Colorado Department of Public Health and Environment

COLORADO DISCHARGE PERMIT SYSTEM (CDPS)
FACT SHEET TO PERMIT NUMBER CO0048054
XTO ENERGY: LORENCITO, XTO LORENCITO CANYON
LAS ANIMAS COUNTY

TABLE OF CONTENTS

I. TYPE OF PERMIT

A. Permit Type: Industrial Minor
First Renewal (of individual permit; formerly COG900002)

B. Discharge To: Surface Water

II. FACILITY INFORMATION

A. SIC Code: 1311 Crude Petroleum and Natural Gas

B. Facility Location: Approximate Middle Point of Operation,
Latitude 37° 04 ’ N, Longitude 104° 52’ W.

C. Permitted Feature and Facility Flows:

Lat/Long and flows of the individual outfalls is located the following table (Table I-1)

Table I-1

Outfall	Main Drainage	Northing	Easting	Flow, MGD	Flow, cfs
010-A	*Unnamed Tributary to Little Alamosa*	37.05272	-104.84470	0.029	0.045
012-A	*Unnamed Tributary to Pancho Canyon*	37.03780	-104.84485	0.046	0.071
016-A	*Unnamed Tributary to Little Alamosa*	37.04266	-104.85707	0.024	0.037
018-A	*Unnamed Tributary to Pancho Canyon*	37.02792	-104.85875	0.01	0.015
019-A	*Unnamed Tributary to Alamosa*	37.0686	-104.85160	0.054	0.084
021-A	*Unnamed Tributary to Alamosa*	37.05294	-104.85797	0.015	0.023
025-A	*Unnamed Tributary to Alamosa*	37.07528	-104.86967	0.106	0.164
027-A	*Unnamed Tributary to Alamosa*	37.06229	-104.87091	0.055	0.085
028-A	*Unnamed Tributary to Alamosa*	37.04641	-104.86813	0.026	0.04
031-A	*Pancho Canyon*	37.02890	-104.87049	0.012	0.019
032-A	*Unnamed Tributary of Unnamed Tributary to Lorencito Canyon*	37.02178	-104.87193	0.04	0.062
034-A	*Unnamed Tributary of Unnamed Tributary to Lorencito Canyon*	37.00835	-104.87228	0.004	0.006
035-A	*Lorencito Canyon*	36.99979	-104.86590	0.026	0.04
036-A	*Unnamed Tributary to Alamosa*	37.06716	-104.88066	0.043	0.067

037-A	*Unnamed Tributary to Alamosa*	37.06051	-104.88842	0.015	0.023
039-A	*Unnamed Tributary to Alamosa*	37.04235	-104.87730	0.015	0.023
040-A	*Unnamed Tributary to Alamosa*	37.03563	-104.88119	0.013	0.02
042-A	*Unnamed Tributary of Unnamed Tributary to Lorencito Canyon*	37.01926	-104.87745	0.024	0.037
045-A	*Unnamed Tributary to Lorencito Canyon*	36.99924	-104.91976	0.013	0.02
047-A	*Unnamed Tributary to Alamosa*	37.05793	-104.88388	0.002	0.003
049-A	*Unnamed Tributary to Alamosa*	37.04028	-104.89172	0.026	0.04
050-A	*Unnamed Tributary to Alamosa*	37.02675	-104.89237	0.03	0.046
051-A	*Unnamed Tributary to Alamosa*	37.02172	-104.88853	0.012	0.019
057-A	*Unnamed Tributary to Alamosa*	37.03738	-104.89943	0.003	0.005
066-A	*Unnamed Tributary to Alamosa*	37.03333	-104.90598	0.006	0.009
067-A	*Unnamed Tributary to Alamosa*	37.02715	-104.90795	0.011	0.017
068-A	*Unnamed Tributary to Alamosa*	37.01539	-104.91045	0.03	0.046
069-A	*Unnamed Tributary to Alamosa*	37.00794	-104.90472	0.009	0.014
070-A	*Unnamed Tributary to Lorencito*	37.00097	-104.90736	0.008	0.012

	Canyon				
072-A	*Unnamed Tributary to Alamosa*	37.03	-104.91074	0.006	0.009
073-A	*Unnamed Tributary to Alamosa*	37.03599	-104.91817	0.016	0.025
074-A	*Unnamed Tributary to Alamosa*	37.02678	-104.91691	0.018	0.028
078-A	*Unnamed Tributary to Lorencito Canyon*	36.99557	-104.91341	0.056	0.087
082-A	*Unnamed Tributary to Alamosa*	37.02929	-104.92530	0.039	0.06
083-A	*Unnamed Tributary to Alamosa*	37.02455	-104.92453	0.056	0.087
084-A	*Unnamed Tributary to Alamosa*	37.01503	-104.92717	0.028	0.043
088-A	*Unnamed Tributary to Alamosa*	37.02153	-104.94077	0.024	0.037
091-A	*Unnamed Tributary to Alamosa*	37.02495	-104.93320	0.011	0.017
093-A	*Unnamed Tributary to Alamosa*	37.00901	-104.93374	0.027	0.042

D. Major Changes From Last Renewal:

The facility has discontinued discharge from a number of outfalls, including Outfalls 1, 4, 8, 11, 14, 53, 59, 62, 85, 86, and 94.

On January 30, 2015, the permittee notified the Division that on September 30, 2014, outfalls 036A and 091A were decommissioned. While these outfalls are included in the reasonable potential analysis portion of this Fact Sheet, they will not be authorized to discharge in the permit.

The segment standard for boron for COARLA04b has increased from 0.75 mg/l to 4 mg/l. Total recoverable trivalent chromium (chronic) was added to the segment. The standard for total recoverable iron decreased from 1805 ug/l to 1000 ug/l.

The Division modified the approach for the implementation of the "current condition" for SAR.

Radium 226+228 was considered and a compliance schedule has been added for outfall 049-A.

WET testing, total recoverable iron, and SAR modification requests are addressed.

The following parameters were removed from the permit: dissolved trivalent chromium, dissolved manganese, and dissolved silver. Annual reporting for a number of parameters that were not in the previous permit have been added.

III. DISCUSSION OF REQUESTED REVISION TO EFFLUENT LIMITATIONS FOR SAR/EC, IRON, AND WET

This renewal addresses all requests submitted in the form of permit modification requests for this facility received throughout 2013. The requests are addressed in turn below.

Requested revision of SAR/EC requirements

The facility requested revision of their SAR/EC permit limits, through submittal of a permit modification request dated August 6, 2014. The Division did not act on the modification request due to the timing of the pending renewal and incorporated consideration of the permit revisions requested through the modification request into the permit renewal process. The facility provided additional information regarding their request as comments on the draft renewal permit.

In the modification request dated August 6, 2014, the permittee stated that they have experienced compliance issues meeting the EC and SAR values that were modified in the permit effective April 1, 2014. The permittee requested that the Division "include a compliance schedule for SAR and EC with 'report only' requirements that will provide XTO with adequate time to assess how to comply with SAR and EC limits and to gather additional data to support revised SAR and EC limits. The suggested compliance schedule as outlined in the modification is as follows;

- For a 24-month period, XTO's SAR and EC will be tested monthly at each outfall, and will report the monthly average on DMRs as "report only;"

- After 12 months, XTO will submit the results of its SAR and EC sampling and testing to the Division, noting any seasonal and field variabilities; and

- After 24 months, XTO will report its SAR and EC results to the Division and provide recommended steps for SAR and EC compliance, and a schedule for compliance.

For development of the draft permit, the division interpreted the modification request as a request to remove the current effluent limits from the permit. In their comments on the draft XTO stated that they "did not suggest that the existing EC/SAR levels should be discarded. Importantly, during this time the Level 1 (soil salinity) and Level 2 (Purgatoire River water quality) monitoring programs in the permits would remain in effect, documenting that current conditions were maintained and agricultural uses were protected in the downstream Purgatoire (segment COARLA05b)." The permittee acknowledged that "it has been standard procedure by the Division to retain numeric discharge limits in permits subject to compliance schedules, but those limits do not take effect until the compliance schedule expires. "

The letter also details:

Under Regulation 61.8(3)(b), permits should include terms and conditions that establish a:

> Schedule of compliance where the Commission has adopted new standards, adopted temporary modifications, adopted revised standards that have become more stringent, or where the Division has developed new interpretations of existing standards including, but not limited to, implementation requirements through approved TMDLs and Wasteload Allocations and anti-degradation reviews.

Further, the request states that historic SAR/EC data at the outfalls was collected quarterly so it was not a robust, statistically valid data set from which to extrapolate monthly limits. The Permits require increased frequency of SAR and EC reporting- i.e., monthly reporting, as opposed to quarterly reporting. Further, certain historic SAR data were mistakenly discarded because they were assumed to be "outliers" and not representative.

The request states that Regulation 61.8(8)(a)(i) provides that permits may be modified based on exceedances of permit limitations. It is not currently feasible for XTO to come into compliance with the SAR limits in the Permits because new data demonstrates unavoidable variability in laboratory data and field conditions, at the same time that field operations have continued without significant changes. XTO compiled this new data in part because XTO has been monitoring SAR and EC levels at an increased frequency, i.e., on a monthly basis, as opposed to on a quarterly basis, pursuant to the new permit limits.

The request states that the recent data also shows considerable variability in laboratory results. For example, XTO has fluctuations in SAR levels at the same outfall. This is likely due to the differences in geology in the coal formations from which the coal bed methane gas is derived. USGS conducted a "robust chemical suite of analyses in the groundwater, including sodium, calcium, and magnesium, at 87 well locations within this region" and demonstrated considerable variability in groundwater quality that predates any coalbed methane development in the region. See USGS, Geldon and Abbott, 1984.

In their comments on the draft permit, the permittee states that "more restrictive EC/SAR limits are unnecessary" and that "levels of EC and SAR in the Purgatoire River have satisfied agricultural (irrigation) use requirements at their points of use. This is evidence that historic CBM water management practices have been protective of the water.

They also state that "XTO recognized the need for caps on flow and EC/SAR, yet under the Division's modifications, some outfalls would immediately exceed flow and SAR limits." The permittee suggests " a tributary-based approach" with "caps on flow and EC/SAR for each tributary, based on historic flows and loads, would maintain historic levels of compliance while allowing for some variability (natural and operational) within and among the outfalls within each tributary."

Discussion of Request

Based on the record, the Division has determined that numeric effluent limitations are necessary and appropriate for EC, SAR and flow. The following includes a discussion of the background, data analyses, and EC, SAR and flow effluent limitation in this permit.

Background

Legal Framework

Section 503(4) of the Water Quality Control Act, §§ 25-8-501, et seq., states,

> No permit shall be issued which allows a discharge that by itself or in combination with other pollution will result in pollution of the receiving waters in excess of the pollution permitted by an applicable water quality standard unless the permit contains effluent limitations and a schedule of compliance specifying treatment requirements. Effluent limitations designed to meet water quality standards shall be based on application of appropriate physical, chemical, and biological factors reasonably necessary to achieve the levels of protection required by the standards.

Effluent limitations for EC and SAR implement the narrative water quality standard for discharges to surface waters that are subsequently diverted for crop irrigation. The Division's Clean Water Permitting Policy 24 "Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops" states:

> The following narrative standards and agricultural beneficial-use definitions from Regulation No. 31 are the starting points for the selection of the appropriate levels of protection that should be provided in permits for discharges to surface waters.
>
> > Section 31.11(1)(a)(iv) State surface waters shall be free from substances attributable to human-caused point source or nonpoint source discharge in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life
> >
> > Section 31.13 State Use Classifications. Waters are classified according to the uses for which they are presently suitable or intended to become suitable. In addition to the classifications, one or more of the qualifying designations described in section 31.13(2), may be appended. Classifications may be established for any state surface waters, except that water in ditches and other manmade conveyance structures shall not be classified.
> >
> > Section 31.13(2) Agriculture. These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

Given the above narrative standards, two types of protection are required.

- One type of protection is "no harm" to plants (i.e., irrigated crops in this application). Many measures can be employed to assess when a plant is harmed by the quality of irrigated water – such as germination rate, growth rate, crop yield, foliage imperfections, and moisture stress.
- The other type of protection is for "no harm to the beneficial use" which for irrigated agriculture is for "crops usually grown in Colorado."

Additional regulatory provisions in Regulation No. 61 regarding the derivation of effluent limits include the following:

Regulation 61.8(2)(b)(i)(G)

When developing water quality-based effluent limits under this paragraph, the Division shall ensure that:

> (I). The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards…

Regulation 61.8(2)(b)(i)(F)

Where a water quality standard has not been established for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or measurably contributes to an excursion above a narrative water quality standard, the Division must establish effluent limits using one or more of the following options:

> (I) Establish effluent limits consistent with the requirements set forth in section 14(4) of the Basic Standards, Regulation No. 31…

Regulation 31.14(4)

> Where no statewide or site-specific numeric standard exists for a constituent of concern, the Division may establish effluent limitations or other permit conditions for such constituent if necessary to comply with the narrative standards in section 31.11(1). Such effluent limitations shall be developed in a manner consistent with the Commission's methodology for establishing numeric water quality standards and, if applicable, shall be consistent with the criteria contained in table I, II and III of this regulation. In such circumstances, upon the request of any interested person, the Commission may hold a rulemaking hearing to consider the adoption of a numerical standard, which would then be binding.

Regulation 61.8(2)(b)(iv):

The permit shall be written with effluent limitations that respect the methods by which water quality standards were derived, and the degree of variation of water quality that exists in the relevant stream segment or ground water on a seasonal basis or otherwise. The existence of water quality standards, particularly where based on ambient stream data, does not necessarily prohibit at all times discharges that may result in pollution of the receiving waters in excess of the applicable water quality standards.

Historic Permit Actions and Effluent Limitations

The permit that became effective February 1, 2010 was the first permit to address EC/SAR. In that permit the Division implemented the narrative standard described above per the division's Clean Water Permitting Policy 24 "Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops." In that permit the effluent limitation for EC was 1.8 ds/m and SAR effluent limitation was capped at a maximum of 6.8.

The effluent limits were established in accordance with the finding that these discharges, will cause, have the reasonable potential to cause, or measurably contribute to an excursion of the narrative water quality standards of "no harm to plants: and "no harm to beneficial uses." 5 CCR 1002-61, § 61.8(2)(b)(i)(F). The Division recognized that XTO would not be able to meet these new limitations, and pursuant to the division's Clean Water Permitting Policy 3 "Permit Compliance Schedules" included a 4.5 year compliance schedule with interim milestones designed to facilitate compliance with the permit limits. These limits were scheduled to become effective on January 31, 2014, but were subsequently extended to August 1, 2014.

In July 2012, XTO requested modifications to the permit for EC and SAR effluent limits on the basis the instream EC and SAR levels in the Purgatoire River supported agricultural irrigation uses. July 12, 2012 letter to the Division, Ronda L. Sandquist. The approach in the permit modification request based on the ambient water quality was a fundamentally different than the established effluent limitations in Clean Water Permitting Policy 24.

In response to this modification request and after analyzing the data, the division developed a draft permit modification, received public comment, reviewed those comments and determined appropriate changes to the draft, responded to the comments, and issued the permit modification. The permit modification became effective April 1, 2014.

The division revised the EC effluent limit from 1.8 dS/m to the maximum effluent discharge concentration (minus outliers) at each outfall for the period of record; and changed the limits for SAR from a cap of 6.8 to the maximum effluent discharge concentration at each outfall for the period of record (collectively, "maximum concentration effluent limitations"). As a result of the modification, the EC effluent limitations ranged from 1.82 dS/m to 4.3 dS/m, and the SAR effluent limitations ranged from 48 to 97. The Division used the effluent discharge concentration for each outfall from January 1, 2010 through September 30, 2013 ("period of record") to establish the maximum concentration levels.

The compliance schedules were removed because the modified permit limitations reflected the maximum concentrations of the permittee's effluent. When the permittee requested this modification it submitted that the data during the period of record was representative of the variability in the concentrations of its discharge. Accordingly, the concentrations in the permittee's effluent should have been below its historic maximum, which represented the upper bounds of its variability.

Additionally, flow limitations were added to each outfall. Flow limits were established at the maximum effluent discharge flow (30 day average) reported during the initial effluent discharge period of record (January 1, 2010 through September 30, 2013). The effluent limitations for flow were added to allow operational flexibility while ensuring that operational and discharge changes do not result in a decrease in water quality.

Summary of Effluent Data

A summary of the outfalls for which discharge data from January 1, 2014 through September 30, 2014 exhibit exceedances of the maximum concentration effluent limitations follows below. Note that the modified SAR effluent limits became effective on April 1, 2014, and at that time the monitoring frequency for SAR increased from quarterly to monthly. Up to 7 values are available for each outfall for the calendar year 2014, depending on whether a discharge was continuous during that time period or not. Any value reported for the first quarter of 2014 prior to the effluent limits becoming effective is not considered a permit violation and those values are included in this summary solely for illustrative purposes regarding "extent of exceedances".

Outfall	*Current SAR Effluent Limit*	*Number of SAR Exceedances*	*SAR Exeedance Values*
010A	*79.1*	*3*	*88.2, 88.4, 91.3*
012A	*77.1*	*2*	*77.9 79.2*
016A	*80.3*	*3*	*81.5, 84, 85*
021A	*79.6*	*3*	*80.6, 82.1, 84.9*
025A	*73.4*	*1*	*74.3*
027A	*78.5*	*2*	*83.2, 87.8*
028A	*86.6*	*3*	*92.6, 93.6, 100*
034A	*75.9*	*1*	*79.6*
035A	*69.2*	*1*	*76.3*
036A	*96.9*	*2*	*105.1, 107.1*
039A	*66.3*	*3*	*67.1, 69.1, 73.1*
042A	*75.4*	*1*	*79.9*
045A	*53.8*	*2*	*58.2, 61.6*
047A	*67.9*	*1*	*69*
049A	*64.6*	*3*	*67.7, 70.2, 72.7*
050A	*76.8*	*2*	*77.2, 78.1*
051A	*77.6*	*2*	*78.1, 80.2*
066A	*59.5*	*2*	*60.3, 61.5*
067A	*60.4*	*2*	*61.8, 64.3*
068A	*69.5*	*1*	*72.4*
069A	*73.9*	*2*	*74.7, 78.3*
070A	*64.0*	*1*	*67.8*
072A	*60.0*	*2*	*61.4, 66.2*
073A	*90.3*	*2*	*90.5, 108*
078A	*66.3*	*1*	*71.9*
082A	*56.1*	*3*	*61, 66.9, 70.7*
083A	*55.5*	*3*	*54.1, 58, 59.7*
088A	*52.5*	*3*	*53.6, 58.2, 62.9*
093A	*48.7*	*2*	*50.2, 53.1*

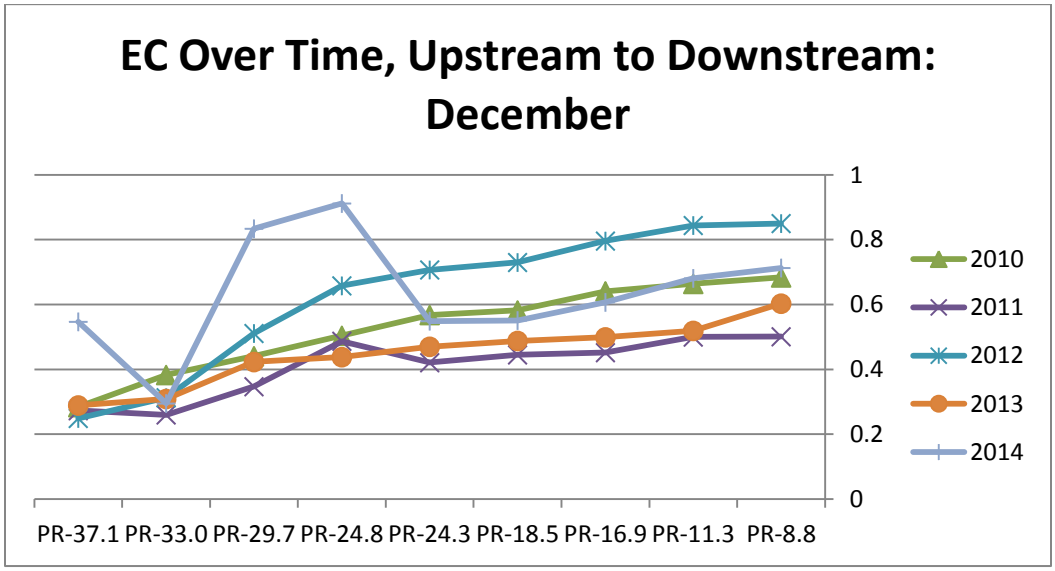
Data Analyses

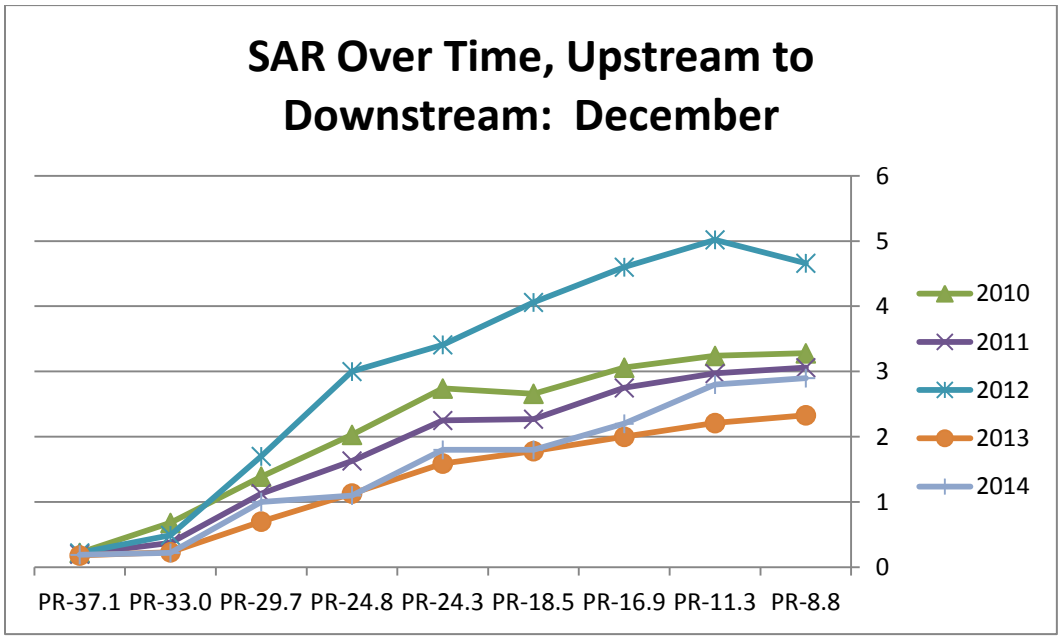
Ambient Data Analysis

In continuing with the approach of establishing effluent limits to characterize the historic effluent discharge concentration, as opposed to returning to a strict application of the effluent limitations established by Clean Water Permitting Policy 24, the division analyzed available ambient stream data and soil analyses to determine whether ambient water quality remains at an acceptable level to support irrigation uses.

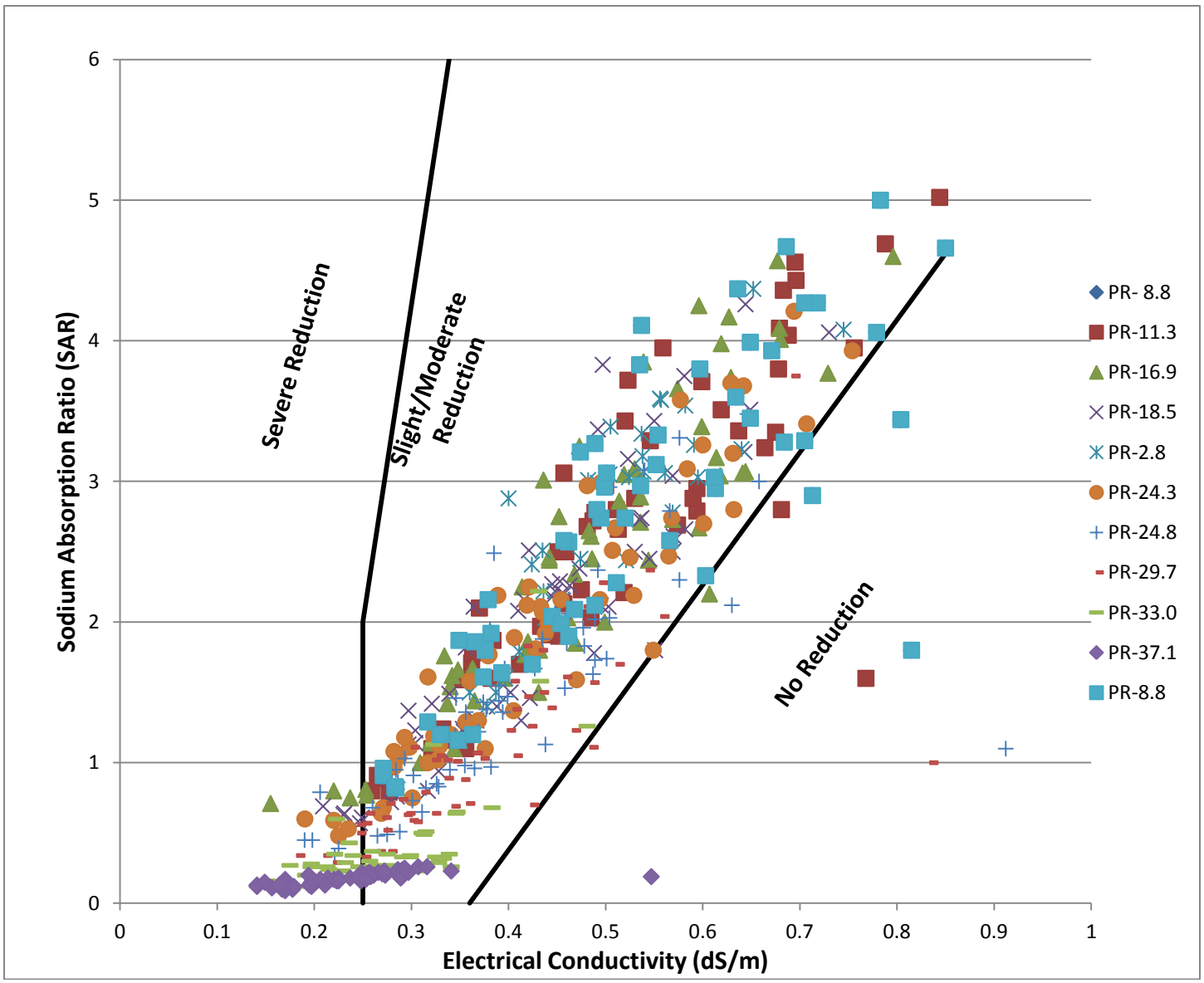
The division concluded that ambient stream data continues to demonstrate a positive relationship between the discharge of CBM water containing high levels of EC and SAR, and a corresponding increase in ambient EC and SAR levels. The following chart illustrates a relative increase in instream EC and SAR levels from the

most upstream station, which is located above any CBM influence, to the most downstream station, which is location below all CBM influence and directly above Trinidad Reservoir. Data is presented for the month of December. A similar positive relationship exists seasonally.



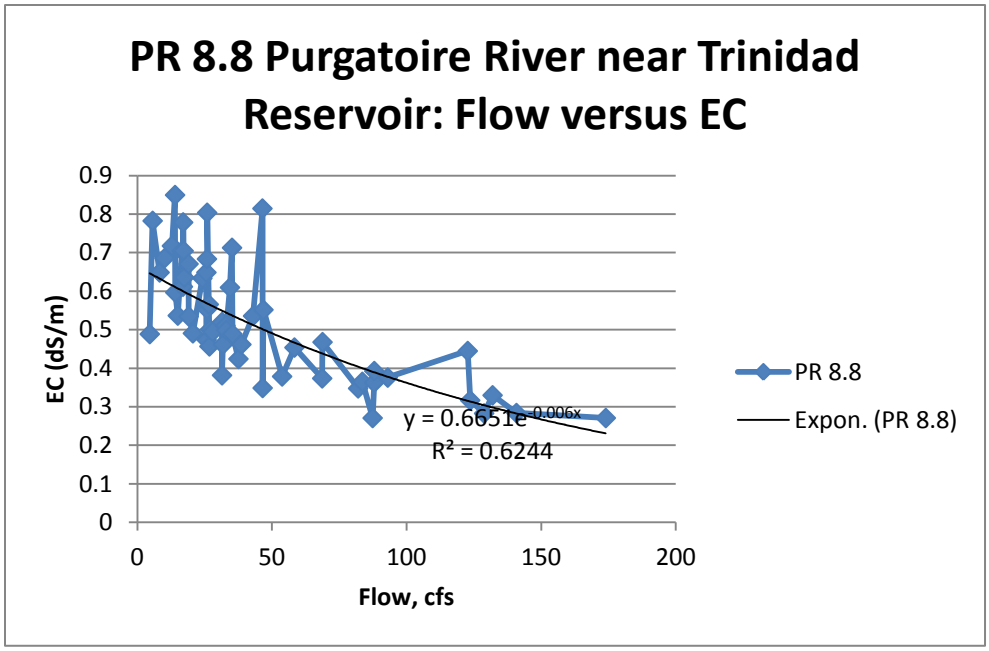


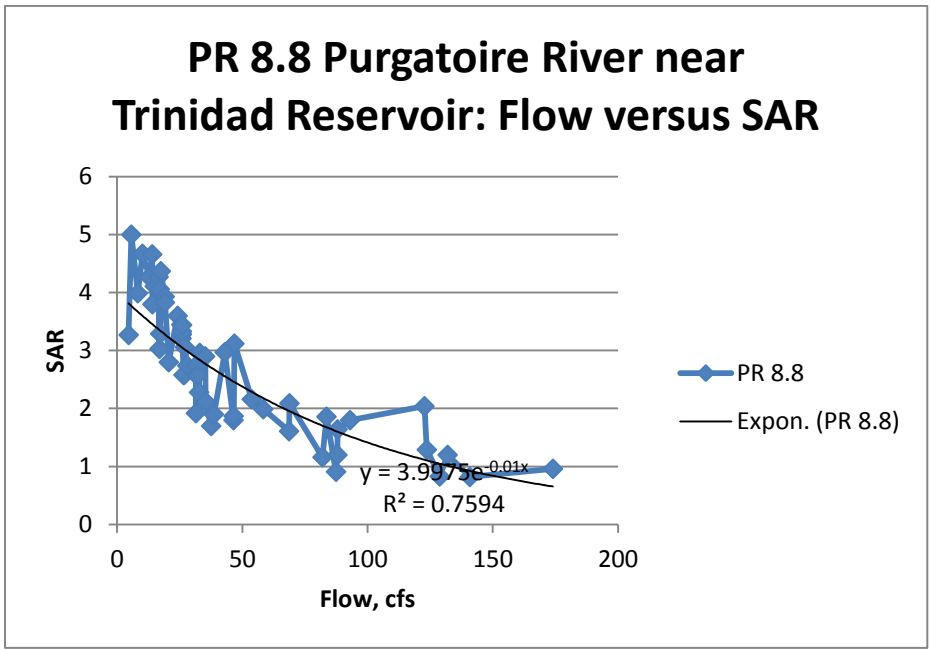
The division analyzed the five years (2010 through 2014) for which ambient stream data are available for EC versus SAR levels to determine if those remained at an acceptable level during the five year period. When the division revised the effluent limits in 2014 to depart from the values based on published science as described in Clean Water Permitting Policy 24, the division agreed with the conclusion put forth by the permittee, that EC versus SAR levels were acceptable with the CBM influence. That while these levels span both the "safe" and slight to moderate reduction in infiltration zone" ambient levels available demonstrated the same thing. An updated analysis confirms this is still the case.



Purgatoire River In stream Irrigation Conditions

The division analyzed the five years (2010 through 2014) for which ambient stream data are available for relationships between ambient stream flow and ambient EC and SAR levels, and concluded that a strong relationship exists.





In other words the relative amount of instream dilution available is a significant factor in determining EC and SAR levels at the point of an irrigation intake.

In accordance with the current permit the permittee is required to conduct soil analyses to monitor soil conditions given the implementation of EC and SAR discharge limits based on maintaining initial effluent discharge concentrations. The permittee was required to conduct initial sampling by October 31, 2014, and then submit results of the initial sampling and first sampling event for the after-irrigation season by December 31, 2014. The results of the sampling were compared to values provided by the U.S. Department of Agriculture, Natural Resources Conservation Service. "*Soil Survey of Las Animas County Area, Colorado, parts of Huerfano and Las Animas Counties*" (2009) which are summarized as follows:

Soil Type	*Salinity Maximum*	*Normal SAR Value*

MaW—Mauricanyon clay loam, 0 to 2 percent slopes, wet	*2 dS/m*	*About 1*

The results of the soil sampling indicate that EC is below the USDA maximum value. Soil EC was less than 1.0 dS/m at all depths in both fields with an average root zone salinity of 0.3 dS/m. However the SAR values indicate an increase over other normal soils in the vicinity. The soil SAR ranges from 1.2 to 1.5 and 0.9 to 1.3 in the two fields sampled. This is potentially due to the cumulative amounts and concentrations of water laden with sodium. The pH ranges from 7.6 to 8.0 and 7.2 to 7.7 in the fields. There is no corresponding reference value for pH included in the USDA publication.

The values were also compared to values included in Table 1 of the fact sheet to the permit modification that became effective April 1, 2014, which are repeated below:

Table 1: Salinity Classification of Soils.

Soil Classification	**EC (dS/m)**	**SAR**	**pH**
Normal	<4	<13	6.5 - 7.2
Saline	>4	<13	<8.5
Sodic	<4	>13	>8.5
Saline-sodic	>4	>13	<8.5

(1) Brady, N.C. 1990. The Nature and Properties of Soils. 10th edition. (2) Waskom, R.M. and others. Diagnosing Saline and Sodic Soil Problems. Colorado State University Extension Publication No. 0.521.

The results of the soil sampling do not conform to a soil classification listed in this reference.

The division concluded that the results of the soil sampling do not inform a change in approach for establishing effluent limits to characterize the initial effluent discharge concentration at this time. The soil sampling results are limited, and the current permit and this renewal permit include requirements to continue with the soil sampling annually, both pre-irrigation and after irrigation. This information will be available to inform future permit actions.

The division used these initial results to inform the specification of benchmarks in the renewal permits. The current permit states the following:

> Benchmark values for those parameters shall be set to half of the soil classification values or two-fold increase in the actual field values, whichever is more stringent, provided in the Brady (1990) to prevent soils from a change in soil salinity classification provided by Brady, 1990.

The results of the sampling did not conform to a soil classification listed in Table 1. Therefore the Division expressed the benchmarks as a two-fold increase in the actual field values. For EC this resulted in a benchmark of the average root zone salinity of 0.6 dS/m. For SAR the division calculated the mean of the range of SAR values at 1.2 (data from Table 2. Composite soil sample data from the Purgatoire River fields. Submitted as part of fall soil sampling results for irrigated soils along the Purgatoire River), and calculated a two fold increase to be at 2.4 SAR.

As such the division determined that a continued departure from the published science based effluent limitations for EC and SAR, and establishment of effluent limits based on an initial effluent discharge concentration, remains appropriate.

Noting the field variability described by the permittee, the Division explored options for revising the establishment of effluent limitations and evaluation of compliance for limits for SAR which, would expressly allow for variability and for slight single value exceedances of the current permit limits to be considered compliant.

EC, FLOW and SAR Effluent Limits Established in this Permit

EC Effluent Limit
The Division did not revise its approach for EC in this permit. During the previous permit term only one outfall slightly (2%) exceeded of the EC effluent limit, and as such, the Division did not have sufficient information to substantiate a change in approach. The permittee may conduct more frequent monitoring for EC so that the effluent quality is fully characterized during the reporting period. This is particularly valuable given that monitoring for EC can be conducted using a field probe eliminating the need to wait for laboratory results.

Flow Effluent Limit
The division did not revise its approach for flow in this permit. During the previous permit term no outfalls exceeded the flow limit, and as such, the Division did not have sufficient information to substantiate a change in approach.

SAR Effluent Limit
For SAR, the Division applied the lower confidence limit (LCL) method in this permit for the purpose of determining compliance with the SAR effluent limitation. The method was first developed by the division for use in the 303(d) listing methodology. A copy of this method is attached to this Fact Sheet as Appendix B. Like ambient water quality data, most discharge water quality data are not normally distributed. Therefore the non-parametric test developed for assessment of ambient stream data has been applied to discharge effluent data in this case.

The LCL method is based on a statistical comparison of ongoing effluent discharge concentrations (effluent data obtained to test compliance) to initial effluent discharge concentrations (the data set used to establish the effluent limit). Initial effluent discharge concentrations were based on the first set of effluent data (January 2010 through September 2013). From that set, the concentration corresponding to a single percentile – 85th in this case – was used to characterize the data set. The 85th percentile was selected because it conforms to the regulatory convention for chronic conditions when assessing stream data and for the establishment of many ambient based standards. There are additional reasons for using 85th percentile concentration: there is regulatory precedent, it locates a relatively high concentration (as opposed to the median), and it serves as a surrogate for a 30-day average concentration with a 3-year recurrence interval.

The 85th percentile concentration from the initial data set becomes the benchmark (i.e., it becomes the permit limit) for testing future compliance data. Consequently, it is important that it is "representative" of effluent conditions being characterized. In this case, representative data included all SAR data available for the effluent for the same period of record that the Division used to derive the maximum concentration effluent limitations (i.e., January 2010 through September 2013.

Once the permit limit has been set with the initial data set, which in this case is the 85th percentile concentration, it is possible to measure compliance with a new data set. Compliance is measured by asking the question: is the 85th percentile concentration of the new data set significantly greater than the permit limit? The method allows for variability in effluent discharge concentrations and accepts the possibility that the 85th percentile will exceed the permit limit, as long as it is not significantly greater. The statistical criterion in the permit is established at a 99% level of confidence. Thus, if the LCL method shows that 85th percentile

concentration of the new data is significantly greater than the permit limit, it means that the data demonstrates with a 99% level of confidence that the effluent is not in compliance with the limit. Note that a different (slightly lower) level of confidence is applied to the use of this method in the 303(d) listing methodology. The division selected a higher level of confidence for use in the permitting framework intentionally, so that a greater level of confidence would be behind the finding of an effluent limit exceedance, than for the finding of waterbody impairment.

Applying a statistical test, such as the LCL method, to an effluent limit allows for flexibility that is not captured by a discharge concentration alone. Under the LCL approach, the discharge concentration that is set as the effluent limit can be exceeded, up to a point, without triggering an effluent limit exceedance. Under the LCL approach the Division was able to develop the permittee's effluent limit based on historic effluent data, rather than revert to the static numeric limits established in Clean Water Permitting Policy 24, and was able to build in a statistical safeguard that was not applicable under the maximum concentration effluent limitation approach.

Using this method, if the LCL concentration of the reported value (e.g., 85th percentile) exceeds the effluent limitation, then the reported value is significantly larger than the effluent limitation and there is a high degree of confidence (99%) that the reported value should be considered non-compliant.

The Division assigned a six-month averaging period to the effluent limit, to facilitate a sample size of at least five samples. As described in Appendix B, a sample size of at least six samples was selected for the purpose of making 303(d) listing decisions, and when there are at least five samples, no additional supporting information is required because conclusions are equally reliable whether sample size is five or ten or fifty. As described in the permit, all samples collected during the averaging period are used to calculate the LCL concentration. This six-month averaging period should not interfere with operational decisions because the permittee can either decommission outfalls at the end of the reporting period, or collect additional samples in advance of any planned decommissioning to ensure that the minimum of five samples needed to report the LCL concentration will be available.

In summary, the Division determined that an 85th percentile effluent limit for SAR, with compliance determinations made based on an LCL concentration, was appropriate in this case based on the following:

- The applicable water quality standards in this case are narrative standards adopted for prevention of toxicity to plants, irrigated crops, and for prevention of harm to the beneficial use, irrigated agriculture
- For this permit, the SAR effluent limits are derived to characterize historic effluent discharge concentrations. This is analogous to the derivation methodology for ambient-based standards. The statistical methods applied in this permit of an 85th percentile value for establishment of an effluent limit for SAR is consistent with the standard practice used to derive ambient based standards.
- The slight exceedances of SAR under the current permit are within the degree of variation expected for the discharge, and because these variations have triggered permit violations, this is a cause for a change in approach that expressly allows for variability.
- The statistical method applied in this permit for compliance determinations for SAR, is intended to only make a finding of non-compliance when there is a high degree of confidence (99%) that the reported value represents a significant departure from the effluent limit.
- The evaluation of the quality of water for irrigation is complex and involves interactions of water quality, flow, plant tolerances, soil types, and agricultural management practices. The two measures of water quality, EC and SAR, used in discharge permits to control levels of salts, are measurements of the relative concentrations of several ionic components which are not constant from outfall to outfall, and are known to transform once discharged into the natural environment. Site-specific studies and data analysis conducted from January 2010 through September 2013 provided basis for

establishing maximum concentration effluent limitation for the period of record. The division adopted this approach based on a showing that the ambient stream condition was acceptable to support the irrigation use at these discharge concentrations. These maximum concentration effluent limitations were established through a permit modification that became effective April 1, 2014. The effluent limits established in this renewal maintain an approach based on historic effluent concentrations and ambient water concentrations that support agricultural irrigation uses.

- The approach used for this permit continues the monitoring and reporting requirements contained in the current permit. The monitoring requirements are intended to provide information to continue to verify that the water quality condition in the ambient receiving water is acceptable to support the irrigation use and to directly assess the potential for salt accumulation of irrigated parcels downstream of the CBM discharges. The special reporting requirements (benchmark trigger levels) are in place to alert the division to significant changes in the ambient water quality or soil conditions during the permit term. Significant changes in ambient water quality or soil conditions would trigger the division to revisit the effluent limitations.

Compliance Schedule

The Division also evaluated the appropriateness of a compliance schedule with the revised effluent limits and method for compliance determinations.

The permittee requested a compliance schedule to provide "adequate time to assess how to comply with SAR and EC limits and to gather additional data to support revised SAR and EC limits". A compliance schedule would only be appropriate to provide adequate time to comply with an effluent limit. A compliance schedule is not appropriate to provide time to revise an effluent limit. The following provisions regarding the establishment of effluent limitations and the use of compliance schedules operate in this case:

Per the Colorado Water Quality Control Act;

> "Schedule of compliance" means a schedule of remedial measures and times including an enforceable sequence of actions or operations leading to compliance with any control regulation or effluent limitation."

EPA's has established principals regarding compliance schedules which are incorporated into the Colorado policy. Three of these principals are as follows;

- Any compliance schedule contained in an NPDES permit must be an "enforceable sequence of actions or operations leading to compliance with a [water quality-based] effluent limitation ["WQBEL"]" as required by the definition of "schedule of compliance" in section 502(17) of the CWA. See also 40 C.F.R. § 122.2 (definition of schedule of compliance). And;

- Any compliance schedule contained in an NPDES permit must include an enforceable final effluent limitation and a date for its achievement that is within the time frame allowed by the applicable State or federal law provision authorizing compliance schedules as required by CWA sections 301(b)(1)(C); 502(17); the Administrator's decision in Star-Kist Caribe, Inc. 3 E.A.D. 172, 175, 177-178 (1990); and EPA regulations at 40 C.F.R. §§ 122.2, 122.44(d) and 122.44(d)(1)(vii)(A).

- In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record, that the compliance schedule

"will lead to compliance with an effluent limitation . . ." "to meet water quality standards" by the end of the compliance schedule as required by sections 301(b)(1)(C) and 502(17) of the CWA.

- A compliance schedule based solely on time needed to develop a Use Attainability Analysis is not appropriate, consistent with EPA's letter of February 20, 2007, to Doyle Childers, Director Missouri Department of Natural Resources, nor is a compliance schedule based solely on time needed to develop a site specific criterion, (underline added) for the same reasons as set forth in the October 23, 2006, (referenced in Paragraph 10) and February 20, 2007 letters.

To grant a compliance schedule in a CPDES permit, the permitting authority has to make a reasonable finding, supported by the administrative record that the discharger cannot immediately comply with the WQBEL upon the effective date of the permit. 40 C.F.R. §§ 122.47, 122.47(a)(1).

As discussed in the permittees request, only some of the outfalls covered under this permit have had compliance problems with EC or SAR. Despite this, the request includes a proposal to remove limits from all outfalls during the compliance period, including those that exhibit compliance with the current EC and SAR limitations. Thus, the record does not show that the discharger could not comply with the limitations as of April 2014 in some of the outfalls (all but one for EC). Subsequently, compliance schedules would not be appropriate for those outfalls that are in compliance with the current effluent limitations.

For existing sources, the Division first evaluates appropriateness of a compliance schedule on the basis of necessity. The necessity determination is made on the basis of whether associated effluent limits can be met. In conducting this analysis, the Division evaluated three scenarios with available effluent data. 1) January – September 2014, which was the data available for development of the draft permit, 2) July – December 2014, which represents a 6 month monitoring period commensurate with the renewal permit, and 3) August 2014, - January 2015, which represents the most recent 6 month period of data available for development of the final permit. A summary of the outfalls for which discharge data would exhibit exceedances of the revised effluent limits, using the LCL concentration method, follows below.

Outfall	*Revised Effluent Limit*	*1).LCL Concentration (Jan – Sept 2014)*	*2).LCL Concentration (Jul – Dec 2014)*	*3).LCL Concentration (Aug 2014 – Jan 2015)*
049-A	*62.5*	*63.3*	*61.9*	*59.9*
050-A	*71.4*	*73.7*	*63.2*	*66.6*
057-A	*59.4*	*60.7*	*59.8*	*59.3*
072-A	*56.7*	*57.6*	*57.1*	*54.6*
083-A	*53*	*53.4*	*52.0*	*49.2*
Total Number of Exceedances		*5*	*2*	*0*

For the most conservative evaluation, for five outfalls, the Division concluded that the necessity test has been met. The appropriateness determination next includes an evaluation of whether the effluent limit is the same, more stringent, or less stringent than the previous effluent limit. In this case the effluent limit is less stringent than the previous effluent limit and a compliance schedule would only be appropriate if new information is available that was not available at the time of issuance of the previous permit action that demonstrates a compliance schedule would have been appropriate in the previous permit.

In this case, a 4.5-year compliance schedule was included in the previous permit, and that compliance schedule was designed to lead to compliance with much more stringent effluent limits than what was included in the modification that became effective on April 1, 2014, and was more stringent than the effluent limitations included in this renewal. The compliance schedule in the previous permit was removed 4 years into its duration when less stringent effluent limits were derived based on maintaining the historic maximum effluent discharge concentration. The determination that a compliance schedule was not appropriate for less stringent effluent limits derived to maintain historic effluent discharge concentration for the April 1, 2014 permit modification, remains appropriate for this renewal.

Proposed Revision of Iron Effluent Limitations Based on Iron Trading

The facility has requested a modification to iron limitations, dated December 13, 2013. The Division postponed the review and incorporation of the modification request in order to coincide with this permit renewal.

This particular discussion will focus on the Lorencito Canyon and tributaries, as the outfalls within this permit (CO0048054) discharge into this watershed. The impact of stream stabilization for those outfalls from other facilities will be discussed in those permit Fact Sheets.

With the December 2013 modification request, the permittee proposes to implement stream bank stabilization to reduce the iron loading to the Purgatoire Watershed as a whole, and to generate loading "credits" for the basin. The report estimates that nearly 14,000 pounds of total recoverable iron will be reduced to the Purgatoire Watershed. The facility cites the Colorado Pollutant Trading Policy (WQCD, October 2004) as the basis for the iron trading proposal. The proposal includes an assessment of streambank erosion and the associated levels of total recoverable iron in the stream. The iron, the proposal indicates, should be reduced if the amount of streambank erosion decreases. The restoration focuses on a stretch on streambanks along the South Fork of the Purgatoire from Torres Canyon to Cherry Canyon. The proposal suggests that the stream project could offset iron contributions on the Purgatoire River and thereby improve the water quality in the Purgatoire Watershed as a whole. With the reduction of the iron loading from stream bank erosion, the facility would gain credits to help offset their own contributions of total recoverable iron to the Purgatoire River. Specifically, the anticipated limitations for iron calculated by Tetra Tech were outlined to be 1421 µg/l for the 30 day average and 377 µg/l for the ADBAC (2 year rolling avg).

The modification includes a proposed construction date of the stream bank stabilization "as early as" April 30, 2015, and the effectiveness of this proposal will not be verified until another two to five years after construction is completed. Hence the proposal does not propose a date when the stream bank stabilization will realize any "credits" to apply to any of the facilities.

This modification request is a result of investigations and options investigated by the facility under the current compliance schedule for meeting final iron limitations of 1,805 ug/l (30-day avg) and 150 ug/l (2 yr rolling average) by July 1, 2015. In the compliance schedule, the first interim milestone was due October 31, 2010. The report submitted by XTO identified strategies that were to be fully evaluated (and one selected) during the compliance schedule period. In that report, the facility identified the following as potential options to meet the final iron limitations;

Enhanced oxidation/aeration
Settling and filtration;
Ponds, settling, and flocculation; and
Watershed-based trading/iron offsets

With the 2011 submittal, the iron trading proposal was researched, along with the options presented in the first report. The facility found that settling and filtration testing did not result in a large enough reduction in iron. Settling the discharge alone did not appear to have any significant effect on the levels of total recoverable iron in the discharge either; however the addition of chemical flocculants were not explored in this compliance schedule. The facility indicated that oxidation occurs naturally when the CBM water is brought to the surface. The permittee decided to pursue the iron trading option further.

The 2012 compliance schedule submittal removed the settling and filtration option. The oxidation option, while occurring naturally, would not provide enough reduction in order for the discharges to comply with future limitations. The ponds, settling, and flocculation was addressed, but without testing any flocculants, and was dismissed as not being effective enough to comply with final permit limitations for iron. The 2012 compliance schedule selected the iron trading option.

Discussion of Request

The Division disagrees with the applicability of the iron trading proposal for this permit (CO0048054 Lorencito Canyon and Tributaries) for the following reasons;

Water Quality Based Limitation

- The proposal focuses on a specific stretch (noted above) of the South Fork of the Purgatoire River, on the basis that stream bank stabilization would improve the water quality for total recoverable iron in the "Purgatoire River Watershed." However, the outfalls in this permit discharge into the Lorencito Canyon or its tributaries. While the South Fork of the Purgatoire is within the larger Purgatoire "Watershed", the "watershed" consists of five different watersheds within the Purgatoire Basin as designated by the WQCC. These are as follows; Guajatoyah Creek (COARLA05a), the South Fork of the Purgatoire (COARLA05b), the North Fork of the Purgatoire River (COARLA05b), the mainstem of the Purgatoire River (COARLA05b), and Lorencito Canyon (COARLA04b). The South Fork of the Purgatoire River is a different "watershed" from Lorencito Canyon as designated by the Water Quality Control Commission, and because these are two separate tributaries to the Purgatoire River, the water quality and water flows in the South Fork do not communicate with Lorencito Canyon and have no bearing on its water quality. Therefore, stream bank stabilization and any associated load reduction (credits) of total recoverable iron in the South Fork will not affect Lorencito Canyon and would not function to improve the water quality in Lorencito Canyon. Thus, stream bank stabilization "credits" from the South Fork cannot be applied to the Lorencito "watershed" The Colorado Pollutant Trading Policy (WQCD, October 2004) , Section IV. also discusses the appropriate geographic considerations of trading as generally "within a single stream segment (p.5)."

- While the Division acknowledges that trading can function to improve water quality within a watershed in certain instances, the policy does not indicate that trading can function to nullify, or in any way allow exceedences of the water quality standards . In fact, The Colorado Pollutant Trading Policy (WQCD, October 2004) , Section VI. expressly *prohibits* the "utilization of credits in such a manner that would cause or contribute to a violation of water quality standards" (p.6). In Lorencito Canyon, the Water Quality Control Commission recently assigned a chronic numeric standard of 1,000 ug/l for total recoverable iron to the segment (COARLA04b). Because this Canyon is a zero low flow stream discharges within this watershed must be controlled at 1,000 ug/l to prevent an exceedence of the assigned standard. Applying credits to discharges in the Lorencito, and allowing effluent limits in excess of 1, 000 ug/l would be allowing exceedence of instream standards in localized reaches e.g. 'hot

spots' and is not consistent with the scope and purpose of trading. Any discharge in exceedence of 1,000 ug/l (30 day average) would be a violation of the water quality standard.

Antidegradation-Based Limitation for TR Iron

This permit includes a consideration of the Purgatoire River solely for an antidegradation analysis. While the Division acknowledges that stream bank rehabilitation projects on the South Fork of the Purgatoire have the potential to reduce loading, and subsequently to increase water quality for total recoverable iron on the Purgatoire, water quality trading was not designed to be a substitute for AD limitations. On page 6 of the Trading Policy, it states that, "though some incremental increase in pollutant loading…may be permissible, consistent with state antidegradation policy and instream water quality standards, it is not acceptable to degrade a significant portion of a stream segment despite the identified water quality or habitat benefits that may be realized below the source of the pollutant reductions." Nevertheless, since the baseline water quality during the AD period has already been characterized, and is a static number, any 'credits' in the Purgatoire River as a result of the steam bank project are not expected to impact the AD limitations to any degree. Note that the ADBAC in this permit renewal is 495 ug/l (2 year rolling average) versus the current permit 2 year rolling average limit of 150 ug/l. Further, this ADBAC is greater than the numeric ADBAC limitation of 377 ug/l that is discussed in the modification. Thus, a 2-year rolling average of 377 ug/l was anticipated by XTO.

Compliance Schedule Proposal

The modification includes a proposed construction date of the stream bank stabilization "as early as" April 30, 2015, and the effectiveness of the project would not be verified until another "two to five" years after construction is completed. The modification request does not propose a date when the stream bank stabilization will generate any "credits" to apply to any of the facilities, and no defined process of measuring credits. Although the project is not applicable in this watershed, note that compliance schedules must include specific dates for compliance with limitations, regardless of their source. A method of determining credits also must be established.

Further, during the compliance period other options for meeting limitations were identified, but not comprehensively researched. Additional investigation on some of these options (e.g. enhanced oxidation, flocculation, etc) to meet the WQBEL of 1,000 ug/l may be warranted. Please see Section VII.D of the Fact Sheet for a discussion of compliance schedule.

Requested Revision of Whole Effluent Toxicity (WET) Requirements

The facility requested revision of their effluent limits for Whole Effluent Toxicity, through submittal of a permit modification request dated December 18, 2013. The Division did not act on the modification request due to the timing of the pending renewal and incorporated consideration of the permit revisions requested through the modification request into the permit renewal process. The facility provided additional information regarding their request as comments on the draft renewal permit.

Excerpts from the WET request follow below:

Biological monitoring has found that aquatic life communities are only sustained in the Purgatoire River, not the upgradient tributaries. Therefore acute WET testing at discharge outfalls in the tributaries will be protective. Testing at the tributary outfalls and confluences of the Purgatoire River indicates that compliance with acute levels at the outfalls will result in meeting WET chronic objectives for the Purgatoire River. To

assure that toxicity in the Purgatoire River does not increase, chronic WET tests will be conducted at the confluences of tributaries and the River.

These permitted discharge outfalls are all located in tributaries to the Purgatoire River- the flow in the tributaries is intermittent or effluent dominated. In many locations, if not for the discharge of produced water, no flow or aquatic life would exist. There is a robust dataset of acute whole effluent toxicity ("WET") testing results, as this has been required of all outfalls since initiation of CBM discharges in the mid-1990s. Outfalls consistently pass this test as shown by DMR data.

However, WET tests using *Ceriodaphnia dubia (C. dubia)* cannot consistently pass the chronic survival and reproduction threshold limits at discharge outfalls identified in XTO permit Nos. CO- 0048054 and -0048062, and Pioneer Permit Nos., CO-0047776 and -0048003 (all permits issued in 2010). These permits contain compliance schedules to evaluate WET testing compliance and determine sources of toxicity and discharge effects on aquatic life.

Sustainable communities of fish and other aquatic species are not present at the points of discharge themselves, because the outfalls are located in the ephemeral, tributary canyons. Chronic WET is not attained at the outfalls, so XTO and Pioneer undertook further studies downstream in waters proximate to the locations of aquatic species. Downstream near the mouths of the canyons, at the confluence with the Purgatoire River, there are surface water flows and more robust aquatic life communities. US EPA has indicated that Colorado Department of Public Health and Environment (CDPHE) has the discretion to set the point of compliance for its aquatic life/toxicity testing policy.

Surface water toxicity studies were performed at different locations in the Lorencito Canyon and South Fork tributaries to the Purgatoire River (Figure 2) to determine if the CBM effluent could be resulting in adverse effects to aquatic life. The evaluations, conducted with effluent and surface water, confirmed that the chronic toxicity, specifically observed in Lorencito Canyon, is related to total dissolved solids (TDS). The toxicity studies, along with habitat, benthic macroinvertebrate, and fish assessments provide evidence about the relative risks associated from the CBM produced water discharge. Testing at these sites using *C. Dubia, Daphnia magna, and Pimephales promelas* demonstrate sublethal toxicity to only *C. dubia* at multiple locations near the outfalls and within the Lorencito tributary due to TDS. According to the AECOM Report, *C. dubia* is recognized as being sensitive to elevated TDS and is not indigenous to these streams.

The TDS concentrations in Lorencito Canyon only appear to be of concern based on WET studies with *C. dubia.* The fact that there are sensitive benthic macroinvertebrate (individuals representing four multi-metric Plains Intolerant families) and fish (flathead chub) species found in portions of the tributary where flow levels allow for a connection to the Purgatoire River indicates that the tolerance ranges of these organisms are within the current water conditions. Therefore, the tributaries near the confluence with Purgatoire River could serve as suitable auxiliary monitoring locations for chronic WET testing in the respective permits.

On the behalf of Pioneer Natural Resources and XTO Energy, Inc., we request to amend XTO Permit Nos. CO-0048054 and C0-0048062 and Pioneer Permit Nos., CO0-0047776 and CO-0048003, to modify the WET test (chronic) requirements. During discussions with the Water Quality Control Division (WQCD), Permitting Section, we initially proposed that chronic WET attainment occur where the aquatic uses and water exist, namely downstream near the mouth of tributary canyons.

The WQCD has recommended incorporating a permitting model for WET testing similar to that in the London Mine Permit (CO0-0038334). Application of this permitting model in the Purgatoire watershed results in acute testing of *Daphnia magna* (*D. magna)* at the outfalls and biennial chronic testing of *C. dubia*

at the confluences of the tributaries and Purgatoire River to confirm no toxicity occurs other than related to TDS.

Our data and analysis supports this approach because acute testing with *D. magna* would occur at the outfalls as it has been conducted since the initiation of CBM discharges in the basin. While chronic WET testing with *C. dubia* often results in WET testing failures due to TDS (even at the mouth of Lorencito canyon in proximity to the Purgatoire River), tests with *D. magna,* a species less susceptible to TDS toxicity and more representative of the aquatic species found in the area, indicates attainment of WET (Table 1). However, because *D. magna and C. Dubia* have similar sensitivity to a variety of toxicants, chronic WET testing with *C. dubia* near the mouth of the tributaries and Purgatoire River would provide assurance that no toxicities, other than TDS could be affecting the aquatic species.

Therefore, the permit would require quarterly acute WET testing at the outfalls with *D. magna,* and biennial chronic WET testing with *C. dubia* at the confluences of the tributaries and Purgatoire River. If the chronic testing indicates toxicity, the permittee will conduct a PTI study to demonstrate that chronic toxicity of *C. dubia* where it occurs is due to TDS. If chronic WET test failures can be attributed to continued, and historic, TDS levels, no further TIE analyses shall be necessary. If chronic WET tests with *C. dubia* fail and the PTI study finds that the source of the toxicity is not TDS, then quarterly monitoring for WET testing (chronic) will be initiated and the WQCD will issue a correction and place this requirement in the permit.

Dr. Naddy's data collection and evaluations support the identification of TDS in Lorencito Canyon as the cause of sublethal toxicity to *C. dubia.* Aquatic life data support the WET being met at the mouth of the canyon, where biological, chemical and physical habitat remain in compliance. Acute WET testing will continue at the discharge outfalls for *D. magna.* No discharge permit violation will deemed to have occurred if acute WET at the discharge outfall for *D. magna* is met.

Discussion of Request

This discussion will focus on the Lorencito Canyon and tributaries, as the outfalls within this permit (CO-0048054) discharge into this watershed. The discussion of WET for those outfalls from other facilities will be discussed in those permit Fact Sheets.

Regulatory Basis for WET Effluent Limits

Limitations for WET have been developed to implement the narrative standards for toxicity. The narrative standards are contained at Regulation 31.11(1), which provides that: "state water shall be free from substances attributable to human-caused point source or nonpoint source discharge in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants or aquatic life."

Applicable regulatory provisions regarding the derivation of effluent limits to implement this narrative standard include the following:

Regulation 61.8(2)(b)(i)(A)

Limitations must control all pollutants or pollutant parameters which the Division determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or measurably contribute to an excursion above any water quality standard, including narrative standards for water quality.

Regulation 61.8(2)(b)(i)(B)

When determining whether a discharge causes, has the reasonable potential to cause, or measurably contributes to an in-stream excursion above a narrative or numeric water quality standard, the Division shall

use procedures, including appropriate water quality modeling, which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

Regulation 61.8(2)(b)(i)(E)

Except as provided in this subparagraph, when the Division determines, using the procedures in subsection (b)(i)(B) of this section, toxicity testing data, or other information, that a discharge causes, has the reasonable potential to cause, or measurably contributes to an in-stream excursion above a narrative water quality standard, the permit must contain limitations, which include effluent limits, for whole effluent toxicity. Such limitations to be derived by the Division are based upon the Division's determination of what constitutes an acceptable level of whole effluent toxicity. Limits on whole effluent toxicity are not necessary where the Division demonstrates in the rationale of the permit, using the procedures in subsection (b)(i)(B) of this section, that chemical-specific limits for the effluent are sufficient to attain and maintain applicable numeric and narrative water quality standards.

Toxicity Studies- Sodium Bicarbonate, $NaHCO_3$, and Bicarbonate, $HCO3^-$.

In accordance with the current CBM permits, and the WET Policy, upon failure of a chronic WET test for *C. dubia*, some Preliminary Toxicity Investigations (PTI) and Toxicity Identification Evaluations (TIE) were conducted. The function of a PTI/TIE study is to identify the cause of toxicity in the effluent. The PTI/TIE studies, concluded that TDS ions are the cause of toxicity in the effluent. The PTI and TIE use a series of tests to identify the cause of the toxicant. As stated in the reports:

The cation/anion ion exchange test is designed to determine if effluent toxicity is due to an imbalance of essential ions (either in excess or deficiency) and to determine if TDS was the cause of toxicity. If toxicity is removed following the ion exchange, the results from this characterization test can be used in conjunction with other procedures to document ionic imbalance and/or TDS as the cause of toxicity.

$NaHCO_3$ is an ion captured in the TDS analysis, and is a major consistent of CBM produced waters, including those in the Purgatoire River watershed. The PTI and TIE studies concluded that sodium bicarbonate, $NaHCO_3$, is the primary ion causing toxicity in the discharge. On occasion, chloride was reported as a possible additional toxicant, however this was not further studied and substantiated through additional ion exchange and ion addition tests. Therefore, chloride is not discussed further in this analysis as no detailed information regarding chloride toxicity in these effluents is currently available. It may be appropriate in the future to generate additional information regarding chloride toxicity in these effluents.

A more extensive ecological evaluation was conducted to evaluate the toxicity instream and aquatic life (*Ecological Evaluation of the Effects from XTO and Pioneer NPDES Discharges to Aquatic Life in Lorencito Canyon and South Fork Purgatoire River*, AECOM Technical Services, Inc, February 2013). The AECOM report was submitted to evaluate instream aquatic communities and to verify that instream WET tests exhibit failures for similar ions as 'mock' effluent. The AECOM report was also attached as Appendix A to the WET permit modification request for revision of the chronic WET effluent limit for *C. dubia*.

The AECOM report also concludes that $NaHCO_3$ is the dominant TDS ion present in the CBM effluent, and concludes that $NaHCO_3$ is also the primary toxicant instream, downstream of the CBM influence. The AECOM report does not present study results in terms of $NaHCO_3$ and instead presents results of the study in terms of alkalinity, mg/L as $CaCO_3$ and bicarbonate, $HCO3^-$.

Based on the aquatic toxicity/PTI/TIE studies submitted in response to WET failures, the Division concurs that TDS ions, specifically sodium bicarbonate, $NaHCO_3$, and bicarbonate, $HCO3^-$, are pollutants causing chronic toxicity for *C. dubia*. The conclusion is well substantiated through the cation/anion ion exchange tests conducted. However, the Division maintains that limitations at the outfalls to implement the narrative standard for chronic toxicity remain applicable.

The USGS also concluded that $NaHCO_3$ is a primary toxicant in CBM produced waters (*The Potential Effects of Sodium Bicarbonate, a Major Constituent of Produced Waters from Coalbed Natural Gas Production, on Aquatic Life*, USGS, 2012). The USGS studied the potential effects of the levels of $NaHCO_3$ present in CBM produced waters, on aquatic life, and this report was also referenced in the AECOM report. The USGS study was conducted to expand the limited knowledge base related to the potential effects of $NaHCO_3$, and focused on $NaHCO_3$ because it is a major constituent of CBM waters in the Tongue and Powder River Basins, which was the study area.

While USGS focused on formulating sample water quality criteria in terms of $NaHCO_3$, they noted the following in regard to the use of $HCO3^-$, as an indicator of toxic effects:

> Criteria often are established for single elements or ions, in this case most likely $HCO3^-$ as the toxic fraction of the compound $NaHCO_3$ (Mount and others, 1997). Therefore, $HCO3^-$ information has been provided for use if derivations with this single element are preferred. The sample criteria could also be calculated as alkalinity because it is an easily measured water chemistry property that is expressed as mg CaCO3/L, but defines the amount of $HCO3^-$ in a sample with a pH less than 8.3 (American Public Health Association, 1975).
>
> Mount and others (1997) demonstrated that the toxicity of sodium and calcium salts was caused by the co-occurring anions (specifically Cl-, sulfate, and $HCO3^-$). In the Tongue and Powder River waters that were simulated in the present experiments, $HCO3^-$ was the predominant co-occurring anion. Therefore, it is likely that the primary source of toxicity of $NaHCO_3$ can be attributed to $HCO3^-$.

The Division agrees with the conclusion that TDS ions are causing toxicity in this case, and that effluent limits for sodium bicarbonate, $NaHCO_3$ and/or or bicarbonate, $HCO3^-$, and potentially other ions could be established to control the level of toxicity. The form of the expression of the effluent limit could be based on available information on the toxicity of that parameter to aquatic life. Further, chloride may also be considered due to its prevalence in CBM waters, and its potential implications in aquatic toxicity.

<u>Effluent Limits for the Pollutant(s) Causing the Toxicity.</u>

An alternative to the establishment of a chronic effluent limit for WET would be to establish chemical specific effluent limits for the pollutants causing the toxicity. This is discussed in the WET policy as follows:

> If the pollutant(s) causing toxicity is/are identified, and is/are not controlled by a permit effluent limitation(s), the Division may develop and add limitations to the permit for these parameters. If there is not a water quality standard for a parameter, the Division will develop a limitation based on available information on the toxicity of that parameter to aquatic life, particularly that present in the receiving stream. The permit may be modified as noted in the above paragraph.

Water quality standards have not been developed for sodium bicarbonate, $NaHCO_3$ and/or or bicarbonate, $HCO3^-$. If the Division developed limits for these parameters, the limits would need to be consistent with the following regulatory provisions.

Regulation 61.8(2)(b)(i)(G)

Where a water quality standard has not been established for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or measurably contributes to an excursion above a narrative water quality standard, the Division must establish effluent limits using one or more of the following options:

(I) Establish effluent limits consistent with the requirements set forth in section 14(4) of the Basic Standards, Regulation No. 31;

Regulation 31.14(4)

Where no statewide or site-specific numeric standard exists for a constituent of concern, the Division may establish effluent limitations or other permit conditions for such constituent if necessary to comply with the narrative standards in section 31.11(1). Such effluent limitations shall be developed in a manner consistent with the Commission's methodology for establishing numeric water quality standards and, if applicable, shall be consistent with the criteria contained in table I, II and III of this regulation. In such circumstances, upon the request of any interested person, the Commission may hold a rulemaking hearing to consider the adoption of a numerical standard, which would then be binding.

Establishing the Appropriate Level of Aquatic Life Protection.

Laboratory WET tests use aquatic species as detectors of toxicity. Consequently, it is critical for a sensitive species to be used as a detector and for that species to be widely available so that WET tests can be successfully conducted. The appropriate selection is based on the species best used as a surrogate for the range of biological community expected to be present at the site. The Division determines the appropriate species to be used based on the aquatic life expectation for the segment that is established by the WQCC through the process of classifying the receiving water and assigning water quality standards to the waterbody.

WET testing is not required where there is not an aquatic life designated use on the stream segment, unless such testing is determined to be necessary to protect downstream aquatic life designated uses. Normally the Division protects for both acute effects (usually death) on group of test organisms during a short-term exposure (e.g., 24, 48 or 96 hours) and chronic effects (growth and reproduction) during a longer-term exposure (96 hours or longer).

For acute testing, the Division may allow use of the 6 organisms identified in the 40 CFR 136 approved method: Invertebrates: *Ceriodaphnia dubia (C. dubia), Daphnia pulex, Daphnia magna (D. magna)*; Vertebrates: *Pimephales promelas* (fathead minnow), rainbow trout, brook trout. Consistent with the WET policy, the Division normally specifies *C. dubia* and fathead minnow. The Division does approve requests for a change in species for acute testing, such as when a less sensitive species is demonstrated to be an appropriate surrogate for the range of biological community expected to be present at the site.

For chronic testing, normally chronic effluent limits apply and the effluent limits specify use of *C. dubia* and fathead minnow. Exceptions are made in the following circumstances:

- where discharges are intermittent, on the basis that there would not be chronic exposure of aquatic life to the effluent,
- where the dilution effect in the receiving water is significant, as such the most significant chronic effect is expected to be within the mixing zone, or

- the Commission has applied an aquatic life use the use classification, but most of the aquatic life standards (e.g. chlorine, and the TVS equations such as ammonia and metals standards) are not in the site-specific segment standards, (unless it is determined that chronic WET testing is necessary to protect downstream aquatic life designated uses, or other evidence exists that would make chronic WET requirements appropriate.)

In this case the discharge is continuous, there is no significant dilution effect, and the level of aquatic life protection assigned by the WQCC is not limited.

However the permittee argues that the use of *C. dubia* is overly protective, and that *D. magna* would be a more appropriate surrogate for the range of biological community expected to be present at the site. The permittee phrases the question in the AECOM report as follows:

> But the question becomes what WET species would be appropriately protective of the indigenous aquatic biotic community without being overly protective?

EPA has not approved the use of *D. magna* for chronic WET testing in 40 CFR 136. If its use were to be an appropriate surrogate for the range of biological community expected to be present at the site, the permittee would need to submit, and EPA would need to approve, the limited use of this method for these permits under the ATP process specified in 40 CFR 136. As the permittee states, this path has been considered, but to date no such ATP request has been developed and submitted to the Division and EPA.

Even if an ATP request is approved by EPA, the permitting authority must still determine whether the ATP is appropriate for use in the permitting action. In other words, the permitting authority must still determine if an alternate species such as *D. magna* in this case, would be an appropriate surrogate for chronic toxic effects to aquatic life in lieu of *C. dubia.*

The same question applies in consideration of the establishment of effluent limits for other parameters including sodium bicarbonate, $NaHCO_3$, bicarbonate, $HCO3^-$, and chloride. Consistent with the Commission's methodology for establishing numeric water quality standards the Division defines species that are "expected to be present" at the site. In 2006, the phrase was included in Policy 06-1 (the Temperature Criteria Policy) at Section XII. The discussion of the phrase is essentially the same as in the EPA's 1994 guidance which is included in the "Recalculation Procedures", which is an Appendix to EPA's Water Quality Standards Handbook chapter on Water Effects Ratio, and re-confirmed in its 2013 "Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria". The description from Policy 06-1 states:

The phrase "expected to be present" includes the species, genera, families, orders, classes, and phyla that:

1) are usually present at the site.
2) are present at the site only seasonally due to migration.
3) are present intermittently because they periodically return to or extend their ranges into the site.
4) were present at the site in the past, are not currently present at the site due to degraded conditions, and are expected to return to the site when conditions improve.
5) are present in nearby bodies of water, are not currently present at the site due to degraded conditions, and are expected to be present at the site when conditions improve.

The study area included in the AECOM report includes the South Fork of the Purgatoire River and the Lorencito. Both of these waterbodies have had the documented occurrence of white sucker (fish taxa). While other taxa were mentioned, including Mayflies, the full taxa results were not included in the report. As such, the Division reviewed the information regarding the toxic effects on white sucker, but notes that prior to assigning

or determining effluent limits, a review of other taxonomic data, or additional studies may be required to verify, present and past species. Thus, it is likely that effluent limitations would need to be based on other, more sensitive species.

Chronic Toxicity of Sodium Bicarbonate, $NaHCO_3$, and Bicarbonate, $HCO3^-$ to Aquatic Life

The Division reviewed the information provided in the ACEOM report, and that provided in the USGS report to determine if adequate chronic toxicity information exists to establish effluent limitations for sodium bicarbonate, $NaHCO_3$, and bicarbonate, $HCO3^-$. The Division concluded that the establishment of effluent limits for these pollutants for control of the toxicity, in lieu of an effluent limit for WET, is not appropriate at this time as discussed below.

The Division found that continued use of a chronic WET limit using *C. dubia* as a surrogate species for the range of biological community expected to be present at the site remains appropriate. The information presented by the permittee to support its argument that the Division should not use the *C. dubia* as a surrogate species for the range of biological community expected to be present at the site was not compelling. The AECOM report did not include a reference site and the observed toxicity to *C. dubia* is likely attributable to the CBM influence. A reduction in the level of aquatic life protection would be inconsistent with the level of protection applied by the Commission through the adoption of the aquatic life classification and standards. As documented in the AECOM report and rulemaking hearings for the adoption of water quality classifications and standards for these segments,

- The South Fork Purgatoire River has supported multiple fish species, including white sucker with a demonstrated sensitivity to sodium bicarbonate, $NaHCO_3$, based on the USGS study. The South Fork Purgatoire River supports a healthy and diverse macro invertebrate assemblage, including more sensitive macro invertebrate species.
- The Lorencito Canyon is capable of supporting a wide variety of biota, including sensitive fish and sensitive macroinvertebrate species. Colorado Parks and Wildlife records indicate multiple fish and macroinvertebrate species present in Lorencito Canyon including white sucker with a demonstrated sensitivity to sodium bicarbonate, $NaHCO_3$, based on the USGS study. Some macroinvertebrate samples collected by GEI in the Lorencito Canyon downstream of CBM influence have indicated impairment based on the MMI score, for which the influence of the CBM discharges is possible cause. The AECOM report documents chronic effects instream to *C. dubia*, for which the influence of the CBM discharges is possible cause.

The most appropriate value to use as an effluent limit would be the USGS calculated chronic criteria of 381 mg $NaHCO_3$/L for protection of aquatic life. This is a published value derived using methodology consistent with how water quality criteria are established by EPA and the Commission for protection of aquatic life. The value is supported by a series of scientific investigations conducted on the same toxicant, sodium bicarbonate, $NaHCO_3$, present in produced waters from similar CBM operations. If applied as an effluent limit, the level of toxicity that would need to be reduced in the discharge would be in a similar range to the level of toxicity that would need to be reduced in the discharge to comply with the chronic WET limits currently in place. The permittee currently reports values for bicarbonate, $HCO3^-$. The values reported from March 2010 through March 2015 for all 5 CBM are summarized below:

Permit No and Name	Range Reported of $HCO3^-$ Values (mg/L)	Average Reported $HCO3^-$ Value (mg/L)
CO0047767 Pioneer East Spanish Peaks	883 - 1290	1284

CO0047776 Pioneer Lorencito	873 - 1464	1189
CO0048054 XTO Lorencito	600 - 2782	1034
CO0048062 XTO Alamocito	332 - 2020	901
CO0048003 Pioneer West Spanish Peaks	597 - 930	755

Discharge data are not available for sodium bicarbonate, $NaHCO_3$. However, sodium bicarbonate, $NaHCO_3$, values would be higher than bicarbonate, $HCO3^-$. The in depth analysis of the toxicity of sodium bicarbonate, $NaHCO_3$, and bicarbonate, $HCO3^-$, conducted for this permit was in response to the permittees request for relief from control of whole effluent toxicity in the discharge. However, a site-specific effluent limit for sodium bicarbonate, $NaHCO_3$, and bicarbonate, $HCO3^-$, to address toxicity would not result in relief.

The Division did not have adequate information in the AECOM report to derive effluent limitations using similar methodology used by USGS to calculate the overall value for protection of aquatic life. The permittees conducted the study for the purpose of suggesting that the chronic level of toxicity observed in stream is acceptable, and that to argue that no level of control in the permit should be included for chronic toxicity (i.e., no effluent limits). Therefore the study design was not intended to provide the level of information needed to derive chronic criteria, which could be used to establish effluent limits in the permit. However, the study results were reviewed to evaluate the relative magnitude of toxicity observed for the species for which the study was conducted. In general, the chronic toxicity values were higher in the AECOM study than in USGS study, and the number of organisms studied was more significantly more limited in the AECOM study.

WET Effluent Limitations Established in This Permit.

After reviewing the information provided by the permittee, and additional information provided in the USGS report, the Division concluded that it remains appropriate to apply chronic WET effluent limits in this permit in accordance with the WET policy. The Division found that continued use of a chronic WET limit using *C. dubia* as a surrogate species for the range of biological community expected to be present at the site remains appropriate. The Division has concluded that the discharge causes, has the reasonable potential to cause, or measurably contributes to an in-stream chronic toxic aquatic life effect and as such effluent limits must be established to control the toxicity. The Division considered the establishment of effluent limits for sodium bicarbonate, $NaHCO_3$, and bicarbonate, $HCO3^-$, and concluded that the establishment of effluent limits for these pollutants for control of the toxicity, in lieu of an effluent limit for WET, is not appropriate at this time.

The permittee may request the Commission hold a rulemaking hearing to consider the adoption of a numerical standard for sodium bicarbonate, $NaHCO_3$, bicarbonate, $HCO3^-$, and potentially other ions (e.g. chloride) which would then be binding in the permitting process for the appropriate level of control of the pollutants causing toxicity. This would be analogous to the London Mine permit example. In that case the Commission had adopted a site specific numeric quality standard for the pollutant causing toxicity, zinc. In doing so the Commission understood that the magnitude of the pollutant concentration established as a site-specific numeric standard would cause toxicity to some aquatic life, for example more sensitive species of trout, and that the lesser level of aquatic life protection embedded into the site specific standards decision reflected the biological community expected to be present at the site.

However, given that the Division has determined that there is reasonable potential, and has derived effluent limits based on the best information available at the time of permit development, the Division must require compliance with those effluent limits “as soon as possible”. Any further work to inform appropriate levels of control of toxicity related to the ions in the effluent, would be a possible cause for a permit modification, but are

not cause for delay in the reduction of toxicity based on the establishment of a chronic WET limit in this permit renewal.

IV. RECEIVING STREAM

A. Waterbody Identification: COARLA04b, Lorencito Canyon and COARLA05b, the Purgatoire River (downstream segment) COARLA06a, various canyons within the Lorencito Canyon watershed

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 receiving waters** 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 Features listed in Table I-1will be the authorized discharge points to the receiving streams as they are prior to discharge into state waters.

V. FACILITY DESCRIPTION

A. Industry Description

This is a coalbed methane (CBM) operation south of the Purgatoire River. The discharges covered under this permit are to various canyons, which all drain to Lorencito Canyon, tributary to the Purgatoire River. The CBM operation involves the drilling of numerous wells, permitted by the Colorado Oil and Gas Conservation Commission (for methane gas production) and State Engineer's Office (for by-product water production). Groundwater is pumped out of deep coal seams in order to depressurize the system and allow the description of methane gas from the coal. This is a 24/7 operation, with several wells typically brought together via pipeline, and tied together into one discharge outfall point. A CBM operation involves the drilling of numerous wells and periodic fracing to pump groundwater out of coal seams in order to depressurize the system and allow the desorption of methane gas from the coal.

B. Sources to the Treatment Plant

The sources to the treatment include produced water from the CBM operations, and does not include frac flowback. The water does not come into contact with any of the drilling fluids and is exclusively ground water from dewatering the wells. The seams from which the ground water originates is from the Raton and the Vermejo seams.

C. Chemical Usage

The permittee did not specify any chemicals for use in waters that may be discharged. On this basis, no chemicals are approved under this permit. Prior to use of any applicable chemical, the permittee must submit a request for approval that includes the most current Material Safety Data Sheet (MSDS) for that chemical. Until approved, use of any chemical in waters that may be discharged could result in a discharge of pollutants not authorized under the permit. Also see Part II.A.1. of the permit.

D. Wastewater Treatment Description

No treatment is provided of this discharge.

VI. PERFORMANCE HISTORY

A. Monitoring Data

1. Discharge Monitoring Reports – The following tables summarizes the majority of effluent data reported on the Discharge Monitoring Reports (DMRs) for the previous permit term, from March 2010 through September 2014. Note that due to the volume of effluent data available, the data included in this summary is limited to specific parameters of relevance. For a download of DMR data in its entirety, see the EPA's Enforcement and Compliance History Online (ECHO) website (http://echo.epa.gov/). Note that effluent data, including parameters not summarized below, is discussed further in the reasonable potential analysis, Section VI.4.

In Table VI-1 below, the "excursions" for EC and SAR in the far right column are from after April 1, 2014, when permit limitations were effective

Table VI-1

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*
Outfall 010-A						
Effluent Flow (MGD)	*22*	*0.016/0.008/0.029*	*0.016/0.008/0.029*		*0.029/Report*	
Fe, TR (µg/l)	*18*	*570/<500/1350*	*570/<500/1350*	*NA/NA/NA*	*Report/5000*	
Pb, Dis (µg/l)	*18*	*0/<12.2/0*	*0/<12.2/0*	*NA/NA/NA*	*Report/Report/Report*	
Se, Dis (µg/l)	*18*	*0.22/<4/4*	*0.22/<4/4*	*0.5/0.5/0.5*	*Report/Report/Report*	
B, Tot (mg/l)	*16*	*0.85/0.28/1.3*	*NA/NA/NA*	*0.82/0.73/0.92*	*Report/Report*	
Chloride (mg/l)	*16*	*250/<10/394*	*NA/NA/NA*	*251/<10/279*	*373/366*	
SAR	*22*	*77/67/108*	*72/69/76*		*79.1/Report*	*2*
EC (dS/m)	*22*	*2.8/2.3/3.3*	*2.8/2.3/3.3*		*3.29/Report*	
pimephales lethality, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales lethality, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
ceriodaphnia lethality, Stat Diff	*25*	*//*	*15/0/100*	*//*	*Report Stat*	
ceriodaphnia lethality, IC25	*25*	*//*	*11/0/81*	*//*	*Diff & IC25*	
pimephales toxicity, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales toxicity, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
ceriodaphnia toxicity, Stat Diff	*25*	*//*	*9/0/75*	*//*	*Report Stat*	
ceriodaphnia toxicity, IC25	*25*	*//*	*7.4/0/58*	*//*	*Diff & IC25*	
Outfall 012-A						
Effluent Flow (MGD)	*22*	*0.023/0.008/0.046*	*0.023/0.008/0.046*		*0.046/Report*	
Fe, TR (µg/l)	*18*	*921/334/1490*	*956/334/2080*	*NA/NA/NA*	*Report/5000*	
Pb, Dis (µg/l)	*18*	*0.13/0/2.3*	*0.13/<12.2/2.3*	*0.3/0.3/0.3*	*Report/Report/Report*	
Se, Dis (µg/l)	*18*	*0.05/<4/0.9*	*0.05/<4/0.9*	*0.13/0.11/0.2*	*Report/Report/Report*	

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
B, Tot (mg/l)	17	0.37/<0.75/0.96	NA/NA/NA	0.38/0.32/0.45	Report/Report	
Chloride (mg/l)	17	105/<10/272	NA/NA/NA	107/92/114	373/366	
SAR	22	86/55/410	68/64/71		77.1/Report	1
EC (dS/m)	22	2.3/2/2.5	2.3/2/2.5		2.53/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	10/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7/0/57	//	Diff & IC25	
Outfall 016-A						
Effluent Flow (MGD)	22	0.01/0.002/0.024	0.01/0.002/0.024		0.024/Report	
Fe, TR (µg/l)	18	700/<500/1770	700/<500/1770	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.05/<4/0.9	0.05/<4/0.9	0.12/0.049/0.2	Report/Report/Report	
B, Tot (mg/l)	17	0.67/<0.15/1.2	NA/NA/NA	0.64/0.56/0.8	Report/Report	
Chloride (mg/l)	17	100/<10/280	NA/NA/NA	102/92/117	373/366	
SAR	22	87/65/367	74/66/83		80.3/Report	2
EC (dS/m)	22	2.5/2.1/3.6	2.5/2.1/3.6		Report Stat	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Diff & IC25	
pimephales lethality, IC25	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia lethality, IC25	25	//	11/0/81	//	Report Stat	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Diff & IC25	
pimephales toxicity, IC25	25	//	15/0/100	//	Report Stat	
ceriodaphnia toxicity, Stat Diff	25	//	9/0/75	//	Diff & IC25	
ceriodaphnia toxicity, IC25	25	//	6.5/0/53	//	Report Stat	
Outfall 018-A						
Effluent Flow (MGD)	22	0.0047/0.002/0.01	0.0047/0.002/0.01		0.010/Report	
Fe, TR (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<4/0	0/<4/0	0.075/0.075/0.075	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	0.075/0.075/0.075	Report/Report/Report	
B, Tot (mg/l)	17	0.59/0/1	NA/NA/NA	0.6/0.48/0.7	Report/Report	
Chloride (mg/l)	17	132/0/446	NA/NA/NA	152/98/182	373/366	
SAR	22	71/58/138	66/65/66		81.3/Report	
EC (dS/m)	22	2.3/1.9/2.7	2.3/1.9/2.7		2.66/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	9.3/0/82	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	2.7/0/32	//	Diff & IC25	
Outfall 019-A						
Effluent Flow (MGD)	22	0.024/0.012/0.054	0.024/0.012/0.054		0.054/Report	

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
Fe, TR (µg/l)	18	593/<50/871	593/<50/871	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.44/<4/8	0.44/<4/8	1/1/1	Report/Report/Report	
B, Tot (mg/l)	17	0.3/<0.75/0.6	NA/NA/NA	0.35/0.28/0.44	Report/Report	
Chloride (mg/l)	17	52/34/169	NA/NA/NA	46/38/63	373/366	
SAR	22	64/56/86	61/56/65		69.2/Report	
EC (dS/m)	22	2.1/1.8/2.4	2.1/1.8/2.4		2.42/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	7/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5/0/56	//	Diff & IC25	
021-A						
Effluent Flow (MGD)	22	0.011/0.005/0.015	0.011/0.005/0.015		0.015/Report	
Fe, TR (µg/l)	18	449/163/704	449/163/704	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.36/<0.75/0.68	NA/NA/NA	0.34/0.18/0.51	Report/Report	
Chloride (mg/l)	17	80/<10/204	NA/NA/NA	77/65/103	373/366	
SAR	22	73/45/112	66/62/71		79.6/Report	2
EC (dS/m)	22	2.3/1/2.6	2.3/1/3.2		2.62/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/79	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.4/0/54	//	Diff & IC25	
025-A						
Effluent Flow (MGD)	21	0.038/0.007/0.11	0.038/0.007/0.11		0.106/Report	
Fe, TR (µg/l)	17	405/<500/779	405/<500/779	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	16	0.32/<0.75/0.59	NA/NA/NA	0.33/0.24/0.41	Report/Report	
Chloride (mg/l)	16	145/79/736	NA/NA/NA	127/85/184	373/366	
SAR	21	69/62/74	66/63/70		73.4/Report	1
EC (dS/m)	21	2.4/2/3	2.4/2/3		2.96/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/77	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5/0/56	//	Diff & IC25	

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
027-A						
Effluent Flow (MGD)	21	0.036/0.005/0.055	0.037/0.005/0.055		0.055/Report	
Fe, TR (µg/l)	17	804/261/2120	804/261/2120	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	16	0.38/<0.75/0.71	NA/NA/NA	0.38/0.25/0.49	Report/Report	
Chloride (mg/l)	16	132/74/350	NA/NA/NA	106/15/142	373/366	
SAR	21	72/16/88	76/73/77		78.5/Report	2
EC (dS/m)	21	2.4/2.1/2.7	2.5/2.2/2.7		2.67/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	7/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.1/0/56	//	Diff & IC25	
028-A						
Effluent Flow (MGD)	22	0.013/0.005/0.026	0.014/0.005/0.026		0.026/Report	
Fe, TR (µg/l)	18	421/<500/928	421/<500/928	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0.67/<12.2/12	0.67/<12.2/12	1.5/1.5/1.5	Report/Report/Report	
Se, Dis (µg/l)	18	1/<4/6	1/<4/6	1.3/0.34/2.4	Report/Report/Report	
B, Tot (mg/l)	17	1.1/<0.75/1.6	NA/NA/NA	1.1/0.92/1.2	Report/Report	
Chloride (mg/l)	17	325/<10/855	NA/NA/NA	326/273/365	373/366	
SAR	22	84/57/156	81/78/83		86.6/Report	2
EC (dS/m)	22	3/1.9/3.3	3/1.9/3.4		3.34/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	10/0/79	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	4.7/0/52	//	Diff & IC25	
031-A						
Effluent Flow (MGD)	22	0.0022/0.001/0.003	0.0022/0.001/0.003		0.012/Report	
Fe, TR (µg/l)	18	866/<500/1370	866/<500/1370	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.05/<4/0.9	0.05/<4/0.9	0.13/0.11/0.2	Report/Report/Report	
B, Tot (mg/l)	17	0.2/<0.75/0.46	NA/NA/NA	0.2/0.079/0.3	Report/Report	
Chloride (mg/l)	17	43/<10/72	NA/NA/NA	45/40/49	373/366	
SAR	22	72/61/114	68/64/73		99.2/Report	
EC (dS/m)	22	2.3/2/2.5	2.3/2/2.5		2.45/Report	
pimephales lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	10/0/79	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	

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
ceriodaphnia toxicity, Stat Diff	25	//	7.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.9/0/56	//	Diff & IC25	
032-A						
Effluent Flow (MGD)	22	0.013/0.01/0.016	0.013/0.01/0.016		0.040/Report	
Fe, TR (µg/l)	18	747/<500/2770	747/<500/2770	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.33/<4/6	0.33/<4/6	0.77/0.75/0.8	Report/Report/Report	
B, Tot (mg/l)	17	0.26/<0.75/0.6	NA/NA/NA	0.29/0.1/0.46	Report/Report	
Chloride (mg/l)	17	55/<10/70	NA/NA/NA	59/53/63	373/366	
SAR	22	69/51/88	64/63/67		88.4/Report	
EC (dS/m)	22	2.3/1.8/2.5	2.3/1.8/2.5		2.54/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/81	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	6.3/0/58	//	Diff & IC25	
034-A						
Effluent Flow (MGD)	21	0.0032/0.001/0.005	0.0032/0.001/0.005		0.004/Report	
Fe, TR (µg/l)	17	958/550/1660	991/550/1890	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0.11/<4/1.1	0.11/<4/1.1	0.22/0.1/0.3	Report/Report/Report	
B, Tot (mg/l)	16	0.42/<0.75/1.1	NA/NA/NA	0.38/0.29/0.45	Report/Report	
Chloride (mg/l)	16	166/<10/402	NA/NA/NA	161/130/204	373/366	
SAR	21	71/63/80	67/63/71		75.9/Report	
EC (dS/m)	21	2.5/2.1/3.4	2.5/2.1/3.4		3.35/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/81	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	7/0/50	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	6.2/0/54	//	Diff & IC25	
035-A						
Effluent Flow (MGD)	22	0.0063/0.001/0.026	0.0063/0.001/0.026		0.026/Report	
Fe, TR (µg/l)	18	1170/542/1850	1170/542/1850	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.57/<4/9	0.57/<4/9	0.88/0.16/1.3	Report/Report/Report	
B, Tot (mg/l)	17	0.36/<0.75/0.81	NA/NA/NA	0.39/0.23/0.55	Report/Report	
Chloride (mg/l)	17	124/<10/208	NA/NA/NA	133/107/168	373/366	
SAR	22	62/49/104	60/55/67		69.2/Report	
EC (dS/m)	22	2/1.6/2.5	2/1.6/2.5		2.45/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/86	//	Diff & IC25	

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*
pimephales toxicity, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales toxicity, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
ceriodaphnia toxicity, Stat Diff	*25*	*//*	*9.5/0/75*	*//*	*Report Stat*	
ceriodaphnia toxicity, IC25	*25*	*//*	*7.1/0/61*	*//*	*Diff & IC25*	
036-A *Additional exceedence of TSS limitation (45 mg/L) September 2010 for 7 day max (96.1 mg/)*						
Effluent Flow (MGD)	*20*	*0.024/0.008/0.043*	*0.024/0.008/0.043*		*0.043/Report*	
Fe, TR (µg/l)	*16*	*363/<500/1563*	*489/<500/3580*	*NA/NA/NA*	*Report/5000*	
Pb, Dis (µg/l)	*16*	*0/<12.2/0*	*0/<12.2/0*	*NA/NA/NA*	*Report/Report/Report*	
Se, Dis (µg/l)	*16*	*0.69/<4/4*	*0.69/<4/4*	*0.98/0.38/1.4*	*Report/Report/Report*	
B, Tot (mg/l)	*15*	*1.6/0.43/2*	*NA/NA/NA*	*1.4/1.1/1.7*	*Report/Report*	
Chloride (mg/l)	*15*	*673/494/1290*	*NA/NA/NA*	*614/475/692*	*373*	
SAR	*20*	*96/22/205*	*96/93/103*		*96.9/Report*	*3*
EC (dS/m)	*20*	*3.9/3.4/4.3*	*3.9/3.4/4.3*		*4.30/Report*	
pimephales lethality, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales lethality, IC25	*25*	*//*	*15/0/100*	*//*	*Diff & IC25*	
ceriodaphnia lethality, Stat Diff	*25*	*//*	*12/0/75*	*//*	*Report Stat*	
ceriodaphnia lethality, IC25	*25*	*//*	*9.4/0/66*	*//*	*Diff & IC25*	
pimephales toxicity, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales toxicity, IC25	*25*	*//*	*15/0/100*	*//*	*Diff & IC25*	
ceriodaphnia toxicity, Stat Diff	*25*	*//*	*5/0/50*	*//*	*Report Stat*	
ceriodaphnia toxicity, IC25	*25*	*//*	*3.4/0/35*	*//*	*Diff & IC25*	
037-A						
Effluent Flow (MGD)	*22*	*0.012/0.009/0.033*	*0.012/0.009/0.033*		*0.015/Report*	*1*
Fe, TR (µg/l)	*18*	*532/<500/1476*	*532/<500/1476*	*NA/NA/NA*	*Report/5000*	
Pb, Dis (µg/l)	*18*	*0/<12.2/0*	*0/<12.2/0*	*NA/NA/NA*	*Report/Report/Report*	
Se, Dis (µg/l)	*18*	*0/<4/0*	*0/<4/0*	*NA/NA/NA*	*Report/Report/Report*	
B, Tot (mg/l)	*17*	*0.22/<0.75/0.42*	*NA/NA/NA*	*0.24/0.13/0.32*	*Report/Report*	
Chloride (mg/l)	*17*	*39/29/109*	*NA/NA/NA*	*38/33/46*	*373/366*	
SAR	*22*	*57/42/77*	*56/53/60*		*60.2/Report*	
EC (dS/m)	*22*	*1.9/1.5/2.5*	*1.9/1.5/2.5*		*2.31/Report*	
pimephales lethality, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales lethality, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
ceriodaphnia lethality, Stat Diff	*25*	*//*	*15/0/100*	*//*	*Report Stat*	
ceriodaphnia lethality, IC25	*25*	*//*	*12/0/84*	*//*	*Diff & IC25*	
pimephales toxicity, Stat Diff	*25*	*//*	*15/0/100*	*//*	*Report Stat*	
pimephales toxicity, IC25	*25*	*//*	*15/0/100*	*//*	*Diff & IC25*	
ceriodaphnia toxicity, Stat Diff	*25*	*//*	*7/0/75*	*//*	*Report Stat*	
ceriodaphnia toxicity, IC25	*25*	*//*	*5/0/58*	*//*	*Diff & IC25*	
039-A						
Effluent Flow (MGD)	*22*	*0.011/0.003/0.015*	*0.011/0.003/0.015*		*0.015/Report*	
Fe, TR (µg/l)	*18*	*279/<500/699*	*279/<500/699*	*NA/NA/NA*	*Report/5000*	
Pb, Dis (µg/l)	*18*	*0/<12.2/0*	*0/<12.2/0*	*NA/NA/NA*	*Report/Report/Report*	
Se, Dis (µg/l)	*18*	*0.28/<4/5*	*0.28/<4/5*	*0.66/0.63/0.7*	*Report/Report/Report*	
B, Tot (mg/l)	*17*	*0.3/<0.75/1.1*	*NA/NA/NA*	*0.31/0.23/0.4*	*Report/Report*	
Chloride (mg/l)	*17*	*60/<10/169*	*NA/NA/NA*	*59/53/76*	*373/366*	
SAR	*22*	*65/52/118*	*63/60/66*		*66.3/Report*	*2*
EC (dS/m)	*22*	*2.1/1.8/2.5*	*2.1/1.8/2.5*		*2.53/Report*	
pimephales lethality, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales lethality, IC25	*25*	*//*	*14/0/100*	*//*	*Diff & IC25*	

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
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/96	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	9.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7.1/0/58	//	Diff & IC25	
040-A						
Effluent Flow (MGD)	22	0.002/0.0004/0.013	0.0019/0.0004/0.013		0.013/Report	
Fe, TR (µg/l)	18	721/152/1573	802/152/3030	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.089/<4/1.6	0.089/<4/1.6	0.24/0.068/0.31	Report/Report/Report	
B, Tot (mg/l)	17	0.73/<0.75/2	NA/NA/NA	0.81/0.66/0.93	Report/Report	
Chloride (mg/l)	17	237/<10/536	NA/NA/NA	252/235/267	373/366	
SAR	22	78/55/150	75/69/79		97.1/Report	
EC (dS/m)	22	2.6/1.7/3.4	2.6/1.7/3.4		3.44/Report	
pimephales lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	13/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/81	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	8.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.9/0/56	//	Diff & IC25	
042-A Additional exceedence of minimum pH (6.5) December 2012 at 5.7						
Effluent Flow (MGD)	18	0.017/0.002/0.027	0.017/0.002/0.027		0.024/Report	
Fe, TR (µg/l)	14	869/<500/2390	947/<500/2860	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	14	0/<6/0	0/<6/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	14	0.064/<4/0.9	0.064/<4/0.9	0.14/0.11/0.2	Report/Report/Report	
B, Tot (mg/l)	14	0.31/<0.75/0.59	NA/NA/NA	0.32/0.062/0.51	Report/Report	
Chloride (mg/l)	14	89/46/178	NA/NA/NA	89/56/109	373/366	
SAR	18	73/62/114	66/62/69		75.4/Report	
EC (dS/m)	18	2.4/2/2.7	2.4/2/2.7		2.73/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/79	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	15/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	8.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7.3/0/57	//	Diff & IC25	
045-A						
Effluent Flow (MGD)	13	0.0068/0.004/0.013	0.0068/0.004/0.013		0.013/Report	
Fe, TR (µg/l)	9	549/186/767	549/186/767	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	9	0/<1/0	0/<1/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	9	0/<0.8/0	0/<0.8/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	9	0.4/0.28/0.52	NA/NA/NA	0.34/0.13/0.46	Report/Report	
Chloride (mg/l)	9	42/36/57	NA/NA/NA	33/12/45	373/366	
SAR	13	52/46/62	48/46/52		53.8/Report	1
EC (dS/m)	13	1.6/1.2/1.9	1.6/1.2/1.9		1.85/Report	

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
pimephales lethality, Stat Diff	25	//	8/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	8/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	8/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	7.7/0/96	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	8/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	8/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	7/0/100	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.4/0/78	//	Diff & IC25	
047-A						
Effluent Flow (MGD)	19	0.001/0.0003/0.002	0.001/0.0003/0.002		0.002/Report	
Fe, TR (µg/l)	15	1326/442/3370	1421/442/3370	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	15	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	15	0.6/<4/9	0.6/<4/9	1.3/1.1/1.6	Report/Report/Report	
B, Tot (mg/l)	14	0.72/0.28/1.1	NA/NA/NA	0.68/0.55/0.87	Report/Report	
Chloride (mg/l)	14	72/36/185	NA/NA/NA	61/44/85	373/366	
SAR	19	52/11/69	35/32/37		67.9/Report	1
EC (dS/m)	19	1.9/1.5/2.6	1.9/1.5/2.6		2.56/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	4/0/53	//	Diff & IC25	
049-A						
Effluent Flow (MGD)	22	0.015/0.009/0.026	0.015/0.009/0.026		0.026/Report	
Fe, TR (µg/l)	18	868/<500/1480	868/<500/1480	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.52/<0.75/1.1	NA/NA/NA	0.54/0.46/0.61	Report/Report	
Chloride (mg/l)	17	83/60/230	NA/NA/NA	81/70/99	373/366	
SAR	22	61/33/73	63/62/66		64.6/Report	2
EC (dS/m)	22	2/1.8/2.2	2/1.8/2.2		2.25/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	12/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	9/0/57	//	Diff & IC25	
050-A *Additional exceedence of TSS limitation (45 mg/L) March 2011 for 7 day max (51 mg/)*						
Effluent Flow (MGD)	22	0.012/0.003/0.03	0.012/0.003/0.03		0.030/Report	
Fe, TR (µg/l)	18	912/433/1580	912/433/1580	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.57/<0.75/1.6	NA/NA/NA	0.64/0.13/1	Report/Report	
Chloride (mg/l)	17	155/<10/268	NA/NA/NA	167/100/199	373/366	

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
SAR	22	69/53/98	65/53/75		76.8/Report	2
EC (dS/m)	22	2.4/1.9/2.9	2.4/1.9/2.9		2.86/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	9/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	6.7/0/57	//	Diff & IC25	
051-A						
Effluent Flow (MGD)	22	0.008/0.005/0.012	0.008/0.005/0.012		0.012/Report	
Fe, TR (µg/l)	18	522/<500/1070	522/<500/1070	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	0.054/0.054/0.054	Report/Report/Report	
B, Tot (mg/l)	17	0.22/<0.75/0.54	NA/NA/NA	0.21/0.044/0.35	Report/Report	
Chloride (mg/l)	17	83/<10/145	NA/NA/NA	81/63/99	373/366	
SAR	22	74/59/101	74/73/75		77.6/Report	1
EC (dS/m)	22	2.3/1.7/2.6	2.3/1.7/2.6		2.57/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	11/0/81	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.2/0/55	//	Diff & IC25	
057-A Additional exceedence of TSS limitation (30 mg/L) March 2010 for 30 day average (30.87 mg/)						
Effluent Flow (MGD)	22	0.0016/0.0003/0.003	0.0016/0.0003/0.003		0.003/Report	
Fe, TR (µg/l)	18	1551/453/3370	1573/453/3370	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.25/<0.75/0.48	NA/NA/NA	0.23/0.14/0.32	Report/Report	
Chloride (mg/l)	17	53/37/169	NA/NA/NA	47/39/65	373/366	
SAR	22	57/14/63	63/60/67		63.3/Report	
EC (dS/m)	22	1.9/1.6/2.1	1.9/1.6/2.1		2.08/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/94	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	9/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7.5/0/56	//	Diff & IC25	
066-A						
Effluent Flow (MGD)	22	0.0032/0.001/0.006	0.0032/0.001/0.006		0.006/Report	
Fe, TR (µg/l)	18	1297/439/4230	1357/439/4230	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	3.1/3.1/3.1	Report/Report/Report	

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
B, Tot (mg/l)	18	0.26/<0.75/0.51	NA/NA/NA	0.26/0.13/0.36	Report/Report	
Chloride (mg/l)	18	35/11/116	NA/NA/NA	31/24/47	373/366	
SAR	18	52/12/62	58/53/64		59.5/Report	1
EC (dS/m)	22	1.8/1.5/2.1	1.8/1.5/2.1		2.09/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/81	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	8/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.8/0/57	//	Diff & IC25	
067-A						
Effluent Flow (MGD)	21	0.0061/0.003/0.011	0.0061/0.003/0.011		0.011/Report	
Fe, TR (µg/l)	17	944/<500/3010	944/<500/3010	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<6/0	0/<6/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0.071/<4/1.2	0.071/<4/1.2	0.16/0.15/0.2	Report/Report/Report	
B, Tot (mg/l)	16	0.38/<0.75/0.84	NA/NA/NA	0.4/0.25/0.53	Report/Report	
Chloride (mg/l)	16	39/29/56	NA/NA/NA	39/37/41	373/366	
SAR	21	56/49/64	51/49/54		60.4/Report	1
EC (dS/m)	21	1.8/1.6/2	1.8/1.6/2		1.96/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	10/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7.5/0/57	//	Diff & IC25	
068-A						
Effluent Flow (MGD)	22	0.015/0.001/0.03	0.015/0.001/0.03		0.030/Report	
Fe, TR (µg/l)	18	1633/625/2960	1655/625/2960	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.76/<4/9	0.76/<4/9	0.62/0.5/0.73	Report/Report/Report	
B, Tot (mg/l)	17	0.49/<0.75/0.95	NA/NA/NA	0.55/0.35/0.68	Report/Report	
Chloride (mg/l)	17	207/17/398	NA/NA/NA	234/149/279	373/366	
SAR	22	60/53/72	56/53/58		69.5/Report	1
EC (dS/m)	22	2.2/1.7/2.8	2.2/1.7/2.8		2.90/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	8.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	7.3/0/59	//	Diff & IC25	
069-A						
Effluent Flow (MGD)	22	0.0033/0.001/0.009	0.0033/0.001/0.009		0.009/Report	
Fe, TR (µg/l)	17	1606/793/2860	1732/793/2860	NA/NA/NA	Report/5000	

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
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.16/<4/1.5	0.16/<4/1.5	0.31/0.16/0.4	Report/Report/Report	
B, Tot (mg/l)	17	0.41/<0.75/0.86	NA/NA/NA	0.5/0.39/0.59	Report/Report	
Chloride (mg/l)	17	115/<10/200	NA/NA/NA	120/105/135	373/366	
SAR	22	67/59/78	65/61/67		73.9/Report	2
EC (dS/m)	22	2.2/1.7/2.6	2.2/1.7/2.6		2.60/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	13/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	9/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	6.8/0/57	//	Diff & IC25	
070-A						
Effluent Flow (MGD)	22	0.0025/0.001/0.008	0.0025/0.001/0.008		0.008/Report	
Fe, TR (µg/l)	18	1703/<500/3900	1967/<500/6110	NA/NA/NA	Report/5000	1
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.48/<0.75/1.1	NA/NA/NA	0.52/0.39/0.62	Report/Report	
Chloride (mg/l)	17	100/18/268	NA/NA/NA	106/80/129	373/366	
SAR	22	58/41/68	59/57/62		64.0/Report	2
EC (dS/m)	22	1.9/1.4/2.5	1.9/1.4/2.5		2.48/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	6/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.2/0/54	//	Diff & IC25	
072-A						
Effluent Flow (MGD)	22	0.0036/0.001/0.006	0.0037/0.001/0.006		0.006/Report	
Fe, TR (µg/l)	18	1123/388/2380	1123/388/2380	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.28/<4/5	0.28/<4/5	0.66/0.63/0.7	Report/Report/Report	
B, Tot (mg/l)	17	0.25/<0.75/0.78	NA/NA/NA	0.22/0.09/0.33	Report/Report	
Chloride (mg/l)	17	80/33/280	NA/NA/NA	74/57/106	373/366	
SAR	22	54/14/66	59/53/62		60.0/Report	1
EC (dS/m)	22	1.8/1.6/2.1	1.9/1.7/2.4		2.06/Report	
pimephales lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	14/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	10/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	8.3/0/70	//	Diff & IC25	
073-A						

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
Effluent Flow (MGD)	22	0.011/0.006/0.016	0.011/0.006/0.016		0.016/Report	
Fe, TR (µg/l)	18	775/<500/2210	775/<500/2210	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	0.3/0.3/0.3	Report/Report/Report	
Se, Dis (µg/l)	18	0.44/<4/5	0.44/<4/5	0.58/0.36/1	Report/Report/Report	
B, Tot (mg/l)	17	0.92/0.18/1.6	NA/NA/NA	0.91/0.77/1	Report/Report	
Chloride (mg/l)	17	374/121/543	NA/NA/NA	351/311/397	373	
SAR	22	81/56/108	83/79/87		90.3/Report	1
EC (dS/m)	22	2.8/1.9/3.3	2.9/1.9/3.3		3.31/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/84	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	7/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.5/0/55	//	Diff & IC25	
074-A						
Effluent Flow (MGD)	22	0.0085/0.001/0.018	0.0085/0.001/0.018		0.018/Report	
Fe, TR (µg/l)	18	688/191/2075	872/191/4570	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	17	0.19/<0.75/0.4	NA/NA/NA	0.2/0.08/0.32	Report/Report	
Chloride (mg/l)	17	56/20/109	NA/NA/NA	55/42/75	373/366	
SAR	22	53/46/63	50/46/55		62.7/Report	
EC (dS/m)	22	1.6/1.3/1.9	1.6/1.3/2		1.94/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	10/0/80	//	Diff & IC25	
078-A						
Effluent Flow (MGD)	22	0.03/0.017/0.056	0.03/0.017/0.056		0.056/Report	
Fe, TR (µg/l)	18	733/<500/2640	733/<500/2640	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.083/<4/1.5	0.083/<4/1.5	0.19/0.19/0.2	Report/Report/Report	
B, Tot (mg/l)	17	0.27/<0.75/0.67	NA/NA/NA	0.32/0.18/0.42	Report/Report	
Chloride (mg/l)	17	62/<10/175	NA/NA/NA	63/56/74	373/366	
SAR	22	61/47/110	57/55/60		66.3/Report	
EC (dS/m)	22	1.9/1.6/2.2	1.9/1.6/2.2		2.16/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	15/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/83	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	15/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	9/0/75	//	Report Stat	

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
ceriodaphnia toxicity, IC25	25	//	7.5/0/62	//	Diff & IC25	
082-A						
Effluent Flow (MGD)	18	0.022/0.008/0.041	0.024/0.008/0.046		0.039/Report	
Fe, TR (µg/l)	14	955/<500/2650	955/<500/2650	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	14	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	14	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	13	0.17/<0.75/0.37	NA/NA/NA	0.14/0.08/0.21	Report/Report	
Chloride (mg/l)	13	64/13/115	NA/NA/NA	52/29/78	373/366	
SAR	18	54/41/71	53/49/56		56.1/Report	2
EC (dS/m)	18	1.7/1.5/2.2	1.8/1.5/2.2		1.95/Report	1
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	13/0/100	//	Diff & IC25	
083-A						
Effluent Flow (MGD)	20	0.019/0.003/0.056	0.019/0.003/0.056		0.056/Report	
Fe, TR (µg/l)	16	468/<500/926	468/<500/926	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	16	0.44/<12.2/7	0.44/<12.2/7	0.95/0.9/1	Report/Report/Report	
Se, Dis (µg/l)	16	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	15	0.22/<0.75/0.39	NA/NA/NA	0.26/0.1/0.54	Report/Report	
Chloride (mg/l)	15	95/71/116	NA/NA/NA	89/77/99	373/366	
SAR	20	53/48/60	53/53/54		55.5/Report	1
EC (dS/m)	20	1.7/1.4/2.3	1.7/1.4/2.3		2.27/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	16/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	12/0/100	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	9.4/0/81	//	Diff & IC25	
084-A						
Effluent Flow (MGD)	22	0.013/0.006/0.029	0.013/0.006/0.029		0.028/Report	
Fe, TR (µg/l)	18	711/<500/2260	711/<500/2260	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	18	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	18	0.16/<4/2.1	0.16/<4/2.1	0.25/0.1/0.3	Report/Report/Report	
B, Tot (mg/l)	17	0.48/<0.75/0.98	NA/NA/NA	0.46/0.21/0.67	Report/Report	
Chloride (mg/l)	17	210/<10/335	NA/NA/NA	215/136/249	373/366	
SAR	22	61/42/73	61/54/65		72.9/Report	
EC (dS/m)	22	2.2/1.4/2.7	2.2/1.4/2.7		2.73/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	13/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	

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
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	12/0/100	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	8/0/82	//	Diff & IC25	
088-A						
Effluent Flow (MGD)	15	0.0075/0.003/0.024	0.0075/0.003/0.024		0.024/Report	
Fe, TR (µg/l)	13	567/<500/1460	567/<500/1460	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	13	0/<6/0	0/<6/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	13	0/<4/0	0/<4/0	NA/NA/NA	Report/Report/Report	
B, Tot (mg/l)	12	0.23/<0.75/0.54	NA/NA/NA	0.22/0.053/0.39	Report/Report	
Chloride (mg/l)	12	76/20/137	NA/NA/NA	62/47/78	373/366	
SAR	15	52/45/63	NA/NA/NA		52.5/Report	2
EC (dS/m)	15	1.7/1.5/2.4	1.7/1.5/2.4		2.37/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	15/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	5.5/0/75	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	6.6/0/64	//	Diff & IC25	
091-A						
Effluent Flow (MGD)	21	0.006/0.004/0.011	0.006/0.004/0.011		0.011/Report	
Fe, TR (µg/l)	17	2416/<50/4850	2494/<50/4850	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0.91/<4/7	0.91/<4/7	1.4/0.79/2.2	Report/Report/Report	
B, Tot (mg/l)	16	0.38/<0.75/0.68	NA/NA/NA	0.38/0.23/0.51	Report/Report	
Chloride (mg/l)	16	480/284/885	NA/NA/NA	438/408/469	373	
SAR	21	58/50/71	55/53/59		70.7/Report	
EC (dS/m)	21	2.9/2.1/4.4	2.9/2.1/4.4		4.37/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	14/0/100	//	Report Stat	
ceriodaphnia lethality, IC25	25	//	12/0/100	//	Diff & IC25	
pimephales toxicity, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales toxicity, IC25	25	//	14/0/100	//	Diff & IC25	
ceriodaphnia toxicity, Stat Diff	25	//	5.5/0/50	//	Report Stat	
ceriodaphnia toxicity, IC25	25	//	5.4/0/54	//	Diff & IC25	
093-A						
Effluent Flow (MGD)	21	0.015/0.001/0.027	0.016/0.001/0.029		0.027/Report	
Fe, TR (µg/l)	17	547/<500/1588	702/<500/4230	NA/NA/NA	Report/5000	
Pb, Dis (µg/l)	17	0/<12.2/0	0/<12.2/0	NA/NA/NA	Report/Report/Report	
Se, Dis (µg/l)	17	0/<4/0	0/<4/0	0.21/0.21/0.21	Report/Report/Report	
B, Tot (mg/l)	16	0.17/<0.75/0.48	NA/NA/NA	0.19/0.049/0.29	Report/Report	
Chloride (mg/l)	16	66/5.5/248	NA/NA/NA	62/13/82	373/366	
SAR	21	45/39/53	41/39/43		48.7/Report	1
EC (dS/m)	21	1.6/1.3/2.3	1.6/1.3/2.3		2.25/Report	
pimephales lethality, Stat Diff	25	//	16/0/100	//	Report Stat	
pimephales lethality, IC25	25	//	16/0/100	//	Diff & IC25	
ceriodaphnia lethality, Stat Diff	25	//	16/0/100	//	Report Stat	

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***
ceriodaphnia lethality, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
pimephales toxicity, Stat Diff	*25*	*//*	*16/0/100*	*//*	*Report Stat*	
pimephales toxicity, IC25	*25*	*//*	*16/0/100*	*//*	*Diff & IC25*	
ceriodaphnia toxicity, Stat Diff	*25*	*//*	*11/0/100*	*//*	*Report Stat*	
ceriodaphnia toxicity, IC25	*25*	*//*	*9.2/0/80*	*//*	*Diff & IC25*	
FLO-W						
Effluent Flow (MGD)	*17*	*0.48/0.37/0.63*	*0.48/0.37/0.63*			

2. Additional Data –Table VI-2a summarizes data submitted by the permittee as Special Sampling during the previous permit term. Table VI-2b summarizes data, including DMR data, submitted by the permittee as a part of their permit application. These data were to be used in conducting a reasonable potential analysis. Data was collected at a variety of outfalls from January 2011 through September 2013 from 39 separate outfalls, for a total of 411 results for each parameter (including DMR data.)

Table VI-2a – Summary of Additional Data: Radionuclide Monitoring September 14-15, 2010

Discharge Points	Total Recoverable Beryllium (mg/L)**	Mercury (ng/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)	Strontium 90 Results ± 2s /TPU	Thorium 230 (pCi/L)	Thorium 232 (pCi/L)
Alamosa Canyon							
016-A	U	U	0.11	0.82	0.09±0.22	0.36	0.09
019-A	U	U	0.24	0.53	0.28±0.29	0.26	0.06
036-A	U	0.6	0.55	0.68	0.21±0.29	0.23	-0.07
049-A	U	0.5	3.1	3.1	-0.09±0.28	0.06	0.02
057-A	U	U	0.23	1.8	0.02±0.22	-0.16	0.0
083-A	U	U	0.31	1.6	0.04±0.20	0.64	0.35
084-A	U	U	0.11	1.2	0.02±0.22	0.07	0.03
Lorencito Canyon							
034-A	U	0.9*	0.21	1.1	-0.19±0.22	0.23	0.03
035-A	U	U	-0.19	0.54	0.06±0.21	0.03	0.06
Poncho Canyon							
031-A	U	U	0.4	1.1	0.12±0.21	0.39	0.05

* Mercury bottle was broken during shipping, resampled on 9/23/2010.
U – Material was analyzed for but was not detected above the level of associated value.
**PQL = 0.5 µg/l

Table VI-2b: Additional Data From Permittee (including DMR data) from January 2011 through September 2013

Parameter	*# Samples or Reporting Periods*	*Reported Average Concentrations Avg/Min/Max*
As, Dis (µg/l)	*varied*	*0.17/<10/10*
Cr+3, Dis (µg/l)	*varied*	*0/<10/0*
Cu, Dis (µg/l)	*varied*	*0.12/<5/11*
Pb, Dis (µg/l)	*varied*	*0.046/<1/12*
Mn, Dis (µg/l)	*varied*	*18/0/82*
Se, Dis (µg/l)	*varied*	*0.33/<4/9*
Ag, Dis (µg/l)	*varied*	*0/<0.4/0*

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. Table VI-3 summarizes DMR violations during the preceding permit term.

Table VI-3: Summary of DMR Violations

Outfall	DMR Date	Parameter	Units	Permit Limitation		DMR Value	Type of Limitation	Over Limit %
010-A	05/31/2014	Sodium Absorption Ratio	Ratio	79.1	=	88.4	30DA AVG	12%
010-A	4/30/2014	Sodium Absorption Ratio	Ratio	79.1	=	84.1	30DA AVG	6%
012-A	05/31/2014	Sodium Absorption Ratio	Ratio	77.1	=	77.9	30DA AVG	1%
016A	4/30/2014	Sodium Absorption Ratio	Ratio	80.3	=	82.7	30DA AVG	3%
016-A	05/31/2014	Sodium Absorption Ratio	Ratio	80.3	=	84.	30DA AVG	5%
021-A	05/31/2014	Sodium Absorption Ratio	Ratio	79.6	=	82.1	30DA AVG	3%
021-A	06/30/2014	Sodium Absorption Ratio	Ratio	79.6	=	80.6	30DA AVG	1%
025-A	06/30/2014	Sodium Absorption Ratio	Ratio	73.4	=	74.3	30DA AVG	1%
027-A	05/31/2014	Sodium Absorption Ratio	Ratio	78.5	=	87.8	30DA AVG	12%
027-A	06/30/2014	Sodium Absorption Ratio	Ratio	78.5	=	83.2	30DA AVG	6%
028-A	05/31/2014	Sodium Absorption Ratio	Ratio	86.6	=	100.	30DA AVG	15%
028-A	04/30/2014	Sodium Absorption Ratio	Ratio	86.6	=	93.6	30DA AVG	8%
036-A	05/31/2014	Sodium Absorption Ratio	Ratio	96.9	=	107.1	30DA AVG	11%
036-A	06/30/2014	Sodium Absorption Ratio	Ratio	96.9	=	105.1	30DA AVG	8%
036-A	04/30/2014	Sodium Absorption Ratio	Ratio	96.9	=	98.8	30DA AVG	2%
036-A	09/30/2010	Solids, total suspended	mg/L	45.	=	96.1	MX 7D AV	114%
037-A	09/30/2014	Flow, in conduit or thru treatment plant	MGD	.015	=	.033	30DA AVG	120%
039-A	05/31/2014	Sodium Absorption Ratio	Ratio	66.3	=	69.1	30DA AVG	4%
039-A	04/30/2014	Sodium Absorption Ratio	Ratio	66.3	=	67.1	30DA AVG	1%
042-A	12/31/2012	pH	SU	6.5	=	5.7	MINIMUM	
045A	4/30/2014	Sodium Absorption Ratio	Ratio	53.8	=	56.6	30DA AVG	5%
047-A	06/30/2014	Sodium Absorption Ratio	Ratio	67.9	=	69.	30DA AVG	2%
049-A	06/30/2014	Sodium Absorption Ratio	Ratio	64.6	=	72.7	30DA AVG	13%
049A	4/30/2014	Sodium Absorption Ratio	Ratio	64.6	=	66.3	30DA AVG	3%
050-A	06/30/2014	Sodium Absorption Ratio	Ratio	76.8	=	78.1	30DA AVG	2%
050-A	04/30/2014	Sodium Absorption Ratio	Ratio	76.8	=	77.2	30DA AVG	1%
050-A	03/31/2011	Solids, total suspended	mg/L	45.	=	51.	MX 7D AV	13%
051-A	04/30/2014	Sodium Absorption Ratio	Ratio	77.6	=	80.2	30DA AVG	3%
057-A	03/31/2010	Solids, total suspended	mg/L	30.	=	30.87	30DA AVG	3%
066-A	04/30/2014	Sodium Absorption Ratio	Ratio	59.5	=	61.5	30DA AVG	3%
067A	4/30/2014	Sodium Absorption Ratio	Ratio	60.4	=	62.0	30DA AVG	3%
068-A	06/30/2014	Sodium Absorption Ratio	Ratio	69.5	=	72.4	30DA AVG	4%
069-A	04/30/2014	Sodium Absorption Ratio	Ratio	73.9	=	78.3	30DA AVG	6%
069-A	05/31/2014	Sodium Absorption Ratio	Ratio	73.9	=	74.7	30DA AVG	1%
070-A	06/30/2013	Iron, total recoverable	ug/L	5000.	=	6110.	DAILY MX	22%
070-A	04/30/2014	Sodium Absorption Ratio	Ratio	64.	=	67.8	30DA AVG	6%
072-A	05/31/2014	Sodium Absorption Ratio	Ratio	60.	=	66.2	30DA AVG	10%
073-A	04/30/2014	Sodium Absorption Ratio	Ratio	90.3	=	90.5	30DA AVG	0%
082-A	04/30/2014	Conductivity	dS/m	1.95	=	1.98	30DA AVG	2%
082A	4/30/2014	Sodium Absorption Ratio	Ratio	56.1	=	63.7	30DA AVG	12%
082-A	05/31/2014	Sodium Absorption Ratio	Ratio	56.1	=	66.9	30DA AVG	19%
083-A	04/30/2014	Sodium Absorption Ratio	Ratio	55.5	=	58.	30DA AVG	5%
088-A	05/31/2014	Sodium Absorption Ratio	Ratio	52.5	=	62.9	30DA AVG	20%
088-A	04/30/2014	Sodium Absorption Ratio	Ratio	52.5	=	53.6	30DA AVG	2%
093-A	04/30/2014	Sodium Absorption Ratio	Ratio	48.7	=	53.1	30DA AVG	9%

Please note that WET testing has been report only with a delayed effective date of July 1, 2015. The data results indicate that the permitee will continue to be unable to meet the proposed limitations for chronic WET testing. (The limitations will remain the same as the previous permit at 100% IWC.) A PTI study was done in February 2013.

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 met all other conditions of the permit.

VII. DISCUSSION OF EFFLUENT LIMITATIONS

A. Regulatory Basis for Limitations

1. Technology Based Limitations

   a. Federal Effluent Limitation Guidelines – The federal guidelines that apply to this type of facility are found under 40 CFR 435, titled *Oil and Gas Extraction Point Source Category*. The applicable ELGs are found in Section VIII of the WQA. These limitations will typically apply, unless a more stringent limitation, or an alternate limitation that would be protective of the limits shown below is applied.

   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 XTO Energy: Lorencito 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. 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. Agricultural Use Protection –The WQA contains the evaluation of pollutants limited by narrative standards, and specifically sodium absorption ratio (SAR) and electrical conductivity (EC), as outlined by the Division's Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops policy. The SAR and EC requirements for this facility differ than the norm due to the availability of site specific data. Instead of utilizing a mass balance equation to calculate the maximum allowable effluent concentration, each individual outfall has been assigned a limitation for both SAR and EC, set to ensure that the initial effluent discharge concentration is maintained. Flow limitations for each outfall have also been assigned to ensure that the initial effluent discharge concentration is maintained.

b. 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). The permittee should refer to this document for additional information regarding WET.

4. Water Quality Regulations, Policies, and Guidance Documents

a. Antidegradation

For the Lorencito watershed (COARLA04b and COARLA06a): Since the receiving water is Use Protected an antidegradation review is not required pursuant to Section 31.8(2)(b) of The Basic Standards and Methodologies for Surface Water.

For the Purgatoire River (COARLA05b): Since the receiving water is Undesignated an antidegradation review is required pursuant to Section 31.8(2)(b) 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) When applicable, the facility may select permit limits based on their non-impact limit (NIL); 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 ADBAC limits are imposed as two-year average limits.

b. Antibacksliding

For the Lorencito (COARLA04b and COARLA06a): As the receiving water is designated Use-Protected, the antibacksliding requirements in Regulation 61.10 have been met.

For the Purgatoire River (COARLA05b): 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) – These stream segments are not on the State's 303(d) list, and therefore TMDLs do not apply.

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.

As the receiving stream is a zero flow stream, no mixing study is required.

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. The RP determination is discussed for each parameter in the text below.

B. Parameter Evaluation

Total Suspended Solids - The TSS concentrations from the Regulations for Effluent Limitations Regulation 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 Regulation 62 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.

Final Potential Limitations for outfalls discharging to tributaries to Lorencito Canyon (COARLA06a), that reach Lorencito Canyon (COARLA04b) and the Purgatoire River (COARLA05b):
010-A, 012-A, 016-A, 018-A, 019-A, 021-A, 025-A, 027-A, 028-A, 031-A, 032-A, 034-A, 036-A, 037-A, 039-A, 040-A, 042-A, 045-A, 047-A, 049-A, 050-A, 051-A, 057-A, 066-A, 067-A, 068-A, 069-A, 070-A, 072-A, 073-A, 074-A, 078-A, 082-A, 083-A, 084-A, 088-A, 091-A, 093-A
(From the Water Quality Assessment for reference for the reasonable potential analysis)

Effluent Parameter	Effluent Limitations Maximum Concentrations		
	30-Day Average	Daily Maximum	2-Year Average[2]
As, TR (µg/l)	100	NA	NA
As, PD (µg/l)	NA	340[3]	83
Be, TR (µg/l)	100		
Cd, TR (µg/l)	10		
Cd, PD (µg/l)	0.45[3]	3[3]	1.3
Cr+3, TR (µg/l)	100	81[2]	12
Cr+3, PD (µg/l)	80[3]	611[4]	38
Cr+6, TR (µg/l)	100		
Cr+6, Dis (µg/l)	11	16[3]	3.1
Cu, TR (µg/l)	200		
Cu, PD (µg/l)	9.6[3]	15[3]	3.9
Fe, TR (µg/l)	1000[3]		495[6]
Pb, TR (µg/l)	100		
Pb, PD (µg/l)	2.8[3]	71[3]	1.5
Mn, PD (µg/l)	1698[3]	3073[3]	582
Mo, TR (µg/l)	160		
Hg, Tot (µg/l)	0.01[3]		0.0027
Ni, TR (µg/l)	200		
Ni, PD (µg/l)	56[3]	504[3]	27

Se, TR (µg/l)	20		
Se, PD (µg/l)	4.6[3]	18[3]	1.4
Ag, PD (µg/l)	0.37[3]	2.4[3]	0.076
Zn, TR (µg/l)	2000		
Zn, PD (µg/l)	131[3]	180[3]	82
B, Tot (mg/l)	4		1.1
Chloride (mg/l)	452[2]		366[5]
Sulfide as H2S (mg/l)	0.002		0.00054
Radium 226+228 (piC/L)	5		1.4
Strontium 90 (piC/L)	8		2.3
Thorium 230+232	60		17

[1]Downstream segment (COARLA05b) most restrictive, substituted that value
[2]Downstream segment (COARLA05b) has this parameter, not the immediate receiving stream
[3] Receiving stream does not have this parameter; downstream segment (COARLA04b) more restrictive than COARLA05b, substituted that value
[4]Downstream segment (COARLA04b) has this parameter, not the immediate receiving stream
[5] ADBEL based on the Alternatives Analysis
[6] Due to Alternatives Analysis completed as a part of the Response to Comments, final 2 year limitations vary. See Final Iron Limitations Table under the Fe, TR heading in the narrative below.

Final Potential Limitations for outfalls discharging directly to Lorencito Canyon (COARLA04b) that reach the Purgatoire River (COARLA05b):
035-A
(From the Water Quality Assessment for reference for the reasonable potential analysis)

Effluent Parameter	**Effluent Limitations Maximum Concentrations**		
	30-Day Average	**Daily Maximum**	**2-Year Average[2]**
As, TR (µg/l)	100	NA	NA
As, PD (µg/l)	NA	340	83
Cd, PD (µg/l)	0.45	3	1.3
Cr+3, TR (µg/l)	100	81[2]	12
Cr+3, PD (µg/l)	80	611	38
Cr+6, Dis (µg/l)	11	16	3.1
Cu, PD (µg/l)	9.6	15	3.9
Fe, TR (µg/l)	1000	NA	495[4]
Pb, PD (µg/l)	2.8	71	1.5
Mn, PD (µg/l)	1698	3073	582
Mo, TR (µg/l)	160	NA	43
Hg, Tot (µg/l)	0.01	NA	0.0027
Ni, PD (µg/l)	56	504	27
Se, PD (µg/l)	4.6	18	1.4
Ag, PD (µg/l)	0.37	2.4	0.076
Zn, PD (µg/l)	131	180	82
B, Tot (mg/l)	4	NA	1.1
Chloride (mg/l)	452[1]	NA	366[3]
Sulfide as H2S (mg/l)	0.002	NA	0.00054
Radium 226+228 (piC/L)	5	NA	1.4
Strontium 90 (piC/L)	8	NA	2.3
Thorium 230+232	60	NA	17

[1]Downstream segment (COARLA05b) more restrictive, substituted that value

[2]Downstream segment (COARLA05b) has this parameter, not the immediate receiving stream
[3] ADBEL based on the Alternatives Analysis
[4]Due to Alternatives Analysis completed as a part of the Response to Comments, final 2 year limitations vary. See Final Iron Limitations Table under the Fe, TR heading in the narrative below.

Metals

As, TR (µg/l) – The downstream segment of COARLA05b has a temporary modification for total recoverable arsenic, chronic, in effect until 12/31/21 (As(ch)=hybrid.) For discharges existing on or before 6/1/2013, the temporary modification is: As(ch)=current condition, expiring on 12/31/2021.

For the Lorencito Canyon, a WQBEL of 100 ug/l is applicable during the period of the temporary modification referenced above.

For the previous permitting action, the data collected was typically non-detect at reporting limits of 1 ug/l of total arsenic. However, this data was from subsurface wells, and was not effluent data. One result was 82 ug/l well HR 05-07, and wells HR 36 and 23 both exhibited concentrations of 2 ug/l in August of 2007. Approximately 90 total data points were submitted. Because data for total recoverable arsenic indicates that the arsenic in the effluent will be non-detect, or significantly below the current limitation of 100 ug/l, limitations are not warranted and monitoring for total recoverable arsenic, will be required, particularly to support an RP analysis in the next permit renewal when the temporary modification will be expired.

As, Dis (µg/l) - The RP analysis for dissolved arsenic was based upon the WQBEL and ADBAC as calculated in the WQA. The available data was too voluminous (600+ data points, plus the additional results the permittee submitted) to run a statistical program. However a quantitative statistical analysis for this parameter is not needed as most of the data was below detection (highest non-detect was below 10 µg/l) and the highest reported value was 8 µg/l versus the potential acute WQBEL of 340 µg/l and ADBAC of 83 µg/l. Therefore, a qualitative determination of no RP has been made for this parameter and limitations and monitoring for dissolved arsenic are not necessary at this time.

Be, TR (µg/l) – For the previous permitting action, the facility was required to perform a onetime monitoring event for total recoverable beryllium at select locations in the Lorencito Canyon watershed. All 10 results were below the method detection limit of 0.1 µg/l and the practical quantification limit of 0.5 µg/l. See Table V-2. Considering the potential permit limitation is 6.9 µg/l (chronic WQBEL), a determination of no reasonable potential has been made and limitations or monitoring are not required at this time.

This parameter is not applicable to outfall 035-A.

Cd, Dis (µg/l) – Monitoring was not required during the previous permit term, and no cadmium data was submitted for consideration in this permitting action. For the previous permitting action, well data was available for total cadmium and all values were non-detect at a reporting limit of 5 µg/l. However the potential limitations based on the applicable WQBELs are at 0.45 µg/l (chronic), 3 µg/l (acute), and 1.3 µg/l (ADBAC) and the PQL for this parameter is 1 ug/l. Consequently, the "total" cadmium data from the previous permitting action are not considered adequate for use in determining that there is no RP. Thus, periodic monitoring at a PQL of 1 ug/l will be specified for this parameter in order to gather data that will enable a more accurate RP analysis to be completed.

Cd, TR (µg/l) – For the previous permitting action, total cadmium results were available from the wells in the Lorencito basin. All 90 were all under the reporting limit of 5 µg/l. As the WQBEL is 10 µg/l, no limitations are required. Even though the PQL for this parameter is 1 ug/l, since there is ample data (both total recoverable from this well field, and potentially dissolved from the effluent—both non-detect) that demonstrates there is no RP at 10 ug/l. Further, potentially dissolved cadmium will be monitored during the permit term. Thus monitoring for TR Cd has been removed from the final permit for this facility.

This parameter is not applicable to outfall 035-A.

Cr+3, TR (µg/l) – For the previous permitting action, results were available for total (unspeciated) chromium. Results were typically non-detect at reporting limits of 20 µg/l and 10 µg/l. 90 samples from the wells were available and a single value of 90 µg/l total chromium was detected in well HR 05-09V in August 2007. Potential limitations for total recoverable trivalent chromium at the outfalls are 100 µg/l (chronic WQBEL), 81 µg/l (acute WQBEL), and 12 µg/l (ADBAC.) The 90 ug/l sample result is an outlier in the data set, and the Division notes that this data was from a subsurface well, not effluent water which can co-mingle water from several wells. Further, the data was not speciated, and concentrations of trivalent chromium are expected to be less than total chromium. For these reasons, limitations are not applied and semiannual monitoring ("Report" only) for total recoverable trivalent chromium will be required to characterize the effluent quality, and for use in future RP analyses.

Cr+3, Dis (µg/l) - The RP analysis for potentially dissolved trivalent chromium was based upon the WQBELs and ADBAC as calculated in the WQA. The available data was too voluminous (600+ data points, plus the additional results the permittee submitted) to run a statistical program. However a quantitative statistical analysis for this parameter is not needed as all of the data was below detection. Although some of the data was non-detect with a reporting detection of 60 µg/l, the vast majority of the non-detect values were below 10 µg/l. Therefore, a qualitative determination of no RP has been made because all of the data was below detection versus the potential chronic WQBEL of 80 µg/l, acute WQBEL of 611 µg/l and ADBAC of 28 µg/l.

For this particular parameter, given the volume of effluent data provided over an extended time period, the Division has determined that potentially dissolved trivalent chromium is no longer a parameter of concern for this facility. Limitations and monitoring have been removed in this permitting action.

Cr+6, Dis (µg/l) and Cr+6, TR (µg/l) – According to the Agency for Toxic Substances and Disease Registry, hexavalent chromium is produced by industrial processes. Activities authorized under this permit (subsurface gas extraction with no frac water) would not generate hexavalent chromium. A qualitative determination of no RP has been made and the evaluation for chromium is limited to the trivalent form.

Total recoverable hexavalent chromium is not applicable to outfall 035-A.

Cu, Dis (µg/l) - The RP analysis for potentially dissolved copper was based upon the WQBELs and ADBAC as calculated in the WQA. The available data was too voluminous (600+ data points) to run a statistical data analysis. However, a statistical evaluation was not needed based on a review of the effluent data. Each outfall had approximately 20 reported effluent values. Although some of the data was non-detect with a reporting detection of 50 and 30 µg/l, the vast majority of the reported non-detect values were below 5 ug/l, 2 ug/l, and 1 µg/l.

The chronic WQBEL for potentially dissolved copper is 9.6 µg/l, the acute is 15 µg/l, and the ADBAC is 3.9 µg/l.

ADBAC Evaluation

For the ADBAC of 3.9 ug/l, not enough data were available to run a statistical program at each outfall. All detects were below the proposed limitation.

For 010A, 028A, 045A, all reported data were non-detect, therefore a determination of no reasonable potential has been made. No ADBAC limitations are required at this time, however for the purposes for future reasonable potential analyses monitoring has been added to the permit.

For 012A, 016A, 018A, 019A, 021A, 025A, 027A, 031A, 032A, 034A, 035A, 036A, 037A, 039A, 040A, 042A, 047A, 049A, 050A, 051A, 057A, 066A, 067A, 068A, 069A, 072A, 073A, 074A, 078A, 082A, 084A, 091A, and 093A the detections were less than half of the proposed limitations, and therefore a determination of no reasonable potential has been made. No ADBAC limitations are required at this time, however for the purposes for future reasonable potential analyses monitoring has been added to the permit.

For 083A, 088A, most of the detections were more than half of the proposed limitation and therefore a determination of reasonable potential has been made. The permittee will be able to consistently meet the ADBAC; the ADBAC has been added to the permit and is effective immediately.

Note that compliance with and the reporting of the ADBAC is expected immediately, and will utilize the effluent data from previous sampling at these outfalls during the previous permit term. Specifically, compliance with (or to satisfy the reporting requirement for) this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on.

WQBEL Evaluation
Outfalls 083-A, 018-A, 088-A
All had detects at above the potential 30 day average (15 ug/l, 13 ug/l, and 11 µg/l, respectively.)

Thus, there is a demonstration of RP as the effluent exceeds the chronic WQBEL of 9.6 ug/l, and limitations are implemented in the renewal permit. Although some effluent values are above the proposed limitations, the majority of the data is below detection and therefore the permittee will able to consistently meet 30-day average limitations for these three outfalls. Limitations have been added to the permit and effective immediately.

All also had detects for the daily max that were more than half the potential acute limitation (15 ug/l.) The permittee will be able to consistently meet the daily maximum limitation for these outfalls, therefore the daily maximum has been added to the permit and is effective immediately.

Outfalls 012-A, 019-A, 025-A, 032-A, 036-A, 039-A, 040-A, 047-A, 049-A, 057-A, 066-A, 067-A, 068-A, 069-A, 070-A, 072-A, 074-A, 078-A, 082-A, 084-A, 091-A, and 093-A
The effluent results had at least one detected 30 day average and daily maximum value that was below the potential WQBEL permit limitations. However, other than 070-A, a qualitative determination of no reasonable potential was made as all but one or two data points were below

detection as described above. No limitations will be required for these outfalls. However, for the purposes of future reasonable potential determinations, semiannual monitoring for potentially dissolved copper for these outfalls will be included in the permit.

Outfall 070-A: The RP analysis for dissolved copper was based upon the WQBEL and ADBAC as described in the WQA.

Outfall 070 DMR Data, PD Copper

Parameter	*# 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*
Cu, PD (µg/l)	*18*	*0.92/<30*/4.3*	*1/<30*/5.2*	*0.93/0/1.9*	*Report/Report/Report*

*PQL of 30 ug/l limited to one sampling event. The remainder of non-detects were at PQLs of 1 ug/l and 5 ug/l.

With the available data, the MDLWIN program was used to determine the appropriate statistics to determine the MEPC.

Pollutant	*Maximum of 30-Day Avg Effluent Or MEPC*	*30-Day Avg WQBEL*	*30-Day Avg RP*	*Maximum of Daily Max Or MEPC*	*Daily Max or WQBEL*	*Daily Max RP*	*Maximum of 2-Yr Avg Effluent Conc. Or MEPC*	*ADBAC*	*2-Year Avg RP*
Cu, Dis (µg/l)	10.95	9.6	Yes	13.53	15	Monitor	6.51	3.9	Yes

For the chronic and antidegradation-based dissolved copper, the MEPCs shown above are both greater than the associated MAPCs and therefore limitations are required. Therefore a 30-day maximum limitation of 9.6 ug/l and a 2 year rolling average limitation of 3.6 ug/l have been added to the permit. Previous monitoring as shown in the DMR table above indicates that these limitations can be met and are therefore imposed upon the effective date of the permit. Note that compliance with the ADBAC is expected immediately, and will be based upon the effluent data from previous sampling at this outfall during the previous permit term. Specifically, compliance with this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on.

For acute dissolved copper, the MEPC of 13.53 was less than the MAPC of 15 and therefore limitations are not necessary at this time, however the MEPC was greater than 50% of the MAPC and therefore monitoring is required. Therefore, a daily maximum "report" requirement has been added to the permit.

Outfalls 010A, 016A, 021A, 027A, 028A, 031A, 034A, 035A, 037A, 042A, 045A, 050A, 051A, 073A (Rest of the outfalls)

All of the effluent data was non-detect at the appropriate PQL and therefore supports a determination of no reasonable potential. However, for the purposes of future reasonable potential determinations, semiannual monitoring for potentially dissolved copper for these outfalls will be included in the permit.

Cu, TR (µg/l) – For the previous permitting action, total copper values were typically non-detect at reporting limits of 10 µg/l and 5 µg/l, with one value of 10 ug/l 'total' copper detected in well HR 26-14,

February 2008, out of 90 sampling events. As the WQBEL for total copper is 200 µg/l, a determination of no reasonable potential has been made. No limitations or monitoring for this parameter are required at this time.

This parameter is not applicable to outfall 035-A.

Fe, TR (µg/l): Note that an Alternatives Analysis was included as a part of the Response to Comments, which changed the reasonable potential for the antidegradation limitations. Please see Comment 16 and its associated Response for a complete review of the Alternatives Analysis for this permit. This Alternatives Analysis does not impact the 30-day Average WQBEL reasonable potential analysis.

The RP analysis for total recoverable iron was based upon the WQBEL (1000 µg/l) and the ADBAC (495 µg/l) as calculated in the WQA. Each outfall reported on a quarterly basis and returned approximately 18 DMR values per outfall (if the outfall discharged during the life of the previous permit.) The Division has made a qualitative reasonable potential determination for all outfalls as all outfalls have had significant amounts of total recoverable iron in the discharge, according to the DMR reports. No ADBAC reporting was required for the previous permit until the conclusion of the compliance schedule in the previous permit, which is July 1, 2015. However, based on the DMR data, the Division has calculated the two year rolling average. The following table compiles the estimated maximum average two year rolling average for each outfall:

Outfall	Maximum Average 2 Year Rolling Average (µg/L)
010-A	*1136*
012-A	*1211*
016-A	*819*
018-A	*1770*
019-A	*871*
021-A	*683*
025-A	*779*
027-A	*817.5*
028-A	*818.5*
031-A	*1024*
032-A	*1115*
034-A	*1278.6*
035-A	*1608*
036-A	*741.7*
037-A	*927*
039-A	*398*
040-A	*1127.5*
042-A	*2082.5*
045-A	*633*
047-A	*1389*
049-A	*1208.5*
050-A	*1188*
051-A	*735*
057-A	*3159*
066-A	*2168*
067-A	*944.1*

068-A	*2282*
069-A	*1672*
070-A	*1785.4*
072-A	*1645*
073-A	*778.2*
074-A	*1331.6*
078-A	*757.6*
082-A	*996*
083-A	*826*
084-A	*725.3*
088-A	*567.3*
091-A	*2483.6*
093-A	*1117*

Antidegradation-Based Limitation (ADBAC)
The ADBAC in this renewal permit is now set at 495 µg/l versus the current permit ADBAC of 150 µg/l which is set to become effective July 1, 2015. Thus, the antidegradation based limitation has become *less stringent* from the permit limit set to become effective July 1, 2015.

Outfall 039-A: The ADBAC for this outfall will be included in the permit and effective immediately, no compliance schedule is needed for this outfall. Compliance with this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on. Please see the permit for additional details regarding compliance with the ADBAC.

ALTERNATIVE ANALYSIS ADBELS

Outfalls 016A, 019A, 021A, 025A, 027A, 028A, 036A, 037A, 045A, 051A, 067A, 073A, 078A, 082A, 083A, 084A, 088A
The 2 year rolling average maximum effluent concentrations for these outfalls is less than the WQBEL. Therefore, the WQBEL will not be protective of the necessary level of degradation and the ADBELs will be revised from 495 ug/l to the highest effluent value (please see refer to following table):

Permit No. CO-0048054	
Outfall	**ADOPTED ADBEL**
010A	NA
012A	NA
016A	819
018A	NA
019A	871
021A	683
025A	779
027A	818
028A	819
031A	NA
032A	NA
034A	NA
035A	NA
036A	742
037A	947
040A	NA
042A	NA
045A	643
047A	NA
049A	NA
050A	NA
051A	735
057A	NA
066A	NA
067A	944
068A	NA
069A	NA
070A	NA
072A	NA
073A	778
074A	NA
078A	758
082A	996
083A	826
084A	725
088A	567
091A	NA
093A	NA

NA = because the effluent is greater than the WQBEL, the Division will set the ADBEL equal to the WQBEL, considering the WQBEL would therefore be protective of the ADBEL as the maximum 2 year effluent has exceeded that value

For outfalls 010A, 012A, 018A, 032A, 034A, 035A, 040A, 042A, 047A, 049A, 050A, 057A, 066A, 068A, 068A, 069A, 070A, 072A, 074A, 091A, 093A, 2 year rolling averages ranges from 1024 ug/l up to 3159 ug/l, and all proposed an ADBELs were above the WQBEL of 1000 ug/l. Thus, because the effluent is greater than the WQBEL, the Division will set the ADBEL equal to the WQBEL, considering the WQBEL would therefore be protective of the ADBEL as the maximum 2 year effluent has exceeded that value. For this outfall, the 2 year rolling average for total recoverable iron has been removed from the permit. The 30 day average iron limitation of 1,000 ug/l is the sole iron limitation.

For outfall 031-A, the DMR indicated that it had one result above the proposed ADBAC and therefore the alternatives analysis does apply and the Division should have included a compliance schedule. The ADBEL of 1470 ug/l is accepted.

WQBEL

The WQBEL of 1,000 ug/l (applicable to all outfalls) has become more stringent than the permit limit of 1,805 ug/l which is set to become effective July 1, 2015. Thus, since this is a new and more stringent limitation, where outfalls are unable to meet the new limitation, compliance schedules will be included in the permit. Please see Section VII.D for a discussion of compliance schedules.

Outfalls 019-A, 021-A, 025-A, 028-A, 036-A, 037-A, 039-A, 045-A, 051-A, 074-A, 083-A, 084A, 093A

These outfalls have DMR effluent data that indicates that the facility will be able to meet the new WQBEL limitation. Thus, the 30-day average limitation of 1,000 ug/l has been added to the permit and is effective immediately.

Note that some outfalls exhibited an exceedence as shown below. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 036-A (Alamosa Canyon): **1 exceedence**

Date	TR Fe (µg/l)
09/30/2010	*1563.*

For outfall 036-A, The remainder of the data was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 037-A (Alamosa Canyon): **2 exceedences**

Date	TR Fe (µg/l)
06/30/2010	*1476.*
06/30/2011	*1420.*

For outfall 037-A, The remainder of this data for this outfall was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and

given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 051-A (Alamosa Canyon): **1 exceedence**

Date	TR Fe (µg/l)
06/30/2013	*1070.*

For outfall 051-A, The remainder of this data for this outfall was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 074-A (Alamosa Canyon): 2 **exceedences**

Date	TR Fe (µg/l)
03/31/2011	*2075.*
12/31/2010	*1913.*

For outfall 074-A, The remainder of this data for this outfall was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 084-A (Alamosa Canyon): = **2 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*2260.*
06/30/2014	*1570.*

For outfall 084-A, The remainder of this data for this outfall was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

- 093-A (Unnamed tributary to Lorencito Canyon): **1 exceedence**

Date	TR Fe (µg/l)
09/30/2010	*1588.*

For outfall 093-A, The remainder of this data for this outfall was below the WQBEL of 1000 µg/l. as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation.**

Outfalls 010-A, 012-A, 016-A, 018-A, 027-A, 031-A, 032-A, 034-A, 035-A, 040-A, 042-A, 047-A, 049-A, 050-A, 057-A, 066-A, 067-A, 068-A, 069-A, 070-A, 072-A, 073-A, 078-A, 082-A, 088-A, and 091-A.

The following outfalls consistently equal or exceed the new renewal permit limitation of 1,000 ug/l during the period of the previous permit, as follows;

- 010-A (Little Alamosa): **3 exceedences**

Date	TR Fe (µg/l)
09/30/2014	*1350.*
09/30/2013	*1170.*
03/31/2010	*1136.*

For outfall 010-A, The new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, it is unlikely that the permittee can consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 012-A (Pancho Canyon): **8 exceedences**

Date	TR Fe (µg/l)
06/30/2014	*1490.*
09/30/2010	*1452.*
06/30/2011	*1430.*
03/31/2014	*1320.*
09/30/2011	*1240.*
06/30/2010	*1110.*
09/30/2014	*1110.*
03/31/2010	*1072.*

For outfall 012-A, the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 016-A (Little Alamosa): **4 exceedences**

Date	TR Fe (µg/l)
06/30/2013	*1770.*
06/30/2014	*1240.*
12/31/2013	*1220.*
09/30/2011	*1170.*

For outfall 016-A, the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 018-A (Pancho Canyon): **5 exceedences**

Date	TR Fe (µg/l)
06/30/2013	*2630.*
03/31/2010	*1770.*
06/30/2010	*1680.*
09/30/2012	*1090.*
06/30/2014	*1020.*

For outfall 018-A, the new limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 027-A (Alamosa Canyon): **3 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*2120.*
06/30/2012	*1200.*
09/30/2013	*1030.*

For outfall 027-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, it is unknown if the permittee can consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 031-A (Pancho Canyon): **8 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*1370.*
06/30/2013	*1280.*
06/30/2014	*1270.*
09/30/2013	*1140.*
03/31/2011	*1040.*
06/30/2012	*1040.*
03/31/2010	*1024.*
12/31/2010	*1010.*

For outfall 031-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 032-A (Lorencito Canyon): **4 exceedences**

Date	TR Fe (µg/l)
09/30/2013	*2770.*

06/30/2010	*1470.*
09/30/2014	*1160.*
09/30/2011	*1050.*

For outfall 032-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 034-A (Lorencito Canyon): **8 exceedences**

Date	TR Fe (µg/l)
12/31/2010	*1660.*
06/30/2013	*1580.*
03/31/2011	*1320.*
06/30/2010	*1312.*
06/30/2011	*1220.*
03/31/2010	*1051.*
09/30/2010	*1050.*
03/31/2014	*1040.*

For outfall 034-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 035-A (Lorencito Canyon): **12 exceedences**

Date	TR Fe (µg/l)
06/30/2013	*1850.*
09/30/2010	*1680.*
12/31/2011	*1650.*
03/31/2010	*1608.*
03/31/2014	*1590.*
03/31/2012	*1400.*
09/30/2013	*1310.*
06/30/2010	*1240.*
03/31/2011	*1120.*
09/30/2011	*1090.*
06/30/2012	*1020.*
12/31/2010	*1000.*

For outfall 035-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 040-A (Alamosa Canyon): **4 exceedences**

Date	TR Fe (µg/l)
06/30/2010	*1573.*
03/31/2014	*1480.*
06/30/2011	*1320.*
09/30/2011	*1090.*

For outfall 040-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 042-A (Alamosa Canyon: **4 exceedences**

Date	TR Fe (µg/l)
06/30/2011	*2390.*
06/30/2010	*1775.*
12/31/2013	*1330.*
06/30/2014	*1070.*

For outfall 042-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 047-A (Alamosa Canyon): **9 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*3370.*
06/30/2014	*2070.*
09/30/2013	*1920.*
12/31/2011	*1800.*
12/31/2013	*1620.*
06/30/2010	*1600.*
09/30/2010	*1387.*
06/30/2011	*1150.*
03/31/2010	*1042.*

For outfall 047-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 049-A (Alamosa Canyon): **7 exceedences**

Date	TR Fe (µg/l)
03/31/2011	*1480.*
03/31/2014	*1410.*

06/30/2010	*1350.*
12/31/2010	*1190.*
06/30/2014	*1100.*
03/31/2010	*1067.*
06/30/2011	*1020.*

For outfall 049-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 050-A (Alamosa Canyon): **6 exceedences**

Date	TR Fe (µg/l)
06/30/2010	*1580.*
06/30/2011	*1580.*
09/30/2013	*1550.*
12/31/2010	*1340.*
09/30/2011	*1080.*
06/30/2013	*1010.*

For outfall 050-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitations.**

- 057-A (Alamosa Canyon): **11 exceedences**

Date	TR Fe (µg/l)
09/30/2011	*3370.*
03/31/2010	*3159.*
03/31/2011	*2680.*
06/30/2010	*2290.*
06/30/2011	*2200.*
06/30/2012	*1720.*
12/31/2011	*1630.*
03/31/2012	*1370.*
09/30/2012	*1340.*
12/31/2012	*1230.*
09/30/2010	*1210.*

For outfall 057-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 066-A (Alamosa Canyon): **9 exceedences**

Date	TR Fe (µg/l)
03/31/2011	*4230.*

06/30/2011	*3160.*
09/30/2011	*1740.*
12/31/2011	*1560.*
06/30/2010	*1550.*
09/30/2010	*1538.*
12/31/2010	*1430.*
06/30/2013	*1160.*
03/31/2010	*1101.*

For outfall 066-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 067-A (Alamosa Canyon): **4 exceedences**

Date	TR Fe (µg/l)
03/31/2012	*3010.*
03/31/2014	*2270.*
09/30/2014	*1850.*
12/31/2012	*1450.*

For outfall 067-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 068-A (Alamosa Canyon): **17 exceedences**

Date	TR Fe (µg/l)
09/30/2013	*2960.*
06/30/2011	*2480.*
03/31/2010	*2282.*
03/31/2014	*1880.*
06/30/2014	*1870.*
03/31/2011	*1790.*
09/30/2011	*1780.*
12/31/2013	*1760.*
09/30/2010	*1610.*
12/31/2011	*1570.*
06/30/2013	*1450.*
09/30/2012	*1400.*
09/30/2014	*1340.*
12/31/2012	*1270.*
06/30/2010	*1204.*
03/31/2012	*1080.*
06/30/2012	*1040.*

For outfall 068-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim**

limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.

- 069-A (Alamosa Canyon): **15 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*2860.*
09/30/2014	*2590.*
06/30/2014	*2430.*
06/30/2011	*1950.*
06/30/2012	*1790.*
12/31/2012	*1780.*
03/31/2010	*1672.*
06/30/2013	*1560.*
12/31/2011	*1456.*
06/30/2010	*1370.*
09/30/2013	*1360.*
12/31/2010	*1304.*
09/30/2011	*1260.*
03/31/2011	*1239.*
09/30/2012	*1050.*

For outfall 069-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 070-A (Unnamed tributary to Lorencito Canyon): **12 exceedences**

Date	TR Fe (µg/l)
09/30/2014	*3900.*
12/31/2013	*3410.*
06/30/2013	*3408.*
03/31/2014	*2850.*
06/30/2014	*2850.*
09/30/2013	*2730.*
09/30/2011	*2260.*
12/31/2011	*1933.*
03/31/2012	*1420.*
06/30/2011	*1320.*
12/31/2010	*1051.*
06/30/2012	*1038.*

For outfall 070-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 072-A (Unnamed tributary to Lorencito Canyon): **11 exceedences**

Date	TR Fe (µg/l)

06/30/2013	*2380.*
03/31/2010	*1645.*
12/31/2010	*1340.*
06/30/2014	*1330.*
12/31/2013	*1260.*
09/30/2014	*1220.*
12/31/2011	*1150.*
06/30/2011	*1120.*
09/30/2012	*1100.*
06/30/2010	*1040.*
09/30/2010	*1000.*

For outfall 072-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 073-A (Alamosa Canyon): 4 **exceedences**

Date	TR Fe (µg/l)
03/31/2014	*2210.*
09/30/2013	*1720.*
06/30/2014	*1680.*
12/31/2013	*1380.*

For outfall 073-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 078-A (Unnamed tributary to Lorencito Canyon): **3 exceedences**

Date	TR Fe (µg/l)
09/30/2012	*2640.*
03/31/2014	*1340.*
06/30/2012	*1010.*

For outfall 078-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, it is unknown if the permittee can consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 082-A (Alamosa Canyon): **5 exceedences**

Date	TR Fe (µg/l)

12/31/2013	*2650.*
09/30/2011	*1710.*
12/31/2011	*1571.*
03/31/2014	*1500.*
03/31/2012	*1290.*

For outfall 082-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit. With the exception of a single data point out of 18 data points, the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 088-A (Alamosa Canyon): **3 exceedences**

Date	TR Fe (µg/l)
12/31/2012	*1460.*
03/31/2014	*1430.*
12/31/2013	*1080.*

For outfall 088-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, it is unknown if the permittee can consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the WQBEL (1805 µg/l 30 day average) and interim limit (5000 µg/l daily max) in the previous permit and the data indicates that the permittee will able to be consistently meet the interim limitation.**

- 091-A (Alamosa Canyon): **16 exceedences**

Date	TR Fe (µg/l)
03/31/2014	*4850.*
06/30/2011	*4760.*
06/30/2014	*3870.*
09/30/2014	*3280.*
12/31/2013	*3170.*
06/30/2013	*2910.*
09/30/2011	*2780.*
03/31/2012	*2540.*
12/31/2012	*1930.*
12/31/2010	*1860.*
12/31/2011	*1857.*
09/30/2012	*1760.*
03/31/2011	*1550.*
06/30/2012	*1520.*
03/31/2010	*1335.*
09/30/2010	*1100.*

For outfall 091-A, as the new WQBEL limitation is more stringent than the limitation proposed in the previous permit and given the results of the DMR reports from the previous permit term, the permittee cannot consistently meet this limitation and **therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are set to the interim limits in the previous permit (report for 30 day average and 5000 µg/l daily max) and the data indicates that the permittee will able to be consistently meet the interim limitation.**

Pb, Dis (µg/l) - The RP analysis for potentially dissolved lead was based upon the WQBELs and ADBAC as calculated in the WQA. The chronic WQBEL for potentially dissolved lead is 2.8 µg/l, the acute is 71 µg/l, and the ADBAC is 1.5 µg/l.

The available data was too voluminous (600+ data points, plus additional data points supplied by the permittee) to run a statistical program. Although some of the data was non-detect with a reporting detection of 12.2 and 6 µg/l, the vast majority of the reported non-detect values were below 1 µg/l. The only detected values were in outfalls 012A, 028A, 073A, and 083A as described below.

For the rest of the outfalls, all data were non-detect and therefore supports a determination of no reasonable potential. However, for the purposes of future reasonable potential determinations, semiannual monitoring for potentially dissolved lead for these outfalls will be included in the permit.

Outfalls 012-A and 073-A

30 day average:
- 2.3 µg/l from 012-A

Two year rolling average:
- 0.3 µg/l from 012-A for December 2013 through September 2014
- 0.3 µg/l from 073-A

Thus, since the only "detected" values for these outfalls are below the potential permit limitations, a qualitative determination of no reasonable potential was made as all but a single data point was above detection as described above. No limitations will be required for these outfalls. However, for the purposes of future reasonable potential determinations, semiannual monitoring for potentially dissolved lead for these outfalls will be included in the permit.

Outfalls 083A and 028-A
The effluent data had at least one value that was above the potential permit limitations as shown below;

30 day average:
- 12 µg/l from 028-A
- 7 µg/l from 083-A

Two year rolling average:
- 1.5 µg/l from 028-A for all quarterly values reported in 2012
- 1 µg/l from 083-A for March and June of 2012
- 0.9 µg/l from 083-A for September and December of 2012

Thus, there is a demonstration of RP as the effluent exceeds the chronic WQBEL of 2.8 ug/l, and the ADBAC of 1.5 ug/l (for outfall 028-A). Although these values are above the proposed limitations, the majority of the data is below detection and therefore indicates that the permittee will able to be consistently meet limitations for these three outfalls. Limitations have been added to the permit and effective immediately.

Note that compliance with and the reporting of the ADBAC is expected immediately, and will utilize the effluent data from previous sampling at these outfalls during the previous permit term. Specifically, compliance with (or to satisfy the reporting requirement for) this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on.

Pb, TR (µg/l) – As discussed in the previous permitting action, water quality data from the wells throughout the basin were typically non-detect at reporting limits of 5 µg/l over 90 sampling events. Well concentrations as high as 9 ug/l 'total' lead were detected. However, as the WQBEL is 100 µg/l, a determination of no reasonable potential has been made. No limitations or monitoring is required.

This parameter is not applicable to outfall 035-A.

Mn, Dis (µg/l) – The data is too voluminous (600+ data points plus additional data provided by the permittee) to run a quantitative statistical program. DMR values were as high as 92 µg/l (30 day average and daily maximum) and 61 µg/l (2 year rolling average). A qualitative determination of no RP has been made because all of the data was significantly below the potential chronic WQBEL of 1698 µg/l, acute WQBEL of 3073 µg/l and ADBAC of 582 µg/l. Limitations are not necessary at this time.

For this parameter, given the volume of data provided from the DMRs, the Division has determined that potentially dissolved manganese is no longer a parameter of concern for this facility. Limitations and monitoring have been removed in this permitting action.

Mo, TR (µg/l) - There is no data available regarding the presence/absence or quantification of this parameter in the discharge, and this parameter was added to the segment standards for this watershed in 2013. Molybdenum is a naturally occurring element and can be found in elevated concentrations in groundwater. Coal bed methane activities have the potential to bring raw groundwater to the surface and therefore the character of the water discharge is unknown. Therefore, the potential exists for this parameter to be present and monitoring has been added to the permit.

Hg, Tot (µg/l) - A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. A total of 10 samples were taken from 10 effluent locations in September 2010. Sample results were as high as 0.0009 µg/l, compared to the WQBEL of 0.01 µg/l and the ADBAC of 0.0027 µg/l. Considering the sample values are significantly smaller than the proposed limitations, a qualitative determination of no RP has been made. No limitations are required at this time.

However, for the purposes of future reasonable potential determinations, and to ensure that water quality is appropriately characterized for each outfall, annual monitoring for total mercury (low level) will remain in permit.

Ni, Dis (µg/l) – For the previous permitting action, results were not available from XTO. Instead, data was used from the nearby Pioneer Lorencito CBM facility (CO0047776). Results for total recoverable nickel were all non-detect at reporting limits of 2 µg/l. The chronic WQBEL for dissolved nickel is 56 µg/l, acute is 504 µg/l, and the ADBAC is 27 µg/l. Because the potential limitations are significantly higher than the detection value for total recoverable nickel, a qualitative determination of no RP has been made.

However, since this data is from another facility from over 5 years ago, due to recent variations in effluent values for other parameters, and for the purposes of future reasonable potential determinations, semiannual

monitoring for dissolved nickel will be added to the permit to characterize the effluent water quality for this parameter.

Ni, TR (µg/l) – No data is available for this outfall regarding total recoverable nickel therefore semi-annual monitoring will be required.

This parameter is not applicable to outfall 035-A.

Se, Dis (µg/l) - The RP analysis for potentially dissolved selenium was based upon the WQBELs and ADBAC as calculated in the WQA. The chronic WQBEL for potentially dissolved selenium is 4.6 µg/l, the acute is 18 µg/l, and the ADBAC is 1.4 µg/l. The available data was too voluminous (600+ data points plus additional data points supplied by the permittee) to run an appropriate statistical program .Although some of the data was non-detect with a reporting detection of 2 and 4 µg/l, the majority of the non-detect values were below a detection limit of 0.8 µg/l.

WQBEL Evaluation

Many outfalls had detections, but the highest reported 30 day average and daily maximum values that were above the proposed limitations are as follows:

- 9 µg/l from 035-A, 047-A, and 068-A
- 8 µg/l from 019-A
- 7 µg/l from 091-A
- 6 µg/l from 028-A and 032-A
- 5 µg/l from 028-A, 039-A, 073-A, and 072-A

All of these DMR values were reported in 2011.

Outfalls 019-A, 028-A, 032-A, 035-A, 039-A, 047-A, 068-A, 072-A, 073-A, and 091-A

There is a demonstration of RP as at least one effluent value (which is not an outlier) exceeds the chronic WQBEL. Although these values are above the proposed limitations, the majority of the data were below the potential limitations and therefore indicates that the permittee will able to be consistently meet limitations for these outfalls. Limitations have been added to the permit and effective immediately.

Outfalls 036-A, 010-A, 084-A, 040-A, 069-A, 078-A, 067-A, 034-A, 012-A, 031-A, 016-A, and 042-A

The effluent DMR results had at least one detected value below the potential permit limitations. However, a qualitative determination of no reasonable potential was made as all but one data point was below detection, and all detects were below the potential limits. Thus, no limitations will be required for these outfalls. However, for the purposes of future reasonable potential determinations, semiannual monitoring for potentially dissolved selenium for these outfalls will be included in the permit.

018A, 021A, 025A, 027A, 037A, 045A, 049A, 050A, 051A, 057A, 066A, 070A, 074A, 082A, 083A, 088A, 093A: For the rest of the outfalls, all data were non-detect and therefore supports a determination of no reasonable potential. However, for the purposes of future reasonable potential determinations, semiannual monitoring will be included in the permit.

Antidegration-Based Limitation (ADBAC) Evaluation

The highest reported two year rolling average values were:

- 3.1 µg/l from 066-A

- 2.4 µg/l, 2.2 µg/l , and 1.86 µg/l from 028-A
- 2.23 µg/l, 2.2 µg/l, 1.5 µg/l, and 1.36 µg/l from 091-A
- 1.6 µg/l from 047-A
- 1.4 µg/l and 1.3 µg/l from 036-A

Outfalls 066-A, 028-A, 091-A, 047-A
There is a demonstration of RP as the effluent meets or exceeds the ADBAC in these outfalls. Based on the DMR data, with the exception of outfall 036A, the permittee may not be able to consistently meet the proposed ADBAC. Thus for outfalls 066A, 028A, 091A, and 047A, a compliance schedule has been added to the permit. See Section VII.D for a discussion of compliance schedules. During the compliance schedule period, the Division will require reporting of the two year rolling average from the effective date of this renewal permit. This means that data collected during the previous permit term will be used along with data under this renewal to calculate and report the 2-year rolling average, for the first two years of the new permit term.

Outfall 010A, 012A, 016A, 018A, 019A, 031A, 032A, 034A, 035A, 036A, 039A, 040A, 042A, 051A, 067A, 068A, 069A, 072A, 073A, 078A, 084A: The results had at least one value that was below the potential ADBAC limitation of 1.4 µg/l. Even though this value was below the ADBAC limitation, an evaluation of RP has been conducted for the WQBEL, and RP was determined. The ADBAC will be included in the permit and effective immediately, no compliance schedule is needed for these outfalls. Compliance with this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on Please see the permit for additional details regarding compliance with the ADBAC.

021A, 025A, 027A, 037A, 045A, 049A, 050A, 057A, 070A, 074A, 082A, 083A, 088A, 093A: all reported data were non-detect, therefore a determination of no reasonable potential has been made. No ADBAC limitations are required at this time, however for the purposes for future reasonable potential analyses monitoring has been added to the permit.

Se, TR (µg/l) – As discussed in the previous permitting action, water quality data from the(source) wells throughout the basin were as high as 45 ug/l 'total' selenium. Thus, as the WQBEL is 20 µg/l, a determination of reasonable potential has been made. However, the vast majority of the source water data (70 out of 90 samples) is non-detect. Thus, because the source water is co-mingled prior to discharge and data indicates that the effluent limit can be attained, a limitation of 20 ug/l has been added to the permit and is effective immediately.

This parameter is not applicable to outfall 035-A.

Ag, Dis (µg/l) - The RP analysis for potentially dissolved silver was based upon the WQBELs and ADBAC as calculated in the WQA. The available data was too voluminous (600+ data points plus an additional data points supplied by the permittee) to run a statistical program. However, a statistical analysis is not need as all of the data was below detection. Although some of the data had a reporting detection of 5 µg/l, the vast majority of the non-detect values were at a detection of 0.4 µg/l. The chronic WQBEL for silver is 0.37 µg/l, the acute is 2.4 µg/l, and the ADBAC is 0.076 µg/l. Although the detection limits are above the potential limitations of the chronic WQBEL and the ADBAC, the data met the appropriate PQL for dissolved silver.

Due to the volume of effluent data with no detected values, the division will no longer consider this parameter as a parameter of concern and limitations and monitoring are not required.

Zn, Dis (µg/l) - For the previous permitting action, results were not available from XTO. However, data was available from the Pioneer Lorencito CBM facility (CO-0047776), adjacent to this site. Pioneer results for 'total recoverable' zinc were non-detect at a reporting limit of 10 ug/l compared to the potential chronic limitations of 131 µg/l, potential acute limitation of 180 ug/l, and the ADBAC limitation of 82 ug/l of 'potentially dissolved' zinc. Thus, at this time, a qualitative determination of no RP has been made and limitations are not included in this permit.

However, considering that this data is from another facility from over 5 years ago, due to recent variations in effluent values for other parameters, and for the purposes of future reasonable potential determinations, semiannual monitoring for dissolved zinc will be added to the permit to characterize the effluent water quality for this parameter.

Zn, TR (µg/l) – For the previous permitting action, data from this area was not available from XTO. However, data was available from the Pioneer Lorencito CBM facility (CO-0047776), adjacent to this site. Pioneer results for 'total recoverable' zinc were non-detect at a reporting limit of 10 ug/l compared to the potential limitation of 2000 ug/l. Thus, at this time, a qualitative determination of no RP has been made and monitoring requirements or limitations are not included in this permit.

This parameter is not applicable to outfall 035-A.

B, Tot (mg/l) – The RP analysis for boron was based upon the WQBELs and ADBAC as calculated in the WQA. The chronic WQBEL for boron is 4.0 mg/l and the ADBAC is 1.1 mg/l. The available data was too voluminous (600+ data points) to run a statistical program. However, a statistical program was not needed to evaluate RP as discussed below.

WQBELS
All of the DMR values for the 30-day average were no higher than 2.0 mg/l. Thus, the effluent data supports a determination of no reasonable potential based on the WQBEL. No limitations for the 30 day average will required for this permit term. However, monitoring will be required to ensure effluent data is available for future reasonable potential analyses. Outfalls 010A, 016A, 018A, 040A, 047A, 050-A, 068A, 070A, 073-A, 084A, 036A, and 028A will have quarterly monitoring as reasonable potential exists for the ADBAC (see discussion below.) For 012-A, 019A, 021A, 025A, 027A, 031A, 032A, 034A, 035A, 037A, 039A, 042A, 045A, 051A, 057A, 066A, 067A, 072A, 074A, 078A, 082A, 083A, 088A, 091A, 093A, semiannual monitoring will be required.

Antidegration-Based Limitation (ADBAC)
The ADBAC in the renewal permit are now set at 1.1 µg/l versus the current permit ADBAC of 0.16 µg/l which is set to become effective July 1, 2015. Thus, the antidegradation based limitation has become *less stringent* from the current permit limit.

The highest recorded values for the two year rolling average were:

- 1.68 mg/l, 1.65 mg/l, 1.64 mg/l, 1.55 mg/l l, 1.47 mg/l, 1.45 mg/l, 1.42 mg/l, 1.38 mg/l, 1.12 mg/l for 036-A
- 1.22 mg/l, 1.17 mg/l, 1.14 mg/l, 1.08 mg/l, 1.07 mg/l, 1.01 mg/l for 028-A
- 1.03 mg/l and 1.0 mg/l for 073-A
- 1.03 mg/l, 1.01 mg/l for 050-A

Outfalls 036-A, 028-A

There is a demonstration of RP as the effluent meets or exceeds the ADBAC in these outfalls. Based on the DMR data, the permittee may not be able to consistently meet the proposed ADBAC and therefore a compliance schedule has been added to the permit. See Section VII.D for a discussion of compliance schedules. During the compliance schedule period, the Division will require reporting of the two year rolling average from the effective date of this renewal permit. This means that data collected during the previous permit term will be used along with data under this renewal to calculate and report the 2-year rolling average, for the first two years of the new permit term.

Outfalls 010A, 016A, 018A, 040A, 047A, 050-A, 068A, 073-A, 084A

The DMR data had at least one detected value that was below the potential ADBAC limitation. A statistical analysis was performed on these outfalls with the exception of 047A, as 047A did not have enough data to perform a statistical analysis.

For 010A, 016A, 018A, 040A, 050-A, 068A, 070A, 073-A, 084A, the results of the statistical analysis are in the table below. For 073A and 050A, the MEPC was greater than the MAPC and therefore limitations are required. Therefore ADBAC requirement has been added to the permit. Previous monitoring as shown in Table VI-1 indicates that this limitation can be met and is therefore imposed upon the effective date of the permit. For 010A, 016A, 018A, 040A, 068A, 070A, 084A, the MEPC was less than the MAPC and therefore limitations are not necessary at this time, however the MEPC was greater than 50% of the MAPC and therefore monitoring is required. Compliance with this 2 year rolling average will be based on the 23 months prior to the effective date of the permit and the 30-day average effluent for the first month of the effective date of the permit (to equal 24 months), and so on Please see the permit for additional details regarding compliance with the ADBAC. For 047A, as multiple detections are greater than 50% of the proposed ADBAC, a determination of reasonable potential has been made and limitations are required.

Outfall	*Maximum of 2-Yr Avg Effluent Conc. Or MEPC*	*Proposed ADBACs*	*2-Year Avg RP*	*Statistical Analysis Type*
084A	1.005	1.1	Monitor	1.005
073A	1.133	1.1	Yes	Normal
010A	1.0164	1.1	Monitor	Normal
016A	0.88	1.1	Monitor	LogNormal
018A	0.77	1.1	Monitor	Normal
040A	1.023	1.1	Monitor	Normal
050A	1.751	1.1	Yes	Normal
068A	0.816	1.1	Monitor	Normal
070A	0.744	1.1	Monitor	Normal

For **012-A, 019A, 021A, 025A, 027A, 031A, 032A, 034A, 035A, 037A, 039A, 042A, 045A, 051A, 057A, 066A, 067A, 072A, 074A, 078A, 082A, 083A, 088A, 091A, 093A :** All detected values for these outfalls were less than half of the proposed ADBAC. Therefore a determination of no reasonable potential has been made. No limitations are required at this time. However, for the purposes of future reasonable potential and as this

continues to be a parameter of concern throughout the area, semi-annual monitoring has been added to the permit.

Chloride (mg/l) – The RP analysis for chloride was based upon the WQBELs and ADBAC as calculated in the WQA. The available data was too voluminous (600+ data points) to run a statistical program. The highest recorded values for the 30-day average were:

Outfall	Date	Chloride, mg/l
036-A	*12/31/2010*	*1290.*
036-A	*12/31/2011*	*946.*
091-A	*12/31/2013*	*885.*
091-A	*09/30/2011*	*868.*
028-A	*12/31/2010*	*855.*
025-A	*12/31/2010*	*736.*
036-A	*03/31/2010*	*716.*
091-A	*03/31/2014*	*702.*
036-A	*06/30/2013*	*686.*
036-A	*03/31/2014*	*669.*
091-A	*03/31/2010*	*666.*
036-A	*09/30/2014*	*640.*
036-A	*09/30/2012*	*638.*
036-A	*12/31/2012*	*630.*
036-A	*09/30/2013*	*619.*
036-A	*06/30/2014*	*602.*
036-A	*06/30/2012*	*579.*
036-A	*12/31/2013*	*554.*
073-A	*03/31/2010*	*543.*
040-A	*12/31/2010*	*536.*
091-A	*06/30/2012*	*535.*
036-A	*06/30/2010*	*522.*
036-A	*09/30/2011*	*514.*
091-A	*06/30/2014*	*505.*
040-A	*12/31/2012*	*494.*
036-A	*03/31/2012*	*494.*
073-A	*03/31/2014*	*469.*
073-A	*06/30/2014*	*466.*
091-A	*06/30/2013*	*461.*
073-A	*12/31/2010*	*458.*
073-A	*09/30/2014*	*457.*
073-A	*09/30/2011*	*451.*
018-A	*06/30/2013*	*446.*
073-A	*12/31/2012*	*436.*
028-A	*06/30/2013*	*435.*

The highest recorded two year rolling averages were:

Outfall	Date	Chloride, mg/l
036-A	*06/30/2012*	*691.7*
036-A	*09/30/2013*	*657.13*
036-A	*06/30/2013*	*644.*
036-A	*09/30/2014*	*633.13*
036-A	*06/30/2014*	*632.88*
036-A	*03/31/2014*	*630.*
036-A	*03/31/2012*	*610.5*
036-A	*12/31/2013*	*608.13*
036-A	*09/30/2012*	*557.7*
036-A	*12/31/2012*	*475.2*
091-A	*09/30/2014*	*468.88*

091-A	*03/31/2014*	*461.5*
091-A	*03/31/2012*	*461.*
091-A	*06/30/2014*	*457.75*
091-A	*06/30/2013*	*445.38*
091-A	*09/30/2012*	*414.4*
091-A	*12/31/2012*	*.3*
091-A	*12/31/2013*	*410.5*
091-A	*06/30/2012*	*408.*
073-A	*03/31/2012*	*397.*
073-A	*09/30/2014*	*380.88*

The chronic WQBEL for chloride is 452 mg/l and the ADBAC is 366 mg/l.

Given the variability in the data and the ability of the facility to redirect well water to different outfalls, a reasonable potential for all outfalls has been made.

Despite a few of the outliers listed above for 025-A, 028-A, and 040-A, the Division believes that the facility will be able to consistently meet the limitations for most outfalls, and therefore for all outfalls except **036-A and 091-A for the ADBAC,** limitations will be placed in the permit, effective immediately.

The data suggests that outfalls 036-A, 073-A, and 091-A will be unable to meet the WQBEL, and 036-A and 091-A will be unable to meet the ADBAC. Considering that the new WQBEL of 452 mg/l is less stringent than the previous permit limitation, and that a five and a half year compliance schedule was already allowed, the Division has determined that a compliance schedule for the WQBEL is inappropriate. Based on the compliance schedule documents submitted during the previous permit the plan to comply with the chloride WQBEL was to discontinue discharge. Based on provisions contained at Regulation 61.8 (1)(b)(iii) and (e), further discharges from these outfalls cannot be authorized. The permittee withdrew outfalls 036A and 091A from consideration on January 30, 2015.

However, for outfall 073A the permittee notified the Division on January 30, 2015 that due to operational changes, 073A can now comply with WQBEL for chloride and submitted the lab results and the January DMR report as proof. The Division agrees with the permittee that outfall 073A is now capable of meeting the new WQBEL and will authorize this permitted feature based on the latest data for the outfall.

Sulfide as H_2S (mg/l) - 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.

Radium 226+228 (pCi/L) - A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. 20 samples were collected at 10 different locations, each location sampling radium 266 and radium 228 in September 2010 (see Table VI-2a for reference.) All locations reported levels of radium, with 049-A reporting the highest at 6.2 pCi/l, compared to the chronic WQBEL of 5 pCi/l and the ADBAC of 1.4 pCi/l. Therefore, a qualitative determination of RP has been made. It is unknown if the permittee can consistently meet this limitation at 049-A and therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limits are report only.

For the rest of the outfalls monitoring will be required in order to obtain a more robust sample set for a quantitative reasonable potential analysis.

Strontium 90 (pCi/L) - A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. 10 samples were collected at 10 different locations in September 2010. Sample results were as high as 0.28 pCi/l, compared to the WQBEL of 8 pCi/l and the ADBAC of 2.3 pCi/l. Considering the sample values are significantly smaller than the proposed limitations, a qualitative determination of no RP has been made. No limitations or monitoring are required at this time.

Thorium 230+232- A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. 10 samples were collected at 10 locations in September 2010. Sample results for were as high as 0.99 pCi/l, compared to the WQBEL of 60 pCi/l and the ADBAC of 17 pCi/l. Considering the sample values are significantly smaller than the proposed limitations, a qualitative determination of no RP has been made. No limitations or monitoring are required at this time.

Temperature- Based on the information presented in the WQA, this facility is exempt from the temperature requirements on Lorencito Canyon due to its ephemeral characteristics.

Electrical Conductivity (EC) – As discussed in the WQA and this fact sheet, the approach to assigning limitations for the outfalls of this facility was different than the typical process of calculating EC limitations. Instead, the EC limitations are set at the maximum recorded value for each individual outfall (note that outliers were removed from consideration.) The EC limitations will be the same as the previous permit.

Sodium Absorption Ratio (SAR), Adjusted SAR – As discussed in the WQA and this fact sheet, the approach to assigning limitations for the outfalls of this facility was different than the typical process of calculating SAR limitations. Instead, the SAR limitations are set at the 85th percentile with the LCL method used for compliance determinations.

Flow – In addition to limitations at each outfall for SAR and EC, flow limits for each outfall are necessary to ensure that the initial effluent discharge concentrations would be maintained. The flow limitations will be the same as the previous permit.

Whole Effluent Toxicity (WET) Testing – For this facility, chronic WET testing has been determined to be applicable based on the instream waste concentrations calculated in the WQA. A zero flow stream has a 100% IWC, and Lorencito Canyon and its tributaries are considered zero flow streams. Therefore, due to the facility type, expected pollutants, and previous WET test results, a determination of reasonable potential has been made and chronic WET testing is required.

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

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

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.

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. To ensure that adequate data are gathered for future reasonable potential determinations and that data are consistent with Division initiatives for mercury, biannual effluent monitoring for total mercury at low-level detection methods will be required by the permit.

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.

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.

The permittee already receives reductions on monitoring, despite the standard monitoring frequencies outlined in the Reduced Monitoring Policy. No further reductions will be granted

B. Reporting

1. Discharge Monitoring Report – The XTO Energy: Lorencito facility 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.6. of the permit.

D. Compliance Schedules

The following compliance schedules are included in the permit. See Part I.B of the permit for more information.

Total Recoverable Iron (Outfalls 010-A, 012-A, 016-A, 018-A, 027-A, 031-A, 032-A, 034-A, 035-A, 040-A, 042-A, 047-A, 049-A, 050-A, 057-A, 066-A, 067-A, 068-A, 069-A, 070-A, 072-A, 073-A, 078-A, 082-A, 088-A, and 091-A)

As discussed in Section VII, the above outfalls cannot consistently meet the new limitations for total recoverable iron of 1,000 ug/l. During the previous permit term, as discussed in Section III (Modification Request Iron Trading) the permittee was given until July 1, 2015 to meet the limitations of 1,805 ug/l and a 2 year rolling average of 150 ug/l. As also detailed in that section, the permittee identified strategies to meet the iron limitations, and selected an Iron Trading Offset approach. As discussed therein, an iron trading approach is not appropriate for this watershed and is not incorporated into this permit renewal. Thus, the Division has allocated the facility additional time to complete evaluations and implement strategies to meet the new and more stringent (for the 30 day average) iron limitations.

As discussed in the Colorado WQCD Compliance Schedule Policy 2, the Division evaluates the appropriateness of compliance schedules for discharges that are not new on the basis of necessity. "Necessity" is determined on the basis of whether associated effluent limits can be met. In this case, as discussed above, limitations cannot be met for the majority of outfalls covered by this permitting action.

Once necessity has been determined, the Division evaluates the "appropriateness" of a compliance schedule. This evaluation includes whether the effluent limit is the same, more stringent, or less stringent than the previous effluent limit. The Division's policy is that compliance schedules may be allowed for pollutants that were previously limited, but for which revised more stringent effluent limits are included in a renewal permit. Note that there is no specific regulatory prohibition against providing a compliance schedule for an effluent limit that is the same as, or even less stringent from the effluent limit in the previous permit. The appropriateness determination, in those circumstances, is based on a consideration of how much time has already been given to meet effluent limits under previous permitting actions, and a good faith effort to comply.

The facility has had since February 2010 to come into compliance with the previous final permit limitations of 1805 µg/l and 150 µg/l. The permittee has secured a consultant and has submitted numerous compliance schedule items that include research into options for obtaining compliance with the final limitations. Thus, even though the 30-day average permit limitation in this renewal is more stringent than the limitation anticipated under the current compliance schedule, substantial progress towards evaluating options for total recoverable iron has been achieved. Noting this, a compliance schedule which allows the permittee to select and install an alternate strategy to meet the TR iron limitations from alternatives identified in the 2010, 2011, and 2013 compliance schedule reports is appropriate.

Therefore, a compliance schedule of 24 months, **until July 1, 2017**, has been added to the permit for total recoverable iron. Note that interim milestones associated with this compliance schedule may be more detailed and more frequent (scheduled at least every six months) to ensure that progress towards compliance is attained.

Whole Effluent Toxicity (Chronic)

The effluent limits for WET in the renewal permit are the same as the effluent limits in the current permit, and those limits have not yet gone into effect. Therefore, the consideration for WET in this renewal is whether an extension of the duration of the existing compliance schedule is appropriate, and if so how milestones should be specified.

The regulatory requirement is that compliance must result "as soon as possible". In determining the specific milestones and duration of the compliance schedule, the Division intends to provide adequate time to conduct the sequence of actions needed thereby leading to compliance, while not providing more time than reasonably needed thus ensuring that the requirement of "as soon as possible" is met.

The WET monitoring frequency requirement in the current permit is annual, and in this case the milestones for the compliance schedule were specified through standard permit language that requires the permittee upon failure of a test to conduct a PTI/TIE or accelerated testing. The first annual WET monitoring results were due by March 28, 2011, and annually thereafter, and the submittal of those results each year triggered the response requirement. During this time, the permittee has conducted several preliminary toxicity investigations (PTI's) to identify causes of chronic toxicity, but has not yet identified or implemented strategies to eliminate whole effluent toxicity in the effluent.

The results of these toxicity investigations identify Total Dissolved Solids (TDS) as the cause, and specifically sodium bicarbonate and bicarbonate.

Therefore, a compliance schedule of 18 months, **until July 1, 2017**, has been added to the permit for chronic WET limitations. Given that this extension of the duration makes the compliance period seven years, the Division determined that more detailed milestone and more frequent reporting on progress was appropriate for this renewal. Those have been specified in the permit.

Subsequent to Public Notice (Total Reoverable Iron and Chronic WET Testing)

The Division determined that an appropriate compliance schedule duration in this case is 24 months. This timeline provides time to design, install, and operate treatment for WET and iron. The treatment would not only need to remove the sodium bicarbonate (an identified toxicant) but also be removing iron for some outfalls where reductions are needed to comply with effluent limitations. The 24 month timeline was developed based on treatment options applicable in this case, including oxidation to remove iron, followed by settling and then membrane filtration to remove sodium bicarbonate for the portion of the discharge necessary to meet the WET limit. The permittee may also elect to implement underground injection in that timeline which they have indicated is their preferred option. Assuming that the permit will be effective July 1, 2015, the following compliance schedule is included in their permit:

1. By December 31, 2015, hire a professional engineering consultant to design the wastewater treatment processes or indicate that underground injection or other method will be implemented.
2. By July 1, 2016, initiate construction of the wastewater treatment processes or provide a progress update on actions taken to complete underground injection or other method selected by the permittee to comply with the

effluent limitation.

3. By July 1, 2017, complete construction of wastewater treatment facility and have all waste streams treated by the wastewater treatment facility or complete underground injection or other method selected by the permittee to comply with the effluent limitation.

This will effectively extend the compliance dates in the current administratively extended permits by 24 months, and extends the compliance dates by six months over the timeline included in the draft of this renewal permit. This compliance schedule is considered "as soon as possible."

The Division has modified this date from the public notice version of January 1, 2017.

Potentially dissolved selenium and boron ADBACs

During the previous permit term, the permittee was given time to conduct extensive research into resolving potential compliance issues with dissolved copper, dissolved selenium, boron, chloride, and total recoverable iron. Building upon the work already conducted for these parameters, the Division believes 2 years is adequate time to give the permittee time to review the work already done and to implement one of the strategies already researched.

Radium 226+228

During the previous permit term, the permittee was given time to conduct extensive research into resolving potential compliance issues with dissolved copper, dissolved selenium, boron, chloride, and total recoverable iron. Building upon the work already conducted for these parameters, the Division is including the following abbreviated compliance schedule to give the permittee time to review the work already done and to implement one of the strategies already researched.

All information and written reports required by the following compliance schedules should be directed to the Compliance Section for final review unless otherwise stated.

E. 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 25-8-192 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 Arkansas River Basin, Regulation 32*, 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 the permittee disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, the permittee should submit all pertinent information to the Division during the public notice period.

IX. REFERENCES

A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0048054.

B. Basic Standards and Methodologies for Surface Water, Regulation No. 31, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 31, 2013.

C. Classifications and Numeric Standards for Arkansas River Basin, Regulation No. 32, Colorado Department of Public Health and Environment, Water Quality Control Commission, Effective June 30, 2015.

D. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 20, 2012.

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

F. 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 30, 2012.

G. 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.

H. 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.

I. Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2013.

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

K. 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.

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

M. 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.

N. Policy for Permit Compliance Schedules, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-30, effective December 2, 2010.

X. PUBLIC NOTICE COMMENTS

The public notice period was from February 6, 2015 to April 6, 2015. Comments were received from a number of stakeholders, including, but not limited to; several citizens of Las Animas County, the U.S. Environmental Protection Agency, XTO, and Pioneer.

These comments and the associated Division responses are in Appendix C and are incorporated herein.

Lori Mulsoff
May 29, 2015