uses: Domestic; Depth: 35 feet
90377	9113401	Uses: Domestic; Depth 35 feet
147633	0274827	Uses: Domestic; Depth: 46 feet

Thus, the TIN, dissolved iron, dissolved manganese (water supply), sulfate standard(s) are further evaluated as part of this WQA for the Eagle WWTF.

The following parameters were identified by the Division as pollutants to be evaluated for the Gypsum WWTF:

- Total Residual Chlorine
- *E. coli*
- Total Inorganic Nitrogen/Nitrite
- Ammonia
- Temperature
- Total Recoverable Arsenic (303d list)
- Total Mercury
- TDS
- Nutrients

Due to the size of the discharge and the dilution provided by the receiving stream, no unusually high metals concentrations are expected to be found in the wastewater effluent of the Gypsum WWTF. The division has determined, however, that total recoverable arsenic is a POC due to the receiving stream listing on the 303(d) list. Also, the division has also determined that mercury will be further evaluated due to dental offices in the Town of Gypsum which are known contributors of Total Mercury to waste water. These metals will be evaluated together will the Eagle WWTF since these metals are a shared parameter of concern.

According to the *Rationale for Classifications, Standards and Designations of the Upper Colorado River Basin and North Platte River*, stream segment COUCEA09c is designated a water supply. An evaluation of the Division of Water Resources Colorado's Decision Support System indicates that there is least one drinking water well and/or surface water intakes identified on the segment that are used for water supply located downgradient from the facility discharge location, as follows:

Well Permit No.	Well Receipt No. (Delete column if not needed)	Description (include depth)
289826	9504298	Uses: Domestic; Depth: 12 feet
217993	0036266	Uses: Domestic; Depth: 40 feet

Thus, the nitrate standard is further evaluated as part of this WQA for the Gypsum WWTF.

VI. Determination of Water Quality Based Effluent Limitations (WQBELs)

Technical Information

Note that the WQBELs developed in the following paragraphs, are calculations of what an effluent limitation may be in a permit. The WQBELs for any given parameter, will be compared to other potential limitations (federal effluent limitations guidelines, state effluent limitations, or other applicable limitation) and typically the more stringent limit is incorporated into a permit. If the WQBEL is the more stringent limitation, incorporation into a permit is dependent upon a reasonable potential analysis.

In-stream background data and low flows evaluated in Sections II and III are used to determine the assimilative capacity of the Eagle River near the Eagle WWTF and the Gypsum WWTF for pollutants of concern, and to calculate the WQBELs. For all parameters except ammonia, it is the Division's approach to calculate the WQBELs using the lowest of the monthly low flows (referred to as the annual low flow) as

determined in the low flow analysis. For ammonia, it is the standard procedure of the Division to determine monthly WQBELs using the monthly low flows, as the regulations allow the use of seasonal flows.

The Division's standard analysis consists of steady-state, mass-balance calculations for most pollutants and modeling for pollutants such as ammonia. The mass-balance equation is used by the Division to calculate the WQBELs, and accounts for the upstream concentration of a pollutant at the existing quality, critical low flow (minimal dilution), effluent flow and the water quality standard. The mass-balance equation is expressed as:

$$M_2 = \frac{M_3 Q_3 - M_1 Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3)
Q_2 = Average daily effluent flow (design capacity for domestic wastewater treatment facilities)
Q_3 = Downstream flow (Q_1 + Q_2)
M_1 = In-stream background pollutant concentrations at the existing quality
M_2 = Calculated WQBEL
M_3 = Water Quality Standard, or other maximum allowable pollutant concentration

The upstream background pollutant concentrations used in the mass-balance equation will vary based on the regulatory definition of existing ambient water quality. For most pollutants, existing quality is determined to be the 85th percentile. For metals in the total or total recoverable form, existing quality is determined to be the 50th percentile. For pathogens such as fecal coliform and *E. coli*, existing quality is determined to be the geometric mean.

For temperature, the highest 7-day mean (for the chronic standard) of daily average stream temperature, over a seven consecutive day period will be used in calculations of the chronic temperature assimilative capacity, where the daily average temperature should be calculated from a minimum of three measurements spaced equally through the day. The highest 2-hour mean (for the acute standard) of stream temperature will be used in calculations of the acute temperature assimilative capacity. The highest 2-hour mean should be calculated from a minimum of 12 measurements spaced equally through the day.

Since the Eagle WWTF receives only 20% of the available dilution in the Eagle River, the facility's limits will be calculated independently of Gypsum WWTF's contribution, except for ammonia.

Because the Eagle WWTF and Gypsum WWTF are located within 6 miles of each other, the Gypsum WWTF's WQBELs will be determined by combining design flows with the Eagle WWTF for conservative parameters (Metals), non-conservative parameters (TIN, Nitrite and Ammonia) and E. coli. The Gypsum WWTF is evaluated separately for the non-conservative parameter, TRC. When facilities are modeled together, the design flow, Q_2, reflects the combined design flow of the facilities modeled together for a particular parameter, thereby resulting in the calculation of the WQBELs, M_2, applicable to the modeled facilities as set forth below.

Calculation of WQBELs

Using the mass-balance equation provided in the beginning of Section VI, the acute and chronic low flows set out in Section IV, ambient water quality as discussed in Section IV, and the in-stream standards shown in Section III, the WQBELs were calculated. The data used and the resulting WQBELs, M_2, are set forth in Table A-7a for the for the chronic WQBELs and A-7b for the acute WQBELs for the Eagle WWTF and are set forth in Table A-8a for the chronic WQBELs and A-8b for the acute WQBELs for the Gypsum WWTF.

Where a WQBEL is calculated to be a negative number and interpreted to be zero or when the ambient water quality exceeds the in-stream standard, the Division standard procedure is to allocate the water quality standard to prevent further degradation of the receiving waters.

Chlorine: There are no point sources discharging total residual chlorine within one mile of the Eagle WWTF or the Gypsum WWTF. Because chlorine is rapidly oxidized, in-stream levels of residual chlorine are detected only for a short distance below a source. Ambient chlorine was therefore assumed to be zero.

***E. coli*:** To protect the portion of Eagle Creek downstream of Gypsum WWTF, E. coli limits will be determined by using reduced low flows (20%) as described in the Low Flow section above. For Gypsum WWTF, limits will be determined by modeling both Eagle WWTF and Gypsum WWTF together to protect the portion of the stream that is in between the facilities. For *E. coli*, the Division establishes the 7-day geometric mean limit as two times the 30-day geometric mean WQBEL and also includes maximum limits of 2,000 colonies per 100 ml (30-day geometric mean) and 4,000 colonies per 100 ml (7-day geometric mean). This 2000 colony limitation also applies to discharges to ditches.

Temperature (Eagle WWTF): A WQBEL for temperature can only be calculated if there is representative data, in the proper form, to determine what the background Maximum Weekly Average Temperature and Daily Maximum ambient temperatures are. As this data is not available at this time, the temperature limitation will be set at the water quality standard and will be revisited in the future when representative temperature data becomes available.

Temperature (Gypsum WWTF): The 7E3 low flow is 85 cfs, resulting in a dilution ratio (7E3 low flow to effluent) of 57:1. As the discharge is from a Domestic WWTF where the available dilution ratio is > 10:1, in accordance with the Division's Temperature Policy, no temperature limitations are required.

Nitrate / Total Inorganic Nitrogen (T.I.N.): An acute nitrate standard of 10 mg/l is assigned to this segment and applies to both facilities. Because nitrite and ammonia can also form nitrate, compliance with the nitrate standard is achieved through implementation of a Total Inorganic Nitrogen (T.I.N.) limit. T.I.N. effectively measures nitrate and its precursors including nitrite and ammonia.

To determine the background concentration for Total Inorganic Nitrogen for use in the mass balance equation, same day samples of the ambient data for ammonia, nitrite and nitrate (or nitrite + nitrate) were added together to calculate the T.I.N. The 85th percentile of this summed data was calculated and used as the ambient water quality for T.I.N. Due to the reduced dilution available to the Eagle WWTF, it is evaluated separately for T.I.N. To determine the T.I.N. WQBEL for the Gypsum WWTF, it is modeled along with the Eagle WWTF at the full assimilative capacity upstream of Gypsum WWTF.

Total Recoverable Arsenic*:* For Total Recoverable Arsenic WQBEL, this limit will be effective, following the expiration of the temporary modification (12/31/2024), on 1/1/2025. An interim limit will be established as follows:

The Water Quality Control Commission's regulations state that current conditions be maintained and existing uses protected during the duration of a temporary modification. Per Reg. 31.7(3), "the adoption of a temporary modification recognizes current conditions while providing an opportunity to resolve the uncertainty." Similarly, Regulation 31.7(3)(d) states that "In order to protect existing uses, the operative value during the time of the temporary modification will be set to represent the current condition of the waterbody." For existing discharges, the commission has further directed the division to protect the current conditions by determining limitations or other conditions "based on an assessment of the level of effluent quality reasonably achievable without requiring significant investment in facility infrastructure (e.g., based on past facility performance)." Reg. 31.9(4)(c). Therefore, consistent with WQCD Clean Water Policy 13 (Permit Implementation Method for Narrative (Current Condition) Temporary Modifications) and current division practice, the division will establish numeric limits for Total Recoverable Arsenic based on the maximum 30-day average value of the effluent, which is applicable for the duration of the arsenic temporary modification.

Uranium: Because total recoverable uranium assimilative capacities are calculated based on a range of standards, further evaluation is required, as outlined in The Basic Standards and Methodologies for Surface Water. Specifically, the regulations state that "Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the

second number in the range." Because the WQBEL for uranium has been calculated to be greater than the second number in the range of standards, the calculated value will be implemented as the WQBEL.

Table A-7a

Chronic WQBELs for the Eagle WWTF

Parameter	Q_1 *(cfs)*	Q_2 *(cfs)*	Q_3 *(cfs)*	M_1	M_3	M_2	*Notes*
Temp MWAT (°C) April-Oct	16	2.6	19	NA	18	***18.3***	
Temp MWAT (°C) Nov-March	16	2.6	19	NA	9.0	***9.0***	
E. coli (#/100 ml)	16	2.6	19	12	126	***828***	
TRC (mg/l)	16	2.6	19	0	0.011	***0.079***	
As, TR (µg/l)	16	2.6	19	0	0.02	***0.02***	1, 2
Cd, Dis (µg/l)	16	2.6	19	0.31	1.50	***8.8***	
Cr+3, Dis (µg/l)	16	2.6	19	0	0.88	***6.3***	
Cr+6, Dis (µg/l)	16	2.6	19	0	11	***79***	
Cu, Dis (µg/l)	16	2.6	19	2.7	20	***126***	
Fe, Dis (µg/l)	16	2.6	19	53	300	***1820***	
Fe, TR (µg/l)	16	2.6	19	174	1000	***6083***	
Pb, Dis (µg/l)	16	2.6	19	0	7.1	***51***	
Mn, Dis (µg/l), WS*	16	2.6	19	30	50	***173***	
Mn, Dis (µg/l), AQ**	16	2.6	19	30	2274	***16083***	
Mo, TR (µg/l)	16	2.6	19	0	160	***1145***	
Hg, Tot (µg/l)	16	2.6	19	0	0.01	***0.072***	
Ni, TR (µg/l)	16	2.6	19	0	100	***715***	
Ni, Dis (µg/l)	16	2.6	19	0	117	***837***	
Se, Dis (µg/l)	16	2.6	19	0	4.6	***33***	
Ag, Dis (µg/l)	16	2.6	19	0	0.39	***2.8***	
U, TR (µg/l)	16	2.6	19	0	16.8-30	***30***	3, 4
U, Dis (µg/l)	16	2.6	19	0	4338	***31033***	4
Zn, Dis (µg/l)	16	2.6	19	21	291	***1953***	
Chloride (mg/l)	16	2.6	19	0	250	***1788***	
Sulfate (mg/l)	16	2.6	19	0	250	***1788***	
Nonylphenol (µg/l)	16	2.6	19	0	6.6	***47***	
Acrylamide (µg/l)	16	2.6	19	0	0.022	***0.16***	

Note 1: WQBELs for parameters on the 303(d) list are set equal to the water quality standard.

Note 2: For total recoverable As, the allowable discharge concentration, M_2, is calculated as less than the range of water quality standards set forth in Table A-2. The regulations dictate that "no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range." See the text for more information.

Note 3: The first number in the 16.8-30 µg/l range is a strictly health-based value, based on the Commission's established methodology for human health-based standards. The second number in the range is a maximum contaminant level, established under the federal Safe Drinking Water Act that has been determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range. Therefore the limit for TR Uranium will be set to 30 µg/l.

Note 4: The final chronic limit (health-based) for total recoverable uranium is more stringent that the chronic limit for dissolved uranium, and therefore the TR uranium limit will be applied in the final permit.

*The WQBEL is calculated using the Water Supply standard for Dissolved Manganese
**The WQBEL is calculated using the Aquatic Life standard for Dissolved Manganese

Table A-7b

Acute WQBELs for the Eagle WWTF

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	M_3	M_2	Notes
Temp Daily Max (°C) April-Oct	12	2.6	14.6	NA	24.3	***24.3***	
Temp Daily Max (°C) Nov-March	12	2.6	14.6	NA	13.0	***13***	
E. coli (#/100 ml)	chronic X 2 = acute					***1656***	
TRC (mg/l)	12	2.6	15	0	0.019	***0.11***	
Total Inorganic Nitrogen as N (mg/l)	12	2.6	15	0.8	10	***52***	
Nitrite as N (mg/l)	12	2.6	15	0.32	0.05	***0.05***	1
As, Dis (µg/l)	12	2.6	15	0	340	***1909***	
Cd, TR (µg/l)	12	2.6	15	0.22	5	***27***	
Cd, Dis (µg/l)	12	2.6	15	0.31	4.4	***23***	
Cr+3, TR (µg/l)	12	2.6	15	0	50	***281***	
Cr+6, Dis (µg/l)	12	2.6	15	0	16	***90***	
Cu, Dis (µg/l)	12	2.6	15	2.7	33	***173***	
CN, Free (µg/l)	12	2.6	15	0	5	***28***	
Pb, TR (µg/l)	12	2.6	15	0	50	***281***	
Pb, Dis (µg/l)	12	2.6	15	0	181	***1016***	
Mn, Dis (µg/l)	12	2.6	15	30	4115	***22969***	
Ni, Dis (µg/l)	12	2.6	15	0	1058	***5941***	
Se, Dis (µg/l)	12	2.6	15	0	18	***103***	
Ag, Dis (µg/l)	12	2.6	15	0	11	***62***	
U, Dis (µg/l)	12	2.6	15	0	6944	***38993***	
Zn, Dis (µg/l)	12	2.6	15	21	384	***2059***	
Nonylphenol (µg/l)	12	2.6	15	0	28	***157***	

Note 1: WQBELs for parameters on the 303(d) list are set equal to the water quality standard.

Table A-8a

Chronic WQBELs for the Gypsum WWTF

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	M_3	M_2	Notes
E. coli (#/100 ml)	81	4.1	85	12	126	***2378***	1,2
TRC (mg/l)	100	1.5	102	0	0.011	***0.5***	3
As, TR (µg/l)	81	4.1	85	0	0.02	***0.02***	2,4,5
Hg, Tot (µg/l)	81	4.1	85	0	0.01	***0.21***	2

Note 1: The chronic *E. coli* WQBEL is capped at 2,000 #/100 ml.

Note 2: Combined design capacities for Gypsum WWTF and Eagle WWTF were used to calculate WQBLEs.

Note 3: The chronic TRC WQBEL is capped at 0.5 mg/l per Regulation 62.

Note 4: WQBELs for parameters on the 303(d) list are set equal to the water quality standard
Note 5: For total recoverable As, the allowable discharge concentration, M_2, is calculated as less than the range of water quality standards set forth in Table A-2. The regulations dictate that "no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range." See the text for more information.

Table A-8b

Acute WQBELs for the Gypsum WWTF

Parameter	*Q_1 (cfs)*	*Q_2 (cfs)*	*Q_3 (cfs)*	*M_1*	*M_3*	*M_2*	*Notes*
E. coli (#/100 ml)	chronic X 2 = acute					***4756***	1,2
TRC (mg/l)	74	1.5	76	0	0.019	***0.5***	3
Total Inorganic Nitrogen as N (mg/l)	60	4.1	64	0.8	10	***145***	2
Nitrite as N (mg/l)	60	4.1	64	0.32	0.05	***0.05***	2, 4
Note 1: The acute *E. coli* WQBEL is capped at 4,000 #/100 ml.							
Note 2: Gypsum WWTF and Eagle WWTF were modeled together for this parameter.							
Note 3: The acute TRC WQBEL is capped at 0.5 mg/l per Regulation 62.							
Note 4: Since this parameter is on the 303(d) list, the WQBEL will be set equal to the water quality standard.							

Ammonia: The Ammonia Toxicity Model (AMMTOX) is a software program designed to project the downstream effects of ammonia and the ammonia assimilative capacities available to each discharger based on upstream water quality and effluent discharges. To develop data for the AMMTOX model, an in-stream water quality study should be conducted of the upstream receiving water conditions, particularly the pH and corresponding temperature, over a period of at least one year. The Gypsum WWTF was modeled together with the Eagle WWTF due to their proximity.

Temperature and corresponding pH data sets, as well as ammonia data reflecting upstream ambient receiving water conditions were available for the Eagle River based on data collected at Riverwatch Station 686 (Hwy 6 Bridge). This data reflected a period of record from October 2007 through October 2012. Ammonia data from WQCD Station CO0048241 (Eagle River Upstream of CO0048241 Eagle WWTF), available from a time period of January 2014 through December 2015, was also used. Ammonia data from WQCD Station 12501 (Eagle River above Confluence with Brush Creek at the Eagle WWTF), available from 2009, also supplemented this data set. The data previously shown in the Ambient Water Quality section of Part IV of the WQA was used to establish the average headwater conditions in the AMMTOX model.

Effluent pH data were available from the Gypsum WWTF's DMR and the Eagle WWTF's DMR submissions were used to establish the average facility contributions in the AMMTOX model. There were no temperature data available for the Gypsum WWTF or the Eagle WWTF that could be used as adequate input data for the AMMTOX model. Therefore, the Division standard procedure is to rely on statistically-based, regionalized data for pH and temperature compiled from similar facilities.

Gypsum Creek flows into Eagle River between the Eagle WWTF's and the Gypsum WWTF's discharge locations, and therefore needed to be included in the AMMTOX model. In the absence of ambient data on Gypsum Creek, the pH, temperature and ammonia inputs were set equal to the headwater conditions on Eagle River. There are no flow gauges which represent flows in Gypsum Creek at the location where Gypsum Creek enters the Eagle River. To determine the low flows in Gypsum Creek, the upstream low flows determined at the Eagle WWTF and the design flow of the Eagle WWTF were subtracted from the flows determined at the USGS gage station 09070000 (Eagle River below Gypsum, CO).

The AMMTOX model may be calibrated for a number of variables in addition to the data discussed above. The values used for the other variables in the model are listed below:

- Stream velocity = $0.3Q^{0.4d}$
- Default ammonia loss rate = 6/day
- pH amplitude was assumed to be medium
- Default times for pH maximum, temperature maximum, and time of day of occurrence
- pH rebound was set at the default value of 0.2 su per mile
- Temperature rebound was set at the default value of 0.7 degrees C per mile.

The results of the ammonia analyses for the Eagle WWTF are presented in Table A-9a, and for the Gypsum WWTF in Table A-9b.

Table A-9a
AMMTOX Results for the Eagle River for the Eagle WWTF

Design of 1.65 MGD (2.6 cfs)

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	6.2	10
February	6.8	12
March	8.2	13
April	9.3	17
May	15	30
June	16	36
July	19	53
August	14	53
September	11	25
October	10	18
November	7.3	13
December	6.6	10

Table A-9b
AMMTOX Results for the Eagle River for the Gypsum WWTF

Design of 0.96 MGD (1.5 cfs)

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	14	21
February	15	25
March	18	30
April	20	37
May	27	65
June	26	65
July	21	59
August	18	50
September	18	38
October	21	33
November	15	34
December	13	26

Whole Effluent Toxicity (WET) Testing:

The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for Surface Waters. The requirements for WET testing are being implemented in accordance with Division policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010). Note that this policy has recently been updated and the permittee should refer to this document for additional information regarding WET.

In-Stream Waste Concentration (IWC) – Where monitoring or limitations for WET are deemed appropriate by the Division, the chronic in-stream dilution is critical in determining whether acute or chronic conditions shall apply. In accordance with Division policy, for those discharges where the chronic IWC is greater than 9.1% and the receiving stream has a Class 1 Aquatic Life use or Class 2 Aquatic Life use with all of the appropriate aquatic life numeric standards, chronic conditions will normally apply. Where the chronic IWC is less than or equal to 9.1, or the stream is not classified as described above, acute conditions will normally apply. The chronic IWC is determined using the following equation:

IWC = [Facility Flow (FF)/(Stream Chronic Low Flow (annual) + FF)] X 100%

The flows and corresponding IWC for the appropriate discharge point for the Eagle WWTF are:

Permitted Feature	Chronic Low Flow, 30E3 (cfs)	Facility Design Flow (cfs)	IWC, (%)
001A	16	2.6	14%

The IWC for the Eagle WWTF permit is 14%, which represents a wastewater concentration of 14% effluent to 86% receiving stream. This IWC correlates to chronic WET testing. The fact sheet and the permit will contain additional information regarding the type of WET testing applicable to this facility.

The flows and corresponding IWC for the appropriate discharge point for the Gypsum WWTF are:

Permitted Feature	Chronic Low Flow, 30E3 (cfs)	Facility Design Flow (cfs)	IWC, (%)
001A	100	1.5	1%

The IWC for the Gypsum WWTF permit is 1%, which represents a wastewater concentration of 1% effluent to 99% receiving stream. This IWC correlates to acute WET testing. The fact sheet and the permit will contain additional information regarding the type of WET testing applicable to this facility.

VII. Antidegradation Evaluation

As set out in *The Basic Standards and Methodologies for Surface Water*, Section 31.8(2)(b), an antidegradation analysis is required except in cases where the receiving water is designated as "Use Protected." Note that "Use Protected" waters are waters "that the Commission has determined do not warrant the special protection provided by the outstanding waters designation or the antidegradation review process" as set out in Section 31.8(2)(b). The antidegradation section of the regulation became effective in December 2000, and therefore antidegradation considerations are applicable to this WQA analysis.

According to the *Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River*, stream segment COUCEA09c is Reviewable. Thus, an antidegradation review is required for this segment if new or increased impacts are found to occur.

The Water Quality Control Commission has recently completed a final action for *The Basic Standards and Methodologies for Surface Water, Regulation 31* which became effective January 1, 2017. The final action exempts dissolved iron, dissolved manganese, and sulfate from antidegradation consideration on the basis that this level of protection extends to standards that protect "fishable/swimmable" uses, and not water supply uses. Dissolved iron, dissolved manganese and sulfate are based on secondary Safe Drinking Water Act criteria and are not surrogates for any swimmable criteria, and are therefore exempt from further antidegradation review. This WQA has been developed in conformance with this final action.

Introduction to the Antidegradation Process

The antidegradation process conducted as part of this water quality assessment is designed to determine if an antidegradation review is necessary and if necessary, to complete the required calculations to determine the limits that can be selected as the antidegradation-based effluent limit (ADBEL), absent further analyses that must be conducted by the facility.

As outlined in the *Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance* (AD Guidance), the first consideration of an antidegradation evaluation is to determine if new or increased impacts are expected to occur. This is determined by a comparison of the newly calculated WQBELs verses the existing permit limitations in place as of September 30, 2000, and is described in more detail in the analysis. Note that the AD Guidance refers to the permit limitations as of September 30, 2000 as the existing limits.

If a new or increased impact is found to occur, then the next step of the antidegradation process is to go through the significance determination tests. These tests include: 1) bioaccumulative toxic pollutant test; 2) temporary impacts test; 3) dilution test (100:1 dilution at low flow) and; 4) a concentration test.

As the determination of new or increased impacts, and the bioaccumulative and concentration significance determination tests require more extensive calculations, the Division will begin the antidegradation evaluation with the dilution and temporary impact significance determination tests. These two significance tests may exempt a facility from further AD review without the additional calculations.

Note that the antidegradation requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the antidegradation review; however, where there is only an acute standard, the acute standard should be used. The appropriate standards are used in the following antidegradation analysis.

Significance Tests for Temporary Impacts and Dilution

This is not a temporary discharge and therefore exclusion based on a temporary discharge cannot be granted and the AD evaluation must continue.

The ratio of the chronic (30E3) low flow to the design flow is 31:1 for the Eagle WWTF, and is less than the 100:1 significance criteria. Therefore this facility is not exempt from an AD evaluation based on the dilution significance determination test, and the AD evaluation must continue.

The ratio of the chronic (30E3) low flow to the design flow is 67:1 for the Gypsum WWTF, and is less than the 100:1 significance criteria. Therefore this facility is not exempt from an AD evaluation based on the dilution significance determination test, and the AD evaluation must continue.

For the determination of a new or increased impact and for the remaining significance determination tests, additional calculations are necessary. Therefore, at this point in the antidegradation evaluation, the Division will go back to the new or increased impacts test. If there is a new or increased impact, the last two significance tests will be evaluated.

New or Increased Impact and Non Impact Limitations (NILs)

To determine if there is a new or increased impact to the receiving water, a comparison of the new WQBEL concentrations and loadings verses the concentrations and loadings as of September 30, 2000, needs to occur. If either the new concentration or loading is greater than the September 30, 2000 concentration or loading, then a new or increased impact is determined. If this is a new facility (commencement of discharge after September 30, 2000) it is automatically considered a new or increased impact.

Note that the AD Guidance document includes a step in the New or Increased Impact Test that calculates the Non-Impact Limit (NIL). The permittee may choose to retain a NIL if certain conditions are met, and therefore the AD evaluation for that parameter would be complete. As the NIL is typically greater than the ADBAC, and is therefore the chosen limit, the Division will typically conclude the AD evaluation after determining the NIL. Where the NILs are very stringent, or upon request of a permittee, the Division will calculate both the NIL and the AD limitation so that the limitations can be compared and the permittee can determine which of the two limits they would prefer, one which does not allow any increased impact (NIL), or the other which allows an insignificant impact (AD limit).

The non impact limit (NIL) is defined as the limit which results in no increased water quality impact (no increase in load or limit over the September 2000 load or limit). The NIL is calculated as the September 2000 loading, divided by the new design flow, and divided by a conversion factor of 8.34. If there is no increase in design flow, then the NIL is equal to the September 2000 permit limitation.

If the facility was in place, but did not have a limitation for a particular parameter in the September 2000 permit, the Division may substitute an implicit limitation. Consistent with the First Update to the AD Guidance of April 2002, an implicit limit is determined based on the approach that specifies that the implicit limit is the maximum concentration of the effluent from October 1998 to September 2000. If this data is unavailable, the Division may substitute more recent representative data, if appropriate, on a case by case basis. Note that the AD requirements specify that chronic values should be used in the AD review; however, where there is only an acute standard, the acute value should be used. Thus, for determining implicit limitations for chronic standards, the 30 day average effluent values are used, while for acute standards, the daily maximum values are used. Note that if there is an increase in design flow, the implicit limit/loading is subject to recalculation based on the increased design flow. For parameters that are undisclosed by the permittee, and unknown to the Division to be present, an implicit limitation may not be recognized.

The Eagle WWTF was in place as a discharger prior to September 30, 2000, and therefore the new or increased impacts test must be conducted. As the design flow of this facility has increased (0.63 MGD to 1.65 MGD), the equations for the NIL calculations are shown below.

For TRC for the Eagle WWTF, the limitations as of September 2000 were used in the evaluation of new or increased impacts.

For E. coli for the Eagle WWTF, the fecal coliform limitations as of September 2000 were used to determine an implicit limitation. In accordance with the Division's practice regarding E. coli, an implicit limit for E. coli is determine as 0.32 times the permit limit for fecal coliform.

For Ammonia (for all months) for the Eagle WWTF, data prior to 2000 were not available. Facility ammonia data from August 2005 to July 2007 were deemed representative and were therefore used to determine implicit limitations.

For Nitrite for the Eagle WWTF, data prior to 2000 were not available. Therefore Reg. 85 Nitrite data from January 2014 to January 2016 were determined to be adequate and were used to determine the implicit limitation.

For TIN, Total Recoverable Arsenic, Dissolved Arsenic, Dissolved Cadmium, Total Recoverable Trivalent Chromium, Dissolved Hexavalent Chromium, Dissolved Copper, Cyanide, Total Recoverable Iron, Dissolved Lead, Dissolved Manganese (for aquatic life), Dissolved Nickel, Dissolved Selenium, Dissolved Silver and

Dissolved Zinc for the Eagle WWTF, data prior to 2000 were not available. Therefore DMR data from February 2011 to February 2013 were deemed representative and therefore were used to determine implicit limitations.

For Total Mercury for the Eagle WWTF, data prior to 2000 were not available. Therefore DMR data from March 2011 to March 2013 were deemed representative and therefore were used to determine implicit limitations.

For Total Recoverable Cadmium, Dissolved Trivalent Chromium, Total Recoverable Lead, Total Recoverable Molybdenum, Total Recoverable Nickel, Chloride and Nonylphenol for the Eagle WWTF, there are no effluent data available and therefore, the Division will include monitoring requirements in the permit so that data can be collected in order to make such a determination of an implicit limit.

Calculation of Loadings for New or Increased Impact Test

The equations for the loading calculations are given below. Note that the AD requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the AD review; however, where there is only an acute standard, the acute standard should be used. Thus, the chronic low flows will be used later in this AD evaluation for all parameters with a chronic standard, and the acute low flows will be used for those parameters with only an acute standard.

$$\text{Previous permit load} = M_{permitted}\ (mg/l) \times Q_{permitted}\ (mgd) \times 8.34$$
$$\text{New WQBELs load} = M_2\ (mg/l) \times Q_2\ (mgd) \times 8.34$$

Where,

$M_{permitted}$ = September 2000 permit limit (or implicit limit) **(mg/l)**
$Q_{permitted}$ = design flow as of September 2000 **(mgd)**
Q_2 = current design flow (same as used in the WQBEL calculations)
M_2 = new WQBEL concentration **(mg/l)**
8.34 = unit conversion factor

Table A-10 shows the results of these calculations and the determination of a new or increased impact for the Eagle WWTF.

Table A-10
Determination of New or Increased Impacts for the Eagle WWTF

Pollutant	*Sept 2000 Permit Limit or Implicit NIL*	*Sept 2000 Permit Load (lbs/day)*	*NIL or Implicit NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
E. coli (#/100 ml)	1920	10088	733	828	18023	Yes
TRC (mg/l)	0.5	2.6	0.19	0.079	1.1	No
Total Inorganic Nitrogen as N (mg/l) [2]	31	161	12	52	1132	Yes
Nitrite as N (mg/l)	16.5	87	6.3	0.05	1.1	No
NH_3, Tot as N (mg/l), Jan[2]	2.6	13	0.98	6.2	135	Yes
NH_3, Tot as N (mg/l), Feb[2]	1.8	9.2	0.7	6.8	148	Yes
NH_3, Tot as N\(mg/l) Mar[2]	2.6	14	1.0	8.2	178	Yes
NH_3, Tot as N (mg/l) Apr[2]	2.3	12	0.88	9.3	202	Yes
NH_3, Tot as N (mg/l) May[2]	0.82	4.3	0.31	15	327	Yes
NH_3, Tot as N (mg/l) Jun[2]	1.6	8.4	0.61	16	348	Yes
NH_3, Tot as N (mg/l) Jul[2]	2.2	12	0.86	19	414	Yes

NH_3, Tot as N (mg/l) Aug[2]	1.9	10	0.7	14	305	Yes
NH_3, Tot as N (mg/l) Sep[2]	1.64	8.6	0.63	11	239	Yes
NH_3, Tot as N (mg/l) Oct[2]	1.4	7.4	0.53	10	218	Yes
NH_3, Tot as N (mg/l) Nov[2]	1.5	7.9	0.57	7.3	159	Yes
NH_3, Tot as N (mg/l) Dec[2]	1.9	10	0.7	6.6	144	Yes
As, TR (µg/l)[2]	97	0.51	37	0.02	0.44	No
As, Dis (µg/l)[2]	79	0.42	30	1909	41554	Yes
Cd, TR (µg/l)	NA	NA	NA	27	588	Yes
Cd, Dis (µg/l)[2]	0.10	0.00053	0.038	8.8	192	Yes
Cr+3, TR (µg/l)[2]	14	0.074	5.3	281	6117	Yes
Cr+3, Dis (µg/l)	NA	NA	NA	6.3	137	Yes
Cr+6, Dis (µg/l)[2]	10	0.053	3.8	79	1720	Yes
Cu, Dis (µg/l)[2]	17	0.089	6.5	126	2743	Yes
CN, Free (µg/l)[2]	5.0	0.026	1.9	28	609	Yes
Fe, TR (µg/l)[2]	709	3.7	271	6083	132411	Yes
Pb, TR (µg/l)	NA	NA	NA	281	6117	Yes
Pb, Dis (µg/l)[2]	1.0	0.0053	0.38	51	1110	Yes
Mn, Dis (µg/l), AQ[1, 2]	100	0.53	38	16083	350085	Yes
Mo, TR (µg/l)	NA	NA	NA	1145	24924	Yes
Hg, Tot (µg/l)[2]	0.0093	0.000049	0.0036	0.072	1.6	Yes
Ni, TR (µg/l)	NA	NA	NA	715	15564	Yes
Ni, Dis (µg/l)[2]	13	0.066	4.8	837	18219	Yes
Se, Dis (µg/l)[2]	1.4	0.0074	0.53	33	718	Yes
Ag, Dis (µg/l)[2]	0.42	0.0022	0.16	2.8	61	Yes
U, TR (µg/l)	NA	NA	NA	30	653	Yes
U, Dis (µg/l)	NA	NA	NA	31033	675508	Yes
Zn, Dis (µg/l)[2]	159	0.84	61	1953	42512	Yes
Chloride (mg/l)	NA	NA	NA	1788	38920	Yes
Nonylphenol (µg/l)	NA	NA	NA	47	1023	Yes
Acrylamide (µg/l)	NA	NA	NA	0.16	3.5	Yes
Note that loading for E. coli cannot be calculated; but, for comparison purposes, the approach is sufficient.						

[1]The WQBEL was calculated using the TVS standard for Dissolved Manganese for aquatic life.
[2]The NIL was determined using an implicit limit.

As shown in Table A-10, there are no new or increased impacts to the receiving stream based on the new WQBELS for TRC, Nitrite and Total Recoverable Arsenic, and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For E. coli there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Because the ADBACs are generally more stringent than NILs, the Division assumes that the permittee will choose NILs rather than ADBACs, and therefore the Division will stop the AD evaluation at this point and assign the NILs to the permit.

For TIN, Ammonia (for all months), Dissolved Arsenic, Dissolved Cadmium, Total Recoverable Trivalent Chromium, Dissolved Hexavalent Chromium, Dissolved Copper, Cyanide, Total Recoverable Iron, Dissolved Lead, Dissolved Manganese, Total Mercury, Dissolved Nickel, Dissolved Selenium, Dissolved Silver and Dissolved Zinc, there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Normally, the Division would assign the NILs as permit limitations, or prescribe monitoring to determine the appropriate implicit limitations as necessary, however,

in this case, the NILs are very stringent and therefore the Division will automatically calculate the ADBACs for comparison.

For those parameters (Total Recoverable Cadmium, Dissolved Trivalent Chromium, Total Recoverable Lead, Total Recoverable Molybdenum, Total Recoverable Nickel, Dissolved Uranium, Total Recoverable Uranium Chloride, Nonylphenol and Acylamide) where there is not a NIL (either implicit or explicit) the AD Guidance allows for the collection of data to determine an implicit limitation. Therefore, the permittee will be required to conduct "monitoring only" for those parameters. The permittee may request ADBAC limits. If the permittee does request ADBAC limits, the Division will proceed with the completion of this Antidegradation Analysis for TIN and Total Recoverable Arsenic.

Gypsum WWTF

The Gypsum WWTF was in place as a discharger prior to September 30, 2000, and therefore the new or increased impacts test must be conducted. As the design flow for this facility has not increased since September 2000, the NILs are equal to the permit limitations as of September 2000.

For TRC for the Gypsum WWTF, the limitations as of September 2000 were used in the evaluation of new or increased impacts.

For E. coli for the Gypsum WWTF, the fecal coliform limitations as of September 2000 were used to determine an implicit limitation. In accordance with the Division's practice regarding E. coli, an implicit limit for E. coli is determine as 0.32 times the permit limit for fecal coliform.

For Ammonia (for all months) for the Gypsum WWTF, data prior to 2000 were not available. Ammonia data from February 2011 to January 2013 were deemed representative and were therefore used to determine implicit limitations.

For TIN and Nitrite for the Gypsum WWTF, data prior to 2000 were not available. Therefore Reg. 85 TIN data from February 2015 to December 2015 were determined to be adequate and were used to determine the implicit limitation.

For Total Recoverable Arsenic and Total Mercury for the Gypsum WWTF, there are no effluent data available and therefore, the Division will include monitoring requirements in the permit so that data can be collected in order to make such a determination of an implicit limit.

Table A-11 shows the results of these calculations and the determination of a new or increased impact for the Gypsum WWTF.

Table A-11
Determination of New or Increased Impacts for the Gypsum WWTF

Pollutant	*Sept 2000 Permit Limit or Implicit NIL*	*Sept 2000 Permit Load (lbs/day)*	*NIL or Implicit NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
E. coli (#/100 ml)	1388	11114	1388	2000	43535	Yes
TRC (mg/l)	0.5	4.0	0.5	0.5	4.0	No
Total Inorganic Nitrogen as N (mg/l)[1]	45	360	45	100	2177	Yes
Nitrite as N (mg/l)[1]	0.28	2.2	0.28	0.05	1.1	No
NH_3, Tot as N (mg/l), Jan[1]	1.1	8.8	1.1	14	305	Yes
NH_3, Tot as N (mg/l), Feb[1]	1.4	11	1.4	15	327	Yes
NH_3, Tot as N\(mg/l) Mar[1]	3.0	24	3	18	392	Yes

NH_3, Tot as N (mg/l) Apr[1]	0.31	2.5	0.31	20	435	Yes
NH_3, Tot as N (mg/l) May[1]	1.7	14	1.7	27	588	Yes
NH_3, Tot as N (mg/l) Jun[1]	0.4	3.2	0.4	26	566	Yes
NH_3, Tot as N (mg/l) Jul[1]	0.2	1.6	0.2	21	457	Yes
NH_3, Tot as N (mg/l) Aug[1]	0.4	3.2	0.4	18	392	Yes
NH_3, Tot as N (mg/l) Sep[1]	0.34	2.7	0.34	18	392	Yes
NH_3, Tot as N (mg/l) Oct[1]	0.8	6.4	0.8	21	457	Yes
NH_3, Tot as N (mg/l) Nov[1]	1.6	13	1.6	15	327	Yes
NH_3, Tot as N (mg/l) Dec[1]	2.6	21	2.6	13	283	Yes
As, TR (µg/l)	NA	NA	NA	0.02	0.44	Yes
Hg, Tot (µg/l)	NA	NA	NA	0.21	4.6	Yes
Note that loading for E. coli cannot be calculated; but, for comparison purposes, the approach is sufficient.						

[1]The NIL was determined using an implicit limit.

As shown in Table A-11, there are no new or increased impacts to the receiving stream based on the new WQBELS for TRC and Nitrite, and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For E. coli there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Because the ADBACs are generally more stringent than NILs, the Division assumes that the permittee will choose NILs rather than ADBACs, and therefore the Division will stop the AD evaluation at this point and assign the NILs to the permit.

For Ammonia (for all months) and TIN there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Normally, the Division would assign the NILs as permit limitations, or prescribe monitoring to determine the appropriate implicit limitations as necessary, however, in this case, the NILs are very stringent and therefore the Division will automatically calculate the ADBACs for comparison.

For those parameters (Total Recoverable Arsenic and Total Mercury) where there is not a NIL (either implicit or explicit) the AD Guidance allows for the collection of data to determine an implicit limitation. Therefore, the permittee will be required to conduct "monitoring only" for those parameters. The permittee may request ADBAC limits. If the permittee does request ADBAC limits, the Division will proceed with the completion of this Antidegradation Analysis for TIN and Total Recoverable Arsenic.

The final two significance determination tests (bioaccumulative and concentration) need to be applied, to determine if AD limits are applicable. For the bioaccumulative test, the determination of the baseline water quality (BWQ), the baseline water quality loading (BWQload), the threshold load (TL) and the threshold load concentration (TL conc) needs to occur. For the concentration test, the BWQ, significant concentration thresholds (SCT) and antidegradation based average concentrations (ADBACs) need to be calculated. These calculations are explained in the following sections, and each significance determination test will be performed as the necessary calculations are complete. The AD low flow may also need to be calculated when determining the BWQ for an existing discharger (as of Sept 2000) when upstream water quality data are used.

Determination of Baseline Water Quality (BWQ)

The BWQ is the ambient condition of the water quality as of September 30, 2000. The BWQ defines the baseline low flow pollutant concentration, and for bioaccumulative toxic pollutants, the baseline load. The BWQ is to take into account the influence of the discharger if the discharge was in place prior to September 30, 2000. In such a case, data from a downstream location should be used to determine the BWQ. If only upstream data is available, then a mass balance equation may be applied, using the facilities effluent data to determine the BWQ. If the discharge was not present prior to September 30, 2000, then the influence of that discharge would not be taken into account in determining the BWQ. If the BWQ has already been

determined in a previous WQA AD evaluation, it may not need to be recalculated as the BWQ is the water quality as of September 30, 2000, and therefore should not change unless additional data is obtained or the calculations were in error.

Eagle WWTF

The BWQ concentrations were correctly determined for Dissolved Arsenic, Dissolved Cadmium, Total Recoverable Trivalent Chromium, Dissolved Hexavalent Chromium, Dissolved Copper, Cyanide, Total Recoverable Iron, Dissolved Lead, Dissolved Manganese (for aquatic life), Total Mercury, Dissolved Nickel, Dissolved Selenium, Dissolved Silver and Dissolved Zinc as part of a previous WQA (dated December 2014). These are summarized in Table A-12a.

Table A-12a
BWQ Concentrations Based on Previous Determinations for the Eagle WWTF

Pollutant	*BWQ*	*WQS*
As, Dis (µg/l)	10	340
Cd, Dis (µg/l)	0	1.5
Cr+3, TR (µg/l)	0	50
Cr+6, Dis (µg/l)	0	11
Cu, Dis (µg/l)	1.9	20
CN, Free (µg/l)	0	5
Fe, TR (µg/l)	679	1000
Pb, Dis (µg/l)	0	7.1
Mn, Dis (µg/l), AQ*	86	2274
Hg, Tot (µg/l)	0	0.01
Ni, Dis (µg/l)	0	117
Se, Dis (µg/l)	0	4.6
Ag, Dis (µg/l)	0	0.39
Zn, Dis (µg/l)	43	291

*The WQS is the TVS standard for Dissolved Manganese for Aquatic Life

Consistent with current Division procedures, the BWQ concentrations for TIN and Ammonia (for all months) should be established so that it can be used as part of an antidegradation review.

The Eagle WWTF was in place as of September 30, 2000, and therefore the BWQ should include the influence of the discharger. There is no TIN or Ammonia ambient data from or representative of the AD period upstream or downstream from the Eagle WWTF. Therefore BWQ for TIN and Ammonia (for all months) is assumed to be zero.

Table A-12b
BWQ Concentrations for Potential Pollutants of Concern for the Eagle WWTF

Pollutant	*BWQ*	*WQS*
Total Inorganic Nitrogen as N (mg/l)	0	10

The BWQ concentrations for Ammonia (for all months) for the Eagle WWTF are summarized in Table A-12c.

Table A-13b BWQ Concentrations for Potential Pollutants of Concern Based on Downstream Ambient Water Quality Concentrations for the Eagle WWTF	
Pollutant	***BWQ***
NH_3, Total (mg/l) Jan	0
NH_3, Total (mg/l) Feb	0
NH_3, Total (mg/l) Mar	0
NH_3, Total (mg/l) Apr	0
NH_3, Total (mg/l) May	0
NH_3, Total (mg/l) Jun	0
NH_3, Total (mg/l) Jul	0
NH_3, Total (mg/l) Aug	0
NH_3, Total (mg/l) Sep	0
NH_3, Total (mg/l) Oct	0
NH_3, Total (mg/l) Nov	0
NH_3, Total (mg/l) Dec	0

Gypsum WWTF

Consistent with current Division procedures, the BWQ concentrations for Ammonia (for the months of July and August) should be established for the Gypsum WWTF so that it can be used as part of an antidegradation review.

The Gypsum WWTF was in place as of September 30, 2000, and therefore the BWQ should include the influence of the discharger. There is no Ammonia or TIN ambient data (for the months of July and August) from or representative of the AD period upstream or downstream from the Gypsum WWTF. Therefore BWQ for TIN and Ammonia (for the months of July and August) is assumed to be zero.

The BWQ concentrations for TIN for the Gypsum WWTF are summarized in Table A-13a.

Table A-13a Ambient Water Quality Data Summary for AD Period for the Gypsum WWTF		
Pollutant	***BWQ***	***WQS***
Total Inorganic Nitrogen as N (mg/l)	0	10

The BWQ concentrations for Ammonia (for the months of July and August) for the Gypsum WWTF are summarized in Table A-13b.

Table A-13b BWQ Concentrations for Potential Pollutants of Concern Based on Downstream Ambient Water Quality Concentrations for the Gypsum WWTF	
Pollutant	***BWQ***
NH_3, Total (mg/l) Jan	0
NH_3, Total (mg/l) Feb	0

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NH_3, Total (mg/l) Mar	0
NH_3, Total (mg/l) Apr	0
NH_3, Total (mg/l) May	0
NH_3, Total (mg/l) Jun	0
NH_3, Total (mg/l) Jul	0
NH_3, Total (mg/l) Aug	0
NH_3, Total (mg/l) Sep	0
NH_3, Total (mg/l) Oct	0
NH_3, Total (mg/l) Nov	0
NH_3, Total (mg/l) Dec	0

In cases where the BWQ concentration exceeds the water quality standard, the calculated BWQ concentration must then be set equal to the water quality standard. This did not occur for any of the pollutants.

Note that the AD requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the antidegradation review; however, where there is only an acute standard, the acute standard should be used. Chronic standards were available for ammonia.

Bioaccumulative Significance Test

For mercury for the Eagle WWTF, which is a bioaccumulative toxic pollutant, the bioaccumulative significance test can now be completed with some minor additional calculations for the baseline water quality load (BWQload), the threshold load (TL), the new load based on the WQBELs, and the threshold load concentration (TL conc). These terms are defined by the following equations:

BWQload = BWQ (from Table A-12a*) * AD low flow (chronic) * 8.34

Threshold Load (TL) = 0.1 * BWQload

Threshold Load Concentration (TL Conc) = TL ÷ new design flow ÷ 8.34

WQBEL Load = new WQBEL (concentration) * new design flow * 8.34

The discharge is considered to be insignificant if the new load (WQBEL load) is less than the threshold load (TL), or if the new WQBEL (concentration) is less than the TL Conc. The results of the calculations and the comparisons are shown in Table A-14.

Table A-14
Bioaccumulative Significance Test

Parameter	Threshold Load Concentration (TL Conc)	Threshold Load (TL)	WQBEL Conc	WQBEL Load
Mercury, Total (µg/l)	0	0	0.072	1.6

For mercury, the WQBEL load is greater than the TL, and the WQBEL Conc is greater than the TL Conc, and therefore additional consideration of the TL must occur. If the permittee accepts the TL, the AD evaluation continues with the calculation of the SCT and ADBACs in the same manner as the other non-bioaccumulative parameters, using the TL Conc in place of the WQBEL.

If the TL is not acceptable, an AD Alternatives Analysis must be completed. For more information regarding an Alternatives Analysis, refer to the Antidegradation Guidance and to Regulation 31.8.

Significant Concentration Threshold

The SCT is defined as the BWQ plus 15% of the baseline available increment (BAI), and is calculated by the following equation:

$$SCT = (0.15 \times BAI) + BWQ$$

The BAI is the concentration increment between the baseline water quality and the water quality standard, expressed by the term (WQS – BWQ). Substituting this into the SCT equation results in:

$$SCT = 0.15 \times (WQS-BWQ) + BWQ$$

Where,

WQS = Chronic standard or, in the absence of a chronic standard, the acute standard
BWQ = Value from Table A-9

The AMMTOX model is used to determine the SCTs for ammonia. Because the new ammonia standard is based on a function of the pH and temperature of the receiving stream, the WQS changes moving downstream from a discharge point. The BWQ and the SCT also change moving downstream. The AMMTOX model calculates these values for every tenth of a mile, for up to 20 miles. Therefore, it is impractical to show the SCTs for every part of the stream for all 12 months. These values are available in the AMMTOX model, if requested.

Determination of the Antidegradation Based Average Concentrations

Antidegradation based average concentrations (ADBACs) are determined for all parameters except ammonia, by using the mass-balance equation, and substituting the SCT in place of the water quality standard, as shown in the following equation:

$$ADBAC = \frac{SCT \times Q_3 - M_1 \times Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3 based on either the chronic or acute standard)
Q_2 = Current design capacity of the facility
Q_3 = Downstream flow (Q_1 + Q_2)
M_1 = Current ambient water quality concentration (From Section III)
SCT = Significant concentration threshold

ADBACs for total ammonia are calculated by substituting the SCT in place of the chronic standard in the AMMTOX model, which generates monthly ADBACs as shown in Table A-15b and Table A-16b. However, it is the procedure of the Division to either impose the minimum of the calculated monthly ADBACs or determine average ADBACs for three groups. The ADBAC groups that were determined are summarized in Table A-15a and Table A-15b for the Eagle WWTF and Table A-16a and Table A-16b for the Gypsum WWTF.

Table A-15a

SCTs and ADBACs for the Eagle WWTF

Pollutant	*Q_1(cfs)*	*Q_2 (cfs)*	*Q_3 (cfs)*	*M_1*	*SCT*	*ADBAC*
Total Inorganic Nitrogen as N (mg/l)	12	4.1	16	0.8	1.5	3.5
As, Dis (µg/l)	12	2.6	15	0	60	337

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Cd, Dis (µg/l)	16	2.6	19	0.31	0.23	0.23
Cr+3, TR (µg/l)	12	2.6	15	0	7.5	42
Cr+6, Dis (µg/l)	16	2.6	19	0	1.7	12
Cu, Dis (µg/l)	16	2.6	19	2.7	4.6	16
CN, Free (µg/l)	12	2.6	15	0	0.75	4.2
Fe, TR (µg/l)	16	2.6	19	174	727	4130
Pb, Dis (µg/l)	16	2.6	19	0	1.1	7.9
Mn, Dis (µg/l), AQ*	16	2.6	19	30	414	2777
Hg, Tot (µg/l)	16	2.6	19	0	0.0015	0.011
Ni, Dis (µg/l)	16	2.6	19	0	18	129
Se, Dis (µg/l)	16	2.6	19	0	0.69	4.9
Ag, Dis (µg/l)	16	2.6	19	0	0.059	0.42
Zn, Dis (µg/l)	16	2.6	19	21	80	443

*The ADBAC is calculated for Dissolved Manganese for Aquatic Life

Table A-15b
ADBACs for Ammonia for the Eagle WWTF

Pollutant	*Monthly ADBAC*
NH_3, Total (mg/l) Jan	0.93
NH_3, Total (mg/l) Feb	1.0
NH_3, Total (mg/l) Mar	1.2
NH_3, Total (mg/l) Apr	1.1
NH_3, Total (mg/l) May	2.3
NH_3, Total (mg/l) Jun	2.5
NH_3, Total (mg/l) Jul	2.9
NH_3, Total (mg/l) Aug	2.1
NH_3, Total (mg/l) Sep	1.7
NH_3, Total (mg/l) Oct	1.5
NH_3, Total (mg/l) Nov	1.0
NH_3, Total (mg/l) Dec	0.99

Based on these calculations, the ambient water quality exceeds the SCT for Dissolved Cadmium. Where an assimilative capacity is calculated to be less than the standard, the Division standard procedure is to allocate the water quality standard, which in this case is the SCT, to prevent degradation of the receiving stream.

Table A-16a
SCTs and ADBACs for the Gypsum WWTF

Pollutant	*Q_1(cfs)*	*Q_2 (cfs)*	*Q_3 (cfs)*	*M_1*	*SCT*	*ADBAC*
Total Inorganic Nitrogen as N (mg/l)	60	4.1	64.1	0.8	1.5	12

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Table A-16b ADBACs for Ammonia for the Gypsum WWTF	
Pollutant	***Monthly ADBAC***
NH_3, Total (mg/l) Jan	1.9
NH_3, Total (mg/l) Feb	2.0
NH_3, Total (mg/l) Mar	2.5
NH_3, Total (mg/l) Apr	2.6
NH_3, Total (mg/l) May	3.0
NH_3, Total (mg/l) Jun	3.2
NH_3, Total (mg/l) Jul	2.9
NH_3, Total (mg/l) Aug	2.7
NH_3, Total (mg/l) Sep	2.6
NH_3, Total (mg/l) Oct	3.0
NH_3, Total (mg/l) Nov	2.2
NH_3, Total (mg/l) Dec	1.8

Concentration Significance Tests

The concentration significance determination test considers the cumulative impact of the discharges over the baseline condition. In order to be insignificant, the new or increased discharge may not increase the actual instream concentration by more than 15% of the available increment over the baseline condition. The insignificant level is the ADBAC calculated in Table A-10 above. If the new WQBEL concentration (or potentially the TL Conc for bioaccumulatives) is greater than the ADBAC, an AD limit would be applied. This comparison is shown in Table A-17a and Table A-17b (for Ammonia) for the Eagle WWTF and Table A-18a and Table A-18b (for Ammonia) for the Gypsum WWTF.

Table A-17a Concentration Significance Test for the Eagle WWTF			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
Total Inorganic Nitrogen as N (mg/l)	52	3.5	Significant
As, Dis (µg/l)	1909	337	Significant
Cd, Dis (µg/l)	8.8	0.23	Significant
Cr+3, TR (µg/l)	281	42	Significant
Cr+6, Dis (µg/l)	79	12	Significant
Cu, Dis (µg/l)	126	16	Significant
CN, Free (µg/l)	28	4.2	Significant
Fe, TR (µg/l)	6083	4130	Significant
Pb, Dis (µg/l)	51	7.9	Significant
Mn, Dis (µg/l), AQ*	16083	2777	Significant
Hg, Tot (µg/l)	0.072	0.011	Significant
Ni, Dis (µg/l)	837	129	Significant
Se, Dis (µg/l)	33	4.9	Significant
Ag, Dis (µg/l)	2.8	0.42	Significant
Zn, Dis (µg/l)	1953	443	Significant

*The ADBAC is calculated for Dissolved Manganese for Aquatic Life

Table A-17b Concentration Significance Test for Ammonia for the Eagle WWTF			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
NH3, Total (mg/l) Jan	6.2	0.93	Significant
NH3, Total (mg/l) Feb	6.8	1.0	Significant
NH3, Total (mg/l) Mar	8.2	1.2	Significant
NH3, Total (mg/l) Apr	9.3	1.1	Significant
NH3, Total (mg/l) May	15	2.3	Significant
NH3, Total (mg/l) Jun	16	2.5	Significant
NH3, Total (mg/l) Jul	19	2.9	Significant
NH3, Total (mg/l) Aug	14	2.1	Significant
NH3, Total (mg/l) Sep	11	1.7	Significant
NH3, Total (mg/l) Oct	10	1.5	Significant
NH3, Total (mg/l) Nov	7.3	1.0	Significant
NH3, Total (mg/l) Dec	6.6	0.99	Significant

For Total Recoverable Iron, the WQBELs are less than the ADBAC and therefore, the concentration test results in an insignificant determination. The WQBELs are the final result of this WQA for these parameters and AD limitations are not necessary.

For all other parameters (except for Total Recoverable Iron) for the Eagle WWTF, the WQBELs are less than the ADBAC and therefore, the concentration test results in an insignificant determination. The WQBELs are the final result of this WQA for these parameters and AD limitations are not necessary.

Table A-18a Concentration Significance Test for the Gypsum WWTF			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
Total Inorganic Nitrogen as N (mg/l)	100	12	Significant

Table A-18b Concentration Significance Test for Ammonia for the Gypsum WWTF			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
NH3, Total (mg/l) Jan	14	1.9	Significant
NH3, Total (mg/l) Feb	15	2.0	Significant
NH3, Total (mg/l) Mar	18	2.5	Significant
NH3, Total (mg/l) Apr	20	2.6	Significant
NH3, Total (mg/l) May	27	3.0	Significant
NH3, Total (mg/l) Jun	26	3.2	Significant
NH3, Total (mg/l) Jul	21	2.9	Significant
NH3, Total (mg/l) Aug	18	2.7	Significant

NH3, Total (mg/l) Sep	18	2.6	Significant
NH3, Total (mg/l) Oct	21	3.0	Significant
NH3, Total (mg/l) Nov	15	2.2	Significant
NH3, Total (mg/l) Dec	13	1.8	Significant

For all parameters for the Gypsum WWTF, the WQBELs are greater than the ADBACs and therefore, the concentration test results in a significance determination, and the antidegradation based effluent limitations (ADBELs) must be determined.

Antidegradation Based Effluent Limitations (ADBELs)

The ADBEL is defined as the potential limitation resulting from the AD evaluation, and may be either the ADBAC, the NIL, or may be based on the concentration associated with the threshold load concentration (for the bioaccumulative toxic pollutants). ADBACs, NILs and TLs have already been determined in the AD evaluation, and therefore to complete the evaluation, a final comparison of limitations needs to be completed.

Note that ADBACs and NILs are not applicable when the new WQBEL concentration (and loading as evaluated in the New and Increased Impacts Test) is less than the NIL concentration (and loading), or when the new WQBEL is less than the ADBAC.

Where an ADBAC or NIL applies, the permittee has the final choice between the two limitations. A NIL is applied as a 30-day average (and the acute WQBEL would also apply where applicable) while the ADBAC would be applied as a 2 year rolling average concentration. For the purposes of this WQA, the Division has made an attempt to determine whether the NIL or ADBAC will apply. The end results of this AD evaluation are in Table A-19 for the Eagle WWTF and Table A-20 for the Gypsum WWTF, including any parameter that was previously exempted from further AD evaluation, with the final potential limitation identified (NIL, WQBEL or ADBAC).

Table A-19
Final Selection of WQBELs, NILs, and ADBACs for the Eagle WWTF

Pollutant	*NIL or Implicit NIL*	*New WQBEL*	*ADBAC*	*Chosen Limit*
E. coli (#/100 ml)	733	828	NA	NIL
TRC (mg/l)	0.19	0.079	NA	WQBEL
Total Inorganic Nitrogen as N (mg/l)	12	52	3.5	NIL
Nitrite as N (mg/l)	6.3	0.05	NA	WQBEL
NH3 as N, Tot (mg/l) Jan	0.98	6.2	0.93	NIL
NH3 as N, Tot (mg/l) Feb	0.7	6.8	1	ADBAC
NH3 as N, Tot (mg/l) Mar	1.0	8.2	1.2	ADBAC
NH3 as N, Tot (mg/l) Apr	0.88	9.3	1.1	ADBAC
NH3 as N, Tot (mg/l) May	0.31	15	2.3	ADBAC
NH3 as N, Tot (mg/l) Jun	0.61	16	2.5	ADBAC
NH3 as N, Tot (mg/l) Jul	0.86	19	2.9	ADBAC
NH3 as N, Tot (mg/l) Aug	0.7	14	2.1	ADBAC
NH3 as N, Tot (mg/l) Sep	0.63	11	1.7	ADBAC
NH3 as N, Tot (mg/l) Oct	0.53	10	1.5	ADBAC
NH3 as N, Tot (mg/l) Nov	0.57	7.3	1.0	ADBAC

NH3 as N, Tot (mg/l) Dec	0.7	6.6	1.0	ADBAC
As, TR (µg/l)	37	0.02	NA	WQBEL
As, Dis (µg/l)	30	1909	337	ADBAC
Cd, TR (µg/l)	NA	27	NA	WQBEL
Cd, Dis (µg/l)	0.038	8.8	0.23	ADBAC
Cr+3, TR (µg/l)	5.3	281	42	ADBAC
Cr+3, Dis (µg/l)	NA	6.3	NA	WQBEL
Cr+6, Dis (µg/l)	3.8	79	12	ADBAC
Cu, Dis (µg/l)	6.5	126	16	ADBAC
CN, Free (µg/l)	1.9	28	4.2	ADBAC
Fe, Dis (µg/l)	NA	1820	NA	WQBEL
Fe, TR (µg/l)	NA	6083	4130	ADBAC
Pb, TR (µg/l)	NA	281	NA	WQBEL
Pb, Dis (µg/l)	0.38	51	7.9	ADBAC
Mn, Dis (µg/l), WS*	NA	173	NA	WQBEL
Mn, Dis (µg/l), AQ**	38	16083	2777	ADBAC
Mo, TR (µg/l)	NA	1145	NA	WQBEL
Hg, Tot (µg/l)	0.0036	0.072	0.011	ADBAC
Ni, TR (µg/l)	NA	715	NA	WQBEL
Ni, Dis (µg/l)	4.8	837	129	ADBAC
Se, Dis (µg/l)	0.53	33	4.9	ADBAC
Ag, Dis (µg/l)	0.16	2.8	0.42	ADBAC
U, TR (µg/l)	NA	30	NA	WQBEL
U, Dis (µg/l)	NA	31033	NA	WQBEL
Zn, Dis (µg/l)	61	1953	443	ADBAC
Chloride (mg/l)	NA	1788	NA	WQBEL
Sulfate (mg/l)	NA	1788	NA	WQBEL
Nonylphenol (µg/l)	NA	47	NA	WQBEL
Acrylamide (µg/l)	NA	0.16	NA	WQBEL

*The final limit is calculated for the Water Supply standard for Dissolved Manganese
**The final limit is calculated for the Aquatic Life standard for Dissolved Manganese

For the following parameters for the Eagle WWTF, Ammonia (for the month of January), E. coli and TIN, the NILs have been established for this facility. The NILs were selected as they are less stringent than the ADBACs. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

For the following parameters for the Eagle WWTF, Ammonia (for all months except January), Dissolved Arsenic, Dissolved Cadmium, Total Recoverable Trivalent Chromium, Dissolved Hexavalent Chromium, Dissolved Copper, Cyanide, Total Recoverable Iron, Dissolved Lead, Dissolved Manganese (for Aquatic Life), Total Mercury, Dissolved Nickel, Dissolved Selenium, Dissolved Silver and Dissolved Zinc, the ADBACs have been established for this facility. The ADBACs were selected as they are more stringent than the WQBELs and less stringent than the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the NIL is preferred, the permit writer should be contacted.

Table A-20
Final Selection of WQBELs, NILs, and ADBACs for the Gypsum WWTF

Pollutant	*NIL or Implicit NIL*	*New WQBEL*	*ADBAC*	*Chosen Limit*
E. coli (#/100 ml)	1388	2000	NA	NIL
TRC (mg/l)	0.5	0.5	NA	WQBEL
Total Inorganic Nitrogen as N (mg/l)	45	100	12	NIL
Nitrite as N (mg/l)	0.28	0.05	NA	WQBEL
NH3 as N, Tot (mg/l) Jan	1.1	14	1.9	ADBAC
NH3 as N, Tot (mg/l) Feb	1.4	15	2.0	ADBAC
NH3 as N, Tot (mg/l) Mar	3.0	18	2.5	NIL
NH3 as N, Tot (mg/l) Apr	0.31	20	2.6	ADBAC
NH3 as N, Tot (mg/l) May	1.7	27	3.0	ADBAC
NH3 as N, Tot (mg/l) Jun	0.4	26	3.2	ADBAC
NH3 as N, Tot (mg/l) Jul	0.2	21	2.9	ADBAC
NH3 as N, Tot (mg/l) Aug	0.4	18	2.7	ADBAC
NH3 as N, Tot (mg/l) Sep	0.34	18	2.6	ADBAC
NH3 as N, Tot (mg/l) Oct	0.8	21	3.0	ADBAC
NH3 as N, Tot (mg/l) Nov	1.6	15	2.2	ADBAC
NH3 as N, Tot (mg/l) Dec	2.6	13	1.8	NIL
As, TR (µg/l)	NA	0.02	NA	WQBEL
Hg, Tot (µg/l)	NA	0.21	NA	WQBEL

For the following parameters, E. coli, TIN and Ammonia (for the months of March and December), the NILs have been established for this facility. The NILs were selected as they are less stringent than the ADBACs. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

For the following parameters, Ammonia (for the months of January, February, and April through November), the ADBACs have been established for this facility. The ADBACs were selected as they are more stringent than the WQBELs and less stringent than the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the NIL is preferred, the permit writer should be contacted.

Alternatives Analysis

If the permittee does not want to accept an effluent limitation that results in no increased impact (NIL) or in insignificant degradation (ADBAC), the applicant may conduct an alternatives analysis (AA). The AA examines alternatives that may result in no degradation or less degradation, and are economically, environmentally, and technologically reasonable. If the proposed activity is determined to be important economic or social development, a determination shall be made whether the degradation that would result from such regulated activity is necessary to accommodate that development. The result of an AA may be an alternate limitation between the ADBEL and the WQBEL, and therefore the ADBEL would not being applied. This option can be further explored with the Division. See Regulation 31.8 (3)(d), and the Antidegradation Guidance for more information regarding an alternatives analysis.

VIII. Technology Based Limitations

Federal Effluent Limitation Guidelines

The Federal Effluent Limitation Guidelines for domestic wastewater treatment facilities are the secondary treatment standards. These standards have been adopted into, and are applied out of, Regulation 62, the Regulations for Effluent Limitations.

Regulations for Effluent Limitations

Regulation No. 62, the Regulations for Effluent Limitations, includes effluent limitations that apply to all discharges of wastewater to State waters, with the exception of storm water and agricultural return flows. These regulations are applicable to the discharge from the proposed discharge.

Table A-21 contains a summary of the applicable limitations for pollutants of concern at this facility.

Table A-21
Regulation 62 Based Limitations

Parameter	*30-Day Average*	*7-Day Average*	*Instantaneous Maximum*
BOD_5	30 mg/l	45 mg/l	NA
BOD_5 Percent Removal	85%	NA	NA
TSS, mechanical plant	30 mg/l	45 mg/l	NA
TSS Percent Removal	85%	NA	NA
Total Residual Chlorine	NA	NA	0.5 mg/l
pH	NA	NA	6.0-9.0 s.u.
Oil and Grease	NA	NA	10 mg/l

Nutrient Effluent Limitation Considerations

WQCC Regulation No. 85, the new *Nutrients Management Control Regulation*, includes technology based effluent limitations for total inorganic nitrogen and total phosphorus that currently, or will in the future, apply to many domestic wastewater discharges to State surface waters. These effluent limits for dischargers are to start being implemented in permitting actions as of July 1, 2013, and are shown in the two tables below:

Effluent Limitations Table at 85.5(1)(a)(iii)

For all Domestic Wastewater Treatment Works not identified in subsections (a)(i) or (ii) above(in Reg. 85) *and discharging prior to May 31, 2012 or for which a complete request for preliminary effluent limits has been submitted to the Division prior to May 31, 2012, the following numeric limits shall apply:*

Parameter	*Parameter Limitations*	
	Annual Median [1]	*95th Percentile [2]*
Total Phosphorus	*1.0 mg/l*	*2.5 mg/l*
Total Inorganic Nitrogen[3]	*15 mg/l*	*20 mg/l*

1 Running Annual Median: The median of all samples taken in the most recent 12 calendar months.
2 The 95th percentile of all samples taken in the most recent 12 calendar months.
3 Determined as the sum of nitrate as N, nitrite as N, and ammonia as N.

Effluent Limitations Table at 85.5(1)(b)

For New Domestic Wastewater Treatment Works which submit a complete request for preliminary effluent limits to the Division on or after May 31, 2012, the following numeric limits shall apply:

Parameter	*Parameter Limitations*	
	Annual Median [1]	*95th Percentile [2]*
Total Phosphorus	*0.7 mg/l*	*1.75 mg/l*
Total Inorganic Nitrogen[3]	*7 mg/l*	*14 mg/l*

1 Running Annual Median: The median of all samples taken in the most recent 12 calendar months.

2 The 95th percentile of all samples taken in the most recent 12 calendar months.
3 Determined as the sum of nitrate as N, nitrite as N, and ammonia as N.

Requirements in Reg. 85 also apply to non-domestic wastewater for industries in the Standard Industrial Class 'Major Group 20,' and any other non-domestic wastewater where the facility is expected, without treatment, to discharge total inorganic nitrogen or total phosphorus concentrations in excess of the numeric limits listed in 85.5 (1)(a)(iii). The facility must investigate, with the Division's approval, whether different considerations should apply.

All permit actions based on this WQA will occur after the July 1, 2013 permit implementation date of Reg. 85. Therefore, total inorganic nitrogen and total phosphorus effluent limitations potentially imposed because of Reg. 85 must be considered. However, also based on Reg. 85, there are direct exemptions from these limitations for smaller domestic facilities that discharge less than or equal to 1 million gallons per day (MGD), or are a domestic facility owned by a disadvantaged community.

Delayed implementation (until 12/31/2027) is also specified in Reg. 85 to occur for domestic WWTFs that discharge more than 1 MGD, and less than or equal to 2.0 MGD, or have an existing watershed control regulations (such as WQCC Reg.'s 71-74), or where the discharge is to waters in a low-priority 8-digit HUC.

For all other larger domestic WWTFs, the nutrient effluent limitations from the two tables above will apply, unless other considerations allowed by Reg. 85 at 85.5(3) are utilized to show compliance with exceptions or variances to these limitations.

Eagle WWTF:

The division will consider the Eagle WWTF to be an existing discharger, and since the design capacity of the Eagle WWTF is 1.65 MGD, the limits addressed in Regulation 85 are delayed until 12/31/2027.

Gypsum WWTF:

The Division will consider the Gypsum WWTF to be an existing WWTF, as the facility was discharging and permitted prior to May 31, 2012. Also, since the design capacity of the Gypsum WWTF is 0.96 MGD, the facility is not currently required to address the new technology based effluent limits as of 7/1/2013.

However, the Division does not intend these results to discourage the Eagle WWTF or the Gypsum WWTF from working on nutrient control with the other dischargers within the Eagle River watershed. These dischargers upstream and downstream of these facilities have the potential to create future nutrient issues in the Eagle River. The Division encourages these entities to all work together to create the most efficient and cost effective solutions for nutrient control in the Eagle River watershed.

Supplemental Reg. 85 Nutrient Monitoring

Reg. 85 also requires that some monitoring for nutrients in wastewater effluent and streams take place, independent of what nutrient effluent limits or monitoring requirements may be established in a discharge permit. The requirements for the type and frequency of this monitoring are set forth in Reg. 85 at 85.6. This nutrient monitoring is not currently required by a permitting action, but is still required to be done by the Reg. 85 nutrient control regulation. Nutrient monitoring for the Reg. 85 control regulation is currently required to be reported to the WQCD Environmental Data Unit.

IX. References

Regulations:

The Basic Standards and Methodologies for Surface Water, Regulation 31, Colorado Department Public Health and Environment, Water Quality Control Commission, effective January 31, 2018.

Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River, Regulation No. 33, Colorado Department Public Health and Environment, Water Quality Control Commission, effective June 30, 2019.

Colorado River Salinity Standards, Regulation 39, CDPHE, WQCC (last update effective 8/30/97)

Regulations for Effluent Limitations, Regulation 62, CDPHE, WQCC, July 30, 2012.

Nutrients Management Control Regulation, Regulation 85, Colorado Department Public Health and Environment, Water Quality Control Commission, effective December 30, 2017.

Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation 93, Colorado Department Public Health and Environment, Water Quality Control Commission, effective March 2, 2018.

Policy and Guidance Documents:

Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, December 2001.

Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department Public Health and Environment, Water Quality Control Division, April 23, 2002.

Rationale for Classifications, Standards and Designations of Segments of the Upper Colorado River Basin and North Platte River, Colorado Department Public Health and Environment, Water Quality Control Division, effective June 30, 2019.

Policy Concerning Escherichia coli versus Fecal Coliform, CDPHE, WQCD, July 20, 2005.

Colorado Mixing Zone Implementation Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, effective April 2002.

Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-23, effective July 3, 2008.

Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-24, effective March 10, 2008.

Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-19, effective May 2002.