

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8 NATIONAL POLLUTANT
DISCHARGE ELIMINATION SYSTEM STATEMENT OF BASIS**

PERMITTEE: U.S. Department of the Army

FACILITY NAME AND ADDRESS: Fort Carson Sewage Treatment Plant
Magrath Avenue Bldg 3900
Fort Carson, Colorado 80913

PERMIT NUMBER: CO-0021181

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PERMIT TYPE: Major, Permit Renewal,
Federally Owned Treatment Works

FACILITY LOCATION: Magrath Avenue Bldg 3900
Fort Carson, Colorado 80913
Latitude: 38.7229° N
Longitude: 104.7435° W

1 INTRODUCTION

This statement of basis (SoB) is for the issuance of a National Pollutant Discharge Elimination System (NPDES) permit (the Permit) to the U.S. Department of the Army (permittee) for the Fort Carson Sewage Treatment Facility (Facility). The Permit establishes discharge limitations for any discharge of wastewater from the Facility through Outfall 001 to Clover Ditch, a tributary of Fountain Creek. The SoB explains the nature of the discharges, EPA's decisions for limiting the pollutants in the wastewater, and the regulatory and technical basis for these decisions.

The Facility is a federal facility in Colorado. EPA Region 8 is the NPDES permitting authority for federal facilities located in Colorado.

2 MAJOR CHANGES FROM PREVIOUS PERMIT

Major changes from the previous permit include the following:

- Clover Ditch has been identified as a receiving water body with applicable water quality standards, Section 5.1.
- A monitoring program and a reopener clause for per- and polyfluoroalkyl substances (PFAS) were added to the Permit, Section 10.1.1.
- Nitrate and nitrite monitoring have been added, Section 7.3.2.
- Total Kjeldahl nitrogen monitoring has been removed, Section 7.3.3.
- The copper effluent limitation was removed because there is no reasonable potential for the Facility to cause an exceedance of water quality standards, Section 7.1.
- Monitoring requirements for discharges from the industrial wastewater system were added, Section 10.2.
- Effluent limitations were added for nonylphenol, cadmium and hexavalent chromium, Section 7.1.
- Effluent temperature monitoring has been added, Section 7.3.5.
- Requirements for an asset management plan (AMP) have been added, Section 12.2.

3 BACKGROUND INFORMATION

The Fort Carson Army Base is located near Colorado Springs in El Paso County, Colorado. Multiple military agencies use the army base for training or staging purposes. The Facility treats the wastewater generated on the army base.

3.1 Fort Carson Sewage Treatment Plant Service Area

Most of the sewage comes from the on-base family housing units and associated community buildings (schools, hospitals, restaurants etc.). The Facility is configured to receive effluent from the Fort Carson Industrial Wastewater System (IWS) and the sanitary sewage and miscellaneous wastewaters from the Cheyenne Mountain Space Force Station. The Fort Carson IWS treats wastewater from outdoor vehicle wash areas and vehicle maintenance facilities. The Cheyenne Mountain Space Force Station produces wastewater including domestic wastewater, excess spring water, and groundwater seepage from its tunnel.

The population served at the Fort Carson Army Base includes residential, non-transient, and transient populations and is estimated to be greater than 40,000 but fewer than 50,000. The actual population served can vary with troop deployments, etc., and does not account for the workforce population and associated flows received from the IWS or Cheyenne Mountain Space Force Station.

3.2 Treatment Process

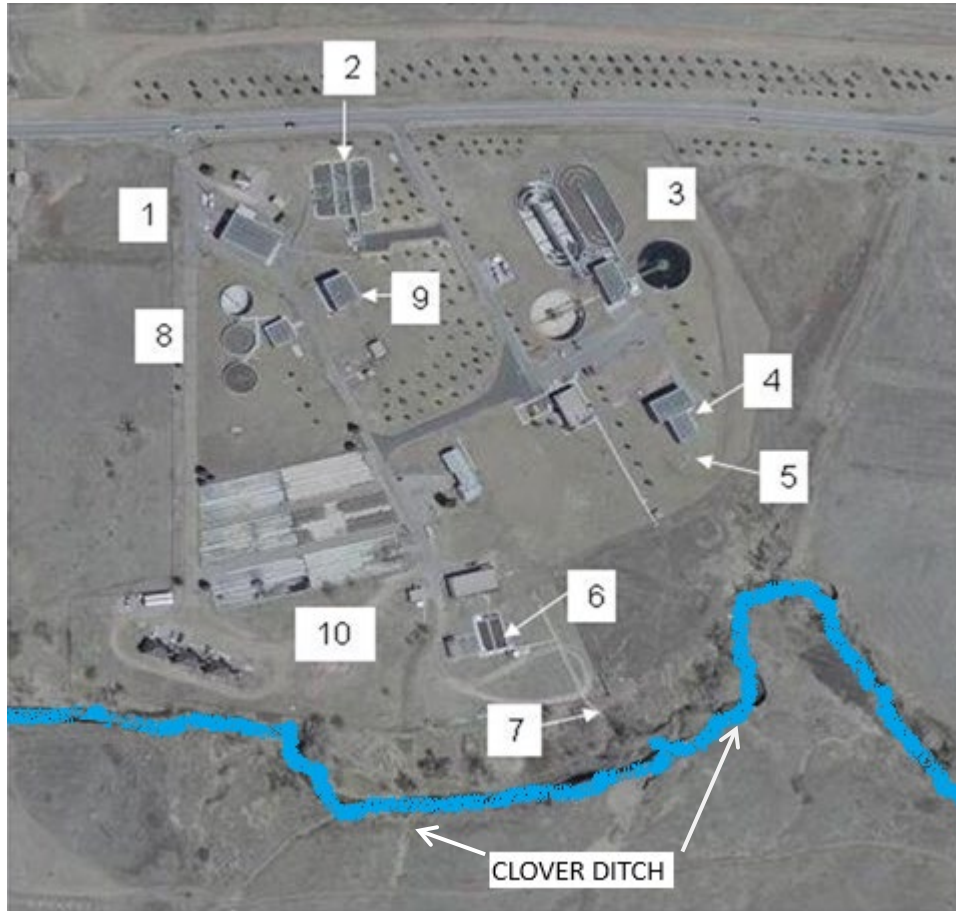
The Facility's wastewater treatment process includes primary treatment with aerated flow equalization, secondary treatment with nitrification/denitrification, followed by filtration with sand media and ultraviolet (UV) disinfection before discharge. Sludge is either recycled and blended with the influent or digested in an aerobic digester prior to disposal at a landfill. The hydraulic and organic design capacities are 4.00 million gallons per day (mgd) and 8,500 lbs 5-day biochemical oxygen demand (BOD₅)/day. An aerial view of the Facility is shown in Figure 1.

Primary treatment occurs in the headworks building and includes coarse screening, fine screening, aerated grit and grease removal, and influent flow measurement with a Parshall flume. The discharge from the headworks building gravity flows to the aerated flow equalization basin.

The Facility has two 1.4-million gallon oxidation ditches for biological treatment that can be operated in series or parallel. Presently only one oxidation ditch is being used and it is operated to achieve nitrification and some denitrification. The denitrification is achieved by turning the aeration off for about an hour after three hours of aeration. There are two 85-foot diameter circular clarifiers for secondary clarification, with only one in operation.

Three aerobic digesters treat waste activated sludge from the secondary clarifiers. The digesters are operated in batch sequence, with supernatant periodically drawn off and additional waste activated sludge added. After digestion, the sludge is dewatered on a 2.0-meter wide belt filter press, with a polymer added to improve the dewatering. The dewatered sludge is approximately 15% solids and is temporarily stored on the old sludge drying beds until it is hauled by a contractor to an off-site landfill for disposal.

Figure 1 - Aerial View of Fort Carson Sewage Treatment Plant



Picture legend:

- 1 = Headworks Building
- 2 = Flow Equalization Basin
- 3 = Oxidation Ditches and Secondary Clarifiers
- 4 = Tertiary Filtration and UV Disinfection Building
- 5 = Parshall Flume
- 6 = Old Chlorine Contact Chamber
- 7 = Outfall 001
- 8 = Aerobic Digesters
- 9 = Sludge Dewatering Building
- 10 = Sludge Drying Beds

Final filtration is provided by up-flow filters that have 42" deep moving sand bed media. Disinfection is performed by UV disinfection.

Following UV disinfection, the flow goes to a Parshall flume located just to the south of the filtration and disinfection building. The flow is continuously monitored and recorded. The effluent can either discharge to Outfall 001 or be pumped to the Fort Carson golf course for irrigation. The outfall pipe is approximately 200 feet long from the Parshall flume and discharges roughly 50 feet from Clover Ditch. The end of the outfall pipe is **Outfall 001**.

The Fort Carson Golf Course (golf course) is located near the western boundary of Fort Carson and has an area of about 126 irrigated acres. The wastewater is conveyed to the golf course by a buried force main to a storage pond. The storage pond is located at latitude 38.7227 N, 104.8083 W. A flow meter has been installed on the pipeline to measure the flow to the storage pond. The Facility subtracts the flow pumped to the golf course from the flow measured at the effluent Parshall flume when calculating the wastewater flow at Outfall 001.

The Permit does not regulate the wastewater land applied at the golf course. The discharge to Clover Ditch via Outfall 001 is discussed in Section 5 below.

3.3 Chemicals Used

No chemicals are used at the Facility for the purposes of treating wastewater.

4 PERMIT HISTORY

According to EPA records for the Facility, this renewal is at least the third issuance of this NPDES permit. The previous permit for the Facility became effective on December 1, 2011, and was set to expire on September 30, 2016. The Facility submitted a permit renewal application prior to the permit's expiration, which EPA received on March 25, 2016, and thus, the previous permit was administratively continued.

4.1 Discharge Monitoring Report (DMR) Data

DMR data from the previous permit was reviewed during the development of this Permit. The application contained a pollutant scan as required in 40 CFR 122.21(j). Monitoring data for organic pollutants showed non-detect for all organics. The pollutant scan measured nickel with a maximum value of 2.4 µg/L which is discussed in the reasonable potential analysis in Section 6. The monitoring data for acute whole effluent toxicity (WET) showed no acute toxicity.

The DMR data included five occasions the effluent limitations were exceeded. A summary of the Facility's monitoring and pollutant scan data is available in Table 1.

Table 1. Summary of the DMR Data 12/31/2011 through 6/30/2025 for Outfall 001 from EPA's Integrated Compliance Information System (ICIS) database (accessed 8/7/2025)

Parameter	Limit	Reported Average	Reported Range	Number of Data Points	Number of Exceedances
BOD, 5-day, 20 deg. C, 30-day average, mg/L	30	3.04	0.9 - 10.4	163	0
BOD, 5-day, 20 deg. C, 7-day average, mg/L	45	5.08	1.2 - 19.59	162	0
BOD, 5-day, 20 deg. C, 30-day average, kg/day	454	21.25	2.4 - 59.3	163	0
BOD, 5-day, 20 deg. C, 7-day average, kg/day	681	30.21	4.7 - 150.9	163	0

Cadmium, potentially dissolved, daily maximum, µg/L	N/A	0.26	ND - 3.3	20	N/A
Chromium, hexavalent dissolved [as Cr], daily maximum, µg/L	N/A	9.92	ND - 42	12	N/A
Copper, potentially dissolved, 30-day average, µg/L <u>a/</u>	16	4.23	1.2 - 11.25	133	0
Copper, potentially dissolved, 30-day average, µg/L <u>a/</u>	25	3.21	2.1 - 4.2	10	0
Copper, potentially dissolved, daily maximum, µg/L <u>a/</u>	39	4.22	1.2 - 20	143	0
Copper, potentially dissolved, 30-day average, µg/L <u>a/</u>	N/A	3.15	1.5 - 10	13	N/A
Copper, potentially dissolved, daily maximum, µg/L <u>a/</u>	N/A	3.15	1.5 - 10	13	N/A
Cyanide, weak acid, dissociable, daily maximum, µg/L	N/A	22.91	4.14 - 186	75	N/A
<i>E. coli</i> , 30-day average, #/100 mL	126	3.45	1 - 17.4	163	0
<i>E. coli</i> , 7-day average, #/100 mL	252	8.38	1 - 58.3	163	0
Flow, total, 30-day average, mgd	4	1.79	0.36 - 3.45	163	0
Flow, total, daily maximum, mgd	N/A	3.48	0.36 - 3.45	163	N/A
Mercury, total [as Hg	N/A	0.0010	ND-0.0025	45	N/A
Nitrate Plus Nitrite as Nitrogen, daily maximum/L <u>b/</u>	N/A	12.66	35.01	313	N/A
Nitrogen, ammonia total [as N], 30-day average, mg/L	10	1.53	0.1 - 7.1	63	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	11	2.30	2.3 - 2.3	1	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	12.5	3.50	3.5 - 3.5	1	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	13	2.50	2.5 - 2.5	1	0

Nitrogen, ammonia total [as N], 30-day average, mg/L	13.6	1.90	1.9 - 1.9	1	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	14	1.60	1.6 - 1.6	1	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	14	6.69	0.5 - 19.2	13	2
Nitrogen, ammonia total [as N], 30-day average, mg/L	15	1.35	1.35 - 1.35	1	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	15	2.80	0.31-10.3	12	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	16	2.98	0.13-8.08	12	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	18	8.60	8.6 - 8.6	1	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	19	3.29	0.25-10.1	12	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	20	2.50	2.5 - 2.5	1	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	20	2.75	0.39-8.6	13	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	21	3.76	0.33-12.7	13	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	22	3.92	0.28 - 18.5	13	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	23	0.45	0.45 - 0.45	1	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	23	2.30	0.21 - 12.2	26	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	24	3.58	0.22 - 10.45	12	0
Nitrogen, ammonia total [as N], daily maximum, mg/L	26	2.76	0.28 - 7.6	13	0

Nitrogen, ammonia total [as N], daily maximum, mg/L	27	3.45	0.28 - 13.1	12	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	28	0.30	0.3 - 0.3	1	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	8	1.07	0.15 - 5.96	56	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	9.2	1.43	0.25 - 6.68	13	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	9.3	0.28	0.28 - 0.28	1	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	9.4	1.04	0.26 - 3.56	13	0
Nitrogen, ammonia total [as N], 30-day average, mg/L	N/A	1.50	0.4 - 6	7	N/A
Nitrogen, ammonia total [as N], daily maximum, mg/L	N/A	3.63	0.68 - 13.1	10	N/A
Nonylphenol, daily maximum	N/A	157.63	ND - 1400	9	N/A
Oil and grease, daily maximum, mg/L	10	2.12	0.3 - 6.88	99	0
Oil and grease, visual	No visible	No visible	No visible	163	0
Oxygen, dissolved [DO], daily minimum, mg/L	5	6.02	4.44 - 8.44	163	1
Selenium, potentially dissolved, daily maximum, µg/L	19	3.48	1.2 - 14.6	147	0
Selenium, potentially dissolved, 30-day average, µg/L	8	3.38	1.2 - 12.6	147	2
Silver, potentially dissolved, daily maximum, µg/L	N/A	0.23	ND - 1.84	18	0
Solids, total suspended, 30-day average, mg/L	30	3.41	0.89 - 9.7	163	0
Solids, total suspended, 7-day average, mg/L	45	4.75	1.05 - 25.8	163	0
Solids, total suspended, 30-day average kg/day	454	25.77	2.7 - 96.1	163	0
Solids, total suspended, 7-day average, kg/day	681	36.71	2.9 - 281.1	163	0

Zinc, potentially dissolved, daily maximum, µg/L	N/A	55.54	2.7 - 400	161	0
pH, minimum, standard units	6.5	6.77	6.5 - 7.22	163	0
pH, maximum, standard units	9	7.48	6.9 - 8.46	163	0

a/ Copper monitoring results were separated according to the effluent limit in effect at the time of collection.

b/ The previous permit did not require this monitoring, but nitrate plus nitrite data was reported in the permit application

4.2 Other Facility History

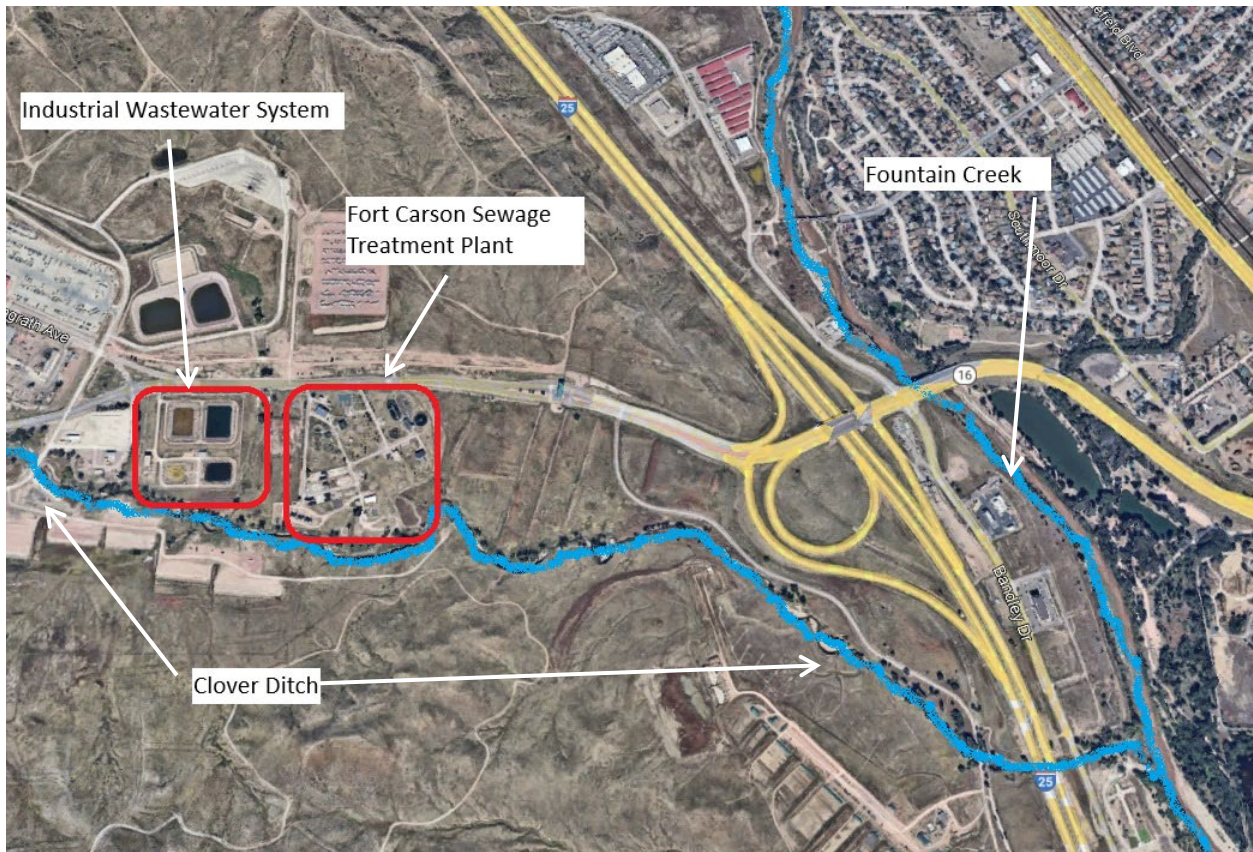
The Facility was last inspected on July 25, 2024. The inspection identified multiple findings classified as maintenance or documentation related. The findings were corrected by the Permittee and do not require modified permit conditions.

5 DESCRIPTION OF RECEIVING WATER AND WATER QUALITY STANDARDS

Outfall 001 is the only permitted discharge point. Outfall 001 discharges into Clover Ditch, which is a tributary to Fountain Creek. Clover Ditch converges with Fountain Creek approximately one mile downstream of Outfall 001. Figure 1 shows the Facility’s location in relation to Clover Ditch and the confluence with Fountain Creek. Fountain Creek is a tributary of the Arkansas River, which flows into Kansas. The current version of water quality standards for the Arkansas River Basin became effective on December 31, 2024, and are discussed below. The state of Colorado develops water quality assessments (WQA) on a watershed basis to ensure that cumulative impacts of multiple dischargers are considered when establishing effluent limitations for a discharge permit. The 2014 WQA for Fountain Creek¹ and applicable water quality standards were used for establishing ambient conditions and calculating Water Quality Based Effluent Limitations (WQBELs) for the Permit.

¹ Water Quality Assessment - Fountain Creek - Colorado Springs Utilities – Las Vegas Street WRRF, Widefield Water & Sanitation District WWTF, Security Sanitation District WWTF, US Army-Fort Carson WWTF, US Army – Fort Carson Landfills, Fountain Sanitation District-Richard J. Christian II WWTF, Lower Fountain Metropolitan Sewage Disposal District – Harold D. Thompson Regional WRF

Figure 2 Showing Fort Carson Sewage Treatment Plant and Industrial Wastewater System in relation to Clover Ditch and the confluence with Fountain Creek.



5.1 Clover Ditch

The Colorado Department of Public Health and Environment's (CDPHE's) water quality standards has classified Clover Ditch as a tributary in section COARFO04D of the Fountain Creek Basin. This section is described as "All tributaries to Fountain Creek from South Academy Blvd (CO83) to below the unnamed tributary immediately south of Old Pueblo Road (38.585843, -104.669591), including all wetlands, except for Little Fountain Creek and its tributaries and wetlands, and specific listings in segments 3a, 5a and 5b." This description has been interpreted to include Clover Ditch. This stream segment has the following uses: Agriculture, Aquatic Life Warm Water Class 2, and Recreation Class E. Clover Ditch is designated as use protected, meaning no antidegradation review is required for permitted discharges according to the State's antidegradation policy.

Table 2. – Physical and Biological Colorado water quality standards for Clover Ditch 1/

	DM or Acute Limit	MWAT or Chronic Limit
Temperature, °C	WS-II	WS-II
DO (mg/L)	---	5.0
pH Standard Units	6.5-9.0	---
chlorophyll a (mg/m ²) <u>2/</u>	---	TVS
<i>Escherichia coli</i> (<i>E. coli</i>) (per 100 mL)	---	126

1/ Code of Colorado Regulations 5CCR 1002-32

2/ Chlorophyll a (mg/m²)(chronic) = applies only above the facilities listed at 32.5(4). The Fort Carson Sewage Treatment Plant is not one of the listed facilities.

DM = daily maximum

MWAT = maximum weekly average temperature

WS-II = warm stream temperature tier two

TVS = Table Value Standard calculated according to the pollutant specific requirements in section 32.6(3) of Regulation 32 – Classification and Numeric Standards for Arkansas River basin.

Table 3. – Inorganic Colorado water quality standards for Clover Ditch 1/

	Acute (mg/L)	Chronic (mg/L)
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	250
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	100	---
Nitrite	---	0.5
Phosphorus	---	TVS
Sulfate	---	--
Sulfide	---	0.002

1/ Code of Colorado Regulations 5CCR 1002-32

TVS = Table Value Standard calculated according to the pollutant specific requirements in section 32.6(3) of Regulation 32 – Classification and Numeric Standards for Arkansas River basin.

Table 4. – Metals Colorado water quality standards for Clover Ditch 1/

	Acute (µg/L)	Chronic (µg/L)
Arsenic	340	---
Arsenic(T)	---	10.0
Cadmium	TVS	TVS
Chromium III	TVS	TVS
Chromium III(T)	---	100
Chromium VI	TVS	TVS
Copper	TVS	TVS
Iron(T)	---	1000
Lead	TVS	TVS
Manganese	TVS	TVS
Mercury(T)	---	0.01
Molybdenum(T)	---	150
Nickel	TVS	TVS
Selenium	TVS	TVS
Silver	TVS	TVS
Uranium	Varies	Varies
Zinc	TVS	TVS

1/ Code of Colorado Regulations 5CCR 1002-32

T = total recoverable

TVS = Table Value Standard

All metals criteria are dissolved unless otherwise noted.

5.2 Fountain Creek

Approximately one mile downstream from Outfall 001, Clover Ditch flows into Fountain Creek segment COARFO02A. The beneficial uses for Fountain Creek are Warm Water Aquatic Life Class 2, Recreation Class E, Agriculture, and Water Supply. This segment is reviewable and is subject to antidegradation review.

5.3 Differences between Cover Ditch and Fountain Creek Water Quality Standards (WQS)

Clover Ditch and Fountain Creek have very similar WQS. For some pollutants with different WQS between the two waterbodies, it was necessary to determine which standard is most protective of the receiving water. Fountain Creek has a beneficial use designation for water supply which results in more stringent WQS for sulfate, nitrate, arsenic, iron, lead and manganese. As a result, the Fountain Creek WQS is the basis for these pollutants.

Clover Ditch has a phosphorus WQS which references Colorado Water Quality Control Commission Regulation No.31, Section 31.17. This regulation excludes phosphorus limitations for this facility.

5.4 Combined Water Quality Standards

The combined WQS are displayed in Table 5 through Table 8. The WQS for Clover Ditch and Fountain Creek are very similar with few discrepancies. In every case the more restrictive standard was selected when applicable. The Table Value Standards (TVS) in Table 8 were calculated with Fountain Creek’s historical pH because it is lower than the effluent’s pH which is likely to dominate Clover Ditch. Metals toxicity decreases when the hardness and pH is increased. Using the lower hardness and pH of Fountain Creek for the metals toxicity calculations protects the most stringent applicable WQS.

Table 5. – Physical and Biological Colorado water quality standards for section COARFO02A Fountain Creek a/

	DM, acute	MWAT, chronic
Temperature, °C	WS-II	WS-II
DO (mg/L)	---	5.0
pH	6.5-9.0	---
chlorophyll a (mg/m ²)	---	---
<i>Escherichia coli</i> (<i>E. coli</i>) (per 100 mL)	---	126

a/ Code of Colorado Regulations 5CCR 1002-32

DM = daily maximum

MWAT = maximum weekly average temperature

WS-II = warm stream temperature tier two

Table 6. – Inorganic Colorado water quality standards for section COARFO02A Fountain Creek: Regulation #32 Stream Classifications and Water Quality Standards, Fountain Creek Basin a/

	Acute (mg/L)	Chronic (mg/L)
Ammonia	TVS	TVS
Boron	---	0.75
Chloride	---	250
Chlorine	0.019	0.011
Cyanide	0.005	---
Nitrate	10	---
Nitrite	---	0.5
Phosphorus	---	---
Sulfate	---	WS
Sulfide	---	0.002

a/ Code of Colorado Regulations 5CCR 1002-32

TVS = Table Value Standard

WS = Water Supply Standard

Table 7. – Metals, Colorado water quality standards for section COARFO02A Fountain Creek: Regulation #32 Stream Classifications and Water Quality Standards, Fountain Creek Basin a/

	Acute (µg/L)	Chronic (µg/L)
Arsenic	340	---
Arsenic(T)	---	0.02-10 <u>b/</u>
Cadmium	TVS	TVS
Cadmium(T)	5.0	---
Chromium III	---	TVS
Chromium III(T)	50	---
Chromium IV	TVS	TVS
Copper	TVS	TVS
Iron	---	WS
Iron(T)	---	1000
Lead	TVS	TVS
Lead(T)	50	---
Manganese	TVS	TVS/WS
Mercury(T)	---	0.01
Molybdenum(T)	---	150
Nickel	TVS	TVS
Nickel(T)	---	100
Selenium	TVS	TVS
Silver	TVS	TVS
Uranium <u>b/</u> , <u>c/</u>	16.8-30	16.8-30
Zinc	TVS	TVS

a/ Code of Colorado Regulations 5CCR 1002-32

b/ Whenever a range of standards is listed and referenced to this footnote, the first number in the range is a strictly health-based value, based on the Colorado Water Quality Control Commission's established methodology for human health-based standards. The second number in the range is a maximum contaminant level, established under the federal Safe Drinking Water Act that has been determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range. Water bodies will be considered in attainment of this standard, and not included on the Section 303(d) List, so long as the existing ambient quality does not exceed the second number in the range.

c/ Uranium Control requirements such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range.

T = total recoverable

TVS = Table Value Standard

WS = Water Supply

All metals criteria are dissolved unless otherwise noted.

Table 8 - TVS calculated for Pollutants of Concern in Fountain Creek and Clover Ditch with Hardness of 295 mg/L

Parameter	Acute	Chronic
Dissolved Cadmium	7.5 µg/L	1.6 µg/L
Dissolved Hexavalent Chromium	16 µg/L	11 µg/L
Dissolved Copper	37 µg/L	23 µg/L
Dissolved Selenium	18.4 µg/L	4.6 µg/L
Dissolved Silver	13 µg/L	2.1 µg/L
Dissolved Zinc	428 µg/L	324 µg/L
Temperature °C March – November <u>a/</u>	28.6	27.5
Temperature °C December – February <u>a/</u>	27.5	13.8

a/ Chronic temperature limits are based on the Maximum Weekly average temperature as defined in the WQS. Acute temperature limitations are based on the daily maximum temperature WQS.

5.5 Ammonia

Ammonia is a pollutant commonly found in domestic wastewater effluent. Ammonia is toxic to aquatic life and must be treated at the Facility to prevent adverse effect in the receiving water.

Clover Ditch and Fountain Creek both have WQS that are calculated using a combination of the effluent's and receiving water's characteristics. Table 9 and Table 10 summarize the ammonia WQS for the receiving waters.

Clover Ditch was not identified as a water of the state at the time of developing the 2014 WQA. The EPA used AMMTOX¹ to calculate the water quality standards in Table 9. AMMTOX is a spreadsheet developed by CDPHE for calculation of ammonia WQS. The inputs for this calculation were pulled from USGS station # 07105820, which is located in Clover Ditch downstream of Outfall 001. The Facility's discharge is expected to be the only flow at critical flows in Clover Ditch. As a result, Clover Ditch will provide no dilution to the effluent when calculating the effluent limitations. The effluent pH was used in the AMMTOX calculation because the USGS station for Clover Ditch does not have pH data and the effluent will dominate flow during critical flows. This is an acceptable alternative because the flow in Clover Ditch is expected to be effluent dominated most of the year including during critical flows.

The Fountain Creek ammonia water quality standards were calculated by CDPHE in the WQA. The WQA calculation included a detailed analysis of the upstream wastewater discharges and their impact on Fountain Creek's assimilative capacity. CDPHE is responsible for developing the WQA when re-issuing Permits in the Fountain Creek watershed.

Table 9 – Instream Ammonia Water Quality Standards for Clover Ditch Calculated Using AMMTOX²

Month	Chronic Standard mg/L	Acute Standard mg/L
Jan	6.9	23.3
Feb	6.2	24.7
Mar	4.7	23.1
Apr	3.7	20.9
May	3.1	21.9
Jun	2.4	19.9
Jul	2.3	18.9
Aug	2.3	20.3
Sep	2.8	21.6
Oct	3.5	19.5
Nov	4.7	21.4
Dec	6.2	24.9

Table 10 – Instream Ammonia Water Quality Standards from 2014 Fountain Creek WQA

Month	Total Chronic mg/L	Total Acute mg/L
Jan	9.1	10
Feb	7	10
Mar	6.5	7
Apr	6.8	10
May	7	7.9
Jun	7	14
Jul	7	18.9
Aug	6.8	15
Sep	6	16.3
Oct	6.5	9
Nov	6	11.6
Dec	6	12

² Colorado’s Ammonia Toxicity Model (AMMTOX) can be found at: <https://cdphe.colorado.gov/clean-water-sewage-systems-compliance-assistance>.

6 Technology Based Effluent Limitations (TBELs)

6.1 Secondary Treatment Standards

The secondary treatment standards (40 CFR Part 133) have been developed by EPA and represent the level of effluent quality attainable through the application of secondary or equivalent treatment. The regulation applies to all publicly owned treatment works (POTWs), and the Facility is similar in operation to a POTW. Therefore, these TBELs will be applied in the Permit and are listed in Table 11.

The EPA Region 8 has also developed technology-based guidance for oil and grease for POTWs and other equivalent treatment facilities. It states, “If a visible sheen or floating oil is detected in the discharge, a grab sample shall be taken immediately, analyzed, and recorded in accordance with the requirements of 40 CFR Part 136. The concentration of oil and grease shall not exceed 10 mg/L in any sample.” The visual narrative “sheen or floating oil” requirement was developed in alignment with 40 CFR § 401.16 which lists “oil and grease” as a conventional pollutant (as related to technology-based limitations in line with 40 CFR § 125.3(h)(1)) pursuant to section 304(a)(4) of the Clean Water Act (CWA). This consideration for oil and grease will be included in the Permit.

Table 11. Secondary treatment standards

Parameter	30-day average (mg/L)	7-day average (mg/L)	30-day average percent removal (%)
BOD ₅	30	45	85
TSS	30	45	85
pH	Maintained within the limits of 6.0 to 9.0		

7 Water Quality Based Effluent Limitations (WQBEL)

The Facility discharges to Clover Ditch, a tributary of Fountain Creek. The receiving water is within the state of Colorado and thus the state of Colorado’s WQS apply. EPA has reviewed the applicable State water quality standards for consideration during the development of WQBELs and evaluated whether any total maximum daily loads (TMDLs) apply.

7.1 Reasonable Potential Analysis

The first step in developing WQBELs is to determine the pollutants of concern at the Facility. Facilities that treat domestic wastewater must account for the conventional pollutants as pollutants of concern. Other pollutants of concern are identified by their reasonable potential (RP) to cause or contribute to an exceedance of a WQS. The EPA conducted a statistical analysis of discharge monitoring data and receiving stream data to determine within a 99% confidence interval whether a facility has RP to cause an exceedance of the WQS.

The RP analysis was conducted according to the guidance document: Technical Support Document (TSD) For Water Quality-based Toxics Control (EPA 505/2-90-001). The EPA Region 8 has developed a spreadsheet to assist in calculating RP when large data sets are provided by the discharger. The spreadsheet is based on the guidance in the TSD for modeling the data. The RP procedure works by

generating an upper percentile estimate of the distribution of effluent concentrations and comparing this (after any appropriate dilution) to relevant criteria. Specifically, the highest observed effluent concentration is increased by an RP multiplier then compared to WQS. The RP multiplier is calculated from the coefficient of variation using the equations in Section 3.3.2 of the TSD. Table 12 summarizes the RP analysis. If RP exists, then a WQBEL was developed.

Nonylphenol had a particularly high coefficient of variation because one monitoring event had a higher value of 1400 µg/L while the remaining data for nonylphenol is less than 10 µg/L. The rest of the pollutant data sets did not show any outliers.

No dilution was considered when performing the RP analysis. This is because Clover Ditch flows are effluent dominated during critical flow. Silver, copper and mercury data did not show RP for either the acute or chronic WQS and will not require an effluent limitation. Cadmium, chromium, cyanide, nonylphenol, selenium, and zinc data demonstrate RP for at least one WQS and will require effluent limitations.

Table 12 – Reasonable Potential (RP) Analysis For WQBEL

Parameter	Water Quality Criterion	Maximum Reported Value (µg/L)	Coefficient of Variation	RP Multiplier	WQS (µg/L)	RP
Cadmium	acute	3.3	0.29	1.2	7.52	NO
Cadmium	chronic	3.3	0.29	1.2	1.62	YES
Chromium (6+)	acute	42	0.19	1.1	16	YES
Chromium (6+)	chronic	42	0.19	1.1	11	YES
Copper	acute	11.25	0.52	1.3	37.2	NO
Copper	chronic	11.25	0.52	1.3	22.6	NO
Cyanide	acute	68	1.3	1.8	5	YES
Mercury	acute	0.0025	0.46	1.7	N/A	NO
Mercury	chronic	0.0025	0.46	1.7	0.01	NO
Nonylphenol	acute	1400	0.60	4.2	28	YES
Nonylphenol	chronic	1400	0.60	4.2	6.6	YES
Selenium	acute	8.18	0.46	1.3	18.4	NO
Selenium	chronic	8.18	0.46	1.3	4.6	YES
Silver	acute	0.465	0.22	1.1	13.05	NO
Silver	chronic	0.465	0.22	1.1	2.06	NO
Zinc	acute	400	0.60	1.4	428	YES
Zinc	chronic	400	0.60	1.4	324	YES

7.2 Antidegradation Analysis

Discharges from the Facility are existing, and no changes to effluent quality are proposed. The Permit prohibits exceedances of numeric and narrative standards. Clover Ditch is designated as “use

protected” in the WQS and does not require an antidegradation evaluation when calculating WQBELs. Wastewater discharges will flow approximately one mile down Clover Ditch to Fountain Creek. Fountain Creek is designated as “reviewable” meaning an antidegradation evaluation is required before developing WQBELs. The antidegradation analysis considers the assimilative capacity of the receiving water to determine the significance of degradation. The WQA provides most of the receiving water information required for conducting an antidegradation evaluation.

7.2.1 Impaired Waters

Fountain Creek’s ambient water quality for *E. coli*, total recoverable iron and total mercury exceed the WQS and caused Fountain Creek to be identified as impaired on the State’s 303(d) list. Impaired waters have no assimilative capacity making the WQS antidegradation analysis impossible. The effluent limitations for these pollutants will be based on the WQS at the point of discharge into Clover Ditch so as to not contribute to the exceedance in Fountain Creek. No dilution allowance will be considered for these pollutants.

7.2.2 Non-Impact Level (NIL)

The next step in conducting an antidegradation evaluation is to determine if the proposed WQBELs will allow a new or increased impact compared to previous conditions. The non-impact level (NIL) has been designated in the WQA and is compared with the chronic WQS in Table 13 and Table 14. If the chronic WQS is below the NIL then no increased impact is expected. Typically, the NIL is the numeric value for a pollutant in the permit on the date the waterbody became reviewable, adjusted for any increases in design flow. Guidance at 31 states, “This policy essentially grandfathers existing plants with their existing limits as of September 30, 2000 so long as those limits are protective (i.e. the new WQBELs are greater than or equal to the existing limits).” However, if a pollutant was known to be present in a facility’s discharge but was not limited by the permit in place as of the reviewable date, then an “implicit NIL” may be available.³ Pollutants without a chronic water quality standard such as cyanide do not have a NIL. As shown in Table 13, the NIL analysis *E. coli*, selenium, and zinc indicates discharges from this facility are expected to have an increased impact. Selenium and zinc are included in the antidegradation evaluation based on the average concentrations in section 7.3.2. Cadmium and cyanide have not been assigned a NIL and must be included in the next step of the antidegradation review. As discussed in section 7.3, Fountain Creek is impaired for *E. coli*, and as such, is not subject to additional antidegradation analysis.

Table 13 Non-Impact Level (NIL) and Increased Impact Determination

Pollutant	2000 NIL a/	Chronic WQS	Increased impact
<i>E. coli</i> (#/100 mL)	64	126	Yes
Cd, Disolved (µg/L)	NEW	1.62	N/A
Cr ⁺⁶ , Disolved (µg/L)	12	11	No
Cyanide, Free (µg/L)	NEW	N/A	N/A
Se, Disolved (µg/L)	4	4.6	Yes

³ May 26, 2022 CDPHE memorandum Re: FINAL VERSION Clarifications of Antidegradation Guidance Regarding Implementation of Implicit Non-Impact Limits (NILs)

Pollutant	2000 NIL a/	Chronic WQS	Increased impact
Zn, Disolved (µg/L)	63	324	Yes
Nonylphenol (µg/L)	7.2	6.6	No

a/ Baseline Data from Fountain Creek WQA 2014

Free = as free cyanide

Dis = Dissolved

Table 14 Non-Impact Level (NIL) Determinations For Ammonia

Total Ammonia	2000 NIL (mg/L)	Effluent Limitation (mg/L)	Increased Impact
Jan	10	6.9	no
Feb	10	6.2	no
Mar	10	4.7	no
Apr	10	3.7	no
May	10	3.1	no
Jun	8	2.4	no
Jul	8	2.3	no
Aug	8	2.3	no
Sep	8	2.8	no
Oct	8	3.5	no
Nov	10	4.7	no
Dec	10	6.2	no

7.2.3 Antidegradation Based Average Concentrations (ADBAC)

Colorado’s WQS require a significance test for each new or increased impact identified in section 7.2.2. The Antidegradation Based Average Concentration (ADBAC) is a water quality parameter that the WQS use to establish the threshold for significant degradation of a receiving water. The Fountain Creek baseline water quality and resulting ADBAC are summarized in Table 15.

Table 15. The ADBAC is the highest allowed average effluent concentration that causes insignificant degradation of downstream water quality. If the WQBEL is below the ADBAC then no degradation is expected and the WQBEL meets the requirements of the WQS. The method used to calculate the ADBAC is described in depth in section VII of the WQA.

Table 15 Baseline Water Quality Conditions and Antidegradation Based Average Concentrations for Fountain Creek (ADBAC) a/

Parameter	# of samples	50th percentile	85th percentile	Chronic Stream Standard	Acute Stream Standard d/	ADBAC b/
pH (su)	100	8.2	8.5	-n/a	6.5-9.0	N/A

Parameter	# of samples	50th percentile	85th percentile	Chronic Stream Standard	Acute Stream Standard <u>d/</u>	ADBAC <u>b/</u>
Nonylphenol ($\mu\text{g/L}$) <u>c/</u>	0	0	0	6.6	-	N/A
Cd, Dis ($\mu\text{g/L}$)	30	0	0.058	1.62	-	2.81
Cr+6, ($\mu\text{g/L}$)	50	0	0	11	-	N/A
Cyanide, ($\mu\text{g/L}$)	24	0	0	-	5	8.7
Se, Dis ($\mu\text{g/L}$)	99	2.8	4	4.6	-	5.05
Zn, Dis ($\mu\text{g/L}$)	60	11	21	324	-	555

a/ For most pollutants, existing quality is determined to be the 85th percentile. For metals in the total or total recoverable form, existing quality is the 50th percentile.

b/ Calculated using method described in section VII of the WQA, and assuming 43 mgd Fountain Creek Critical low flow rate 30-day average (USGS station #07105800) and 4 mgd facility design flow.

c/ Nonylphenol has no data for baseline water quality data available. Baseline water quality assumed to be 0.0 mg/L.

d/ The significance determination will be based on the chronic numeric standard and flow for the pollutant of concern except for those pollutants which have only acute numeric standards in which case the acute standard and flow will be used. Cyanide only has an acute standard. Colorado Reg. 31.8(3)(c)

7.3 Other Pollutants and Effluent Limitations

7.3.1 Flow

An effluent limitation was developed for flow based on the Facility's design capacity. This limit is needed because the calculations used in developing WQBELs and ADBACs are dependent on the flow contribution from the discharge, which means the WQBELs are dependent on the Facility discharging fewer than 4.0 mgd.

7.3.2 Nitrate and Nitrite

Nitrate and nitrite are common pollutants in treated domestic wastewater. The nitrate WQS for Fountain Creek and Clover Ditch are 10 mg/L as nitrogen and 100 mg/L as nitrogen, respectively. Both water bodies have a nitrite WQS of 0.5 mg/L. The data reported to EPA in the application were for the combined total of nitrite and nitrate. The previous permit did not require individual nitrate or nitrite monitoring.

The data required in order to conduct a RP analysis for nitrate and nitrite is not available. From the Facility's application, 313 monitoring events had an average of 12.66 mg/L nitrogen of nitrate plus nitrite and a reported maximum of 35.01 mg/L. This data is well below the nitrate WQS of 100 mg/L in Clover Ditch, but it might exceed the 10 mg/L WQS of Fountain Creek depending on how dilution is calculated. The exact amount of nitrate and nitrite in the discharge can not be determined from the data reported. Due to the lack of data, an RP analysis can not be conducted

and WQBELs could not be developed. Nitrate and nitrite monitoring and reporting are required in the Permit in order to conduct a RP and antidegradation analysis during the next permit renewal.

7.3.3 Total Kjeldhal Nitrogen (TKN)

TKN monitoring was required in the previous permit. There is no water quality standard for TKN and there is not a standard in development. TKN monitoring has been removed from the permit.

7.3.4 Phosphorus

According to the WQS (Colorado Code of Regulations 31.17) there is not a phosphorus numeric standard for Clover Ditch or Fountain Creek. The WQS state that numeric standards will be adopted by the Commission where necessary to protect the assigned use classifications and comply with the Colorado Water Quality Control Act and the federal CWA. At the time of drafting this permit the Commission has not adopted a standard for Fountain Creek or Clover Ditch. Therefore, no limit will be applied.

7.3.5 Temperature

Clover Ditch and Fountain Creek both have the same WQS for temperature on a seasonal basis. The previous permit did not require effluent monitoring for temperature. The Facility will be required to monitor the effluent for temperature. The temperature measurement will be required to be continuous since the water quality standard is based on the daily maximum, and the continuous measurement will ensure the maximum is collected.

USGS station # 7105820 records the temperature and flow in Clover Ditch immediately downstream from Outfall 001. The daily maximum was reviewed for data from 8/6/2018 through 8/26/2025 and is summarized in Table 16. There are multiple months where Clover Ditch was reported to exceed the WQS. The exceedances during the summer months may be attributed to the ambient temperature influencing the water temperature in Clover Ditch and it is unclear if they are caused or contributed to by the Facility. The winter exceedances could be influenced by the Facility’s discharge. The Facility is required to monitor the effluent temperature to determine if the Facility’s impact on Clover Ditch requires a temperature effluent limitation.

Table 16 – Summary of Temperature Data from USGS Station # 7105820

Month	Daily Maximum Temperature °C	Daily Max WQS °C	Maximum Weekly Average Temp °C	MWAT WQS °C	WQS Exceedance?
January	12.6	25.2	11.6	13.8	N
February	14.7	25.2	13.8	13.8	N
March	20.8	28.6	17.8	27.5	N
April	23.8	28.6	21.3	27.5	N
May	25.8	28.6	24.4	27.5	N
June	29.1	28.6	27.3	27.5	Y
July	33.7	28.6	29.8	27.5	Y
August	31.5	28.6	28.4	27.5	Y

September	28.5	28.6	26.6	27.5	N
October	25.1	28.6	21.7	27.5	N
November	17.9	25.2	17.0	13.8	Y
December	14.9	25.2	13.1	13.8	N

7.4 Whole Effluent Toxicity (WET)

Many toxic pollutants have cumulative effects on aquatic organisms that cannot be detected by individual chemical testing. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. Because these tests measure the aggregate toxicity of the whole effluent, this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

The Facility, operating at half capacity, has an average discharge of approximately 2 mgd, classifying it as a major facility. Major facilities are required to submit WET testing with their permit application (see 40 CFR 122.21(j)(5)(ii)(A)). The WET testing data submitted with the application and from the previous permit term did not show toxicity of the effluent.

The EPA has determined since the Facility is a major facility with contributions from the Fort Carson IWS and the presence of pollutants with potential toxic effects (e.g., ammonia and hexavalent chromium), there is reasonable potential to discharge toxics in toxic amounts and violate the State's narrative water quality criterion, Regulation 31.11(1). The receiving stream (Clover Ditch) is expected to be effluent dominated during critical flow indicating the receiving stream will be under a direct acute impact from the Facility. Acute WET testing is required in the Permit. WET testing shall be performed on bi-annual basis by the Permittee for two species: *Ceriodaphnia dubia* and *Pimephales promelas*. The Bi-annual frequency is based on the Facility's history of no reported toxicity in the effluent. The Facility is required to use both species because the EPA has determined each species is sensitive to different types of toxicity, therefore both species should be tested to ensure no toxicity is present at the time of testing.

If WET testing confirms reasonable potential to cause or contribute to an exceedance of the State's narrative standards, the Permit may be reopened to include a WET limitation. Specific WET requirements are outlined in the Special Conditions section of the Permit (See section 5.1 of the Permit).

8 Comparison of Effluent Limitations

Applicable TBELs, WQBELs, and the ADBAC were compared, and the most stringent limitation was selected for the following parameters (Table 17). Table 18 contains the final effluent limitations for ammonia.

Table 17. Comparison of TBEL, WQBEL, and ADBAC values for Outfall 001

Parameter	WQBEL chronic	ADBAC	WQBEL Acute	TBEL 7-day Average	TBEL 30-day Average	Chronic Effluent Limitation Basis	Acute Effluent Limitation Basis
Flow (mgd)	4	N/A	N/A	N/A	N/A	WQBEL	N/A
TSS (mg/L)	N/A	N/A	N/A	45	30	TBEL	TBEL
TSS % removal (mg/L)	N/A	N/A	N/A	45	85	TBEL	N/A
Minimum Dissolved Oxygen (mg/L)	N/A	N/A	5	N/A	N/A	N/A	WQBEL
Nonylphenol ($\mu\text{g/L}$)	6.6	N/A	28	N/A	N/A	WQBEL	WQBEL
<i>E. coli</i> (#/100 mL)	126	N/A	N/A	N/A	N/A	WQBEL	WQBEL
Cadmium (Cd) Dissolved ($\mu\text{g/L}$)	1.6	2.81	7.5	N/A	N/A	WQBEL	WQBEL
Hexavalent Chromium (Cr^{6+}) ($\mu\text{g/L}$)	11	N/A	16	N/A	N/A	WQBEL	WQBEL
Cyanide (CN) (WAD), ($\mu\text{g/L}$)	N/A	8.7	5	N/A	N/A	N/A	WQBEL
Selenium (Se), Dissolved ($\mu\text{g/L}$)	4.6	5.05	18.4	N/A	N/A	WQBEL	WQBEL
Zinc (Zn) Dissolved ($\mu\text{g/L}$)	324	555	445	N/A	N/A	WQBEL	WQBEL
pH (Standard Units)	N/A	N/A	6.5-9.0	6.0-9.0	6.0-9.0	WQBEL	WQBEL

a/ See section 1 of the Permit for definition of terms.

b/ WQBEL = Limitation based on water quality-based effluent limit; TBEL = Limitation based on technology based effluent limit

8.1 Physical and Biological Pollutants

The physical and biological pollutants are BOD₅, TSS, *E. coli*, and pH. BOD₅ and TSS effluent limitations are based on the national secondary standards. The TSS and BOD₅ load limits were included in the previous permit and are based on the requirements of Colorado regulation No. 62 Colorado Department of Public Health and Environment, Water Quality Control Commission's Regulations for Effluent Limitations. The *E. coli* effluent limitation is based on the WQS for recreation use. The pH limitation is based on the aquatic life WQS because the 6.5-9.0 range is the most protective standard.

8.2 Organic/Inorganic Pollutants of Concern

Oil and grease effluent limitation will carry forward from the previous permit and is based on the Region 8 oil and grease policy; see also Section 6.1. Phosphorus and Nitrogen effluent limitations are based on Colorado Regulation 85, a TBEL for wastewater treatment plants. Nitrate, Nitrite, Nonylphenol and cyanide are based on the WQBEL because there isn't TBEL requirements.

8.3 Metals

The effluent limitations for metals are based on the WQBELs developed from Colorado's WQS. According to Colorado regulation 31.22 (B)(2); For discharge permits, effluent monitoring to determine compliance with metals limitations based on dissolved metals standards shall use the potentially dissolved method. As a result of this requirements metals with a corresponding dissolved metal standard are required to be monitored for potentially dissolved constituents. This affects Cadmium, Hexavalent Chromium, Copper, Cyanide, Selenium, Silver, and Zinc.

9 Final Effluent Limitations

Table 18. Final Effluent Limitations for Outfall 001

Parameter	Maximum 30-Day Average	Daily Maximum	Maximum 7-day Average
Flow (mgd)	4.0	Report only	Report only
BOD ₅ (mg/L)	30	N/A	45
BOD ₅ (kg/day)	454	N/A	681
BOD ₅ % removal <u>a/</u>	≥ 85%	N/A	N/A
TSS (mg/L)	30	N/A	45
TSS (kg/day)	454	N/A	681
TSS % removal <u>a/</u>	≥85%	N/A	N/A
Minimum Dissolved Oxygen (mg/L) <u>c/</u>	N/A	5.0	N/A
Nonylphenol (µg/L)	6.6	28	N/A
<i>E. coli</i> (#/100 mL)	126	N/A	N/A
Cd, potentially dissolved (µg/L)	1.6	7.5	N/A
Cr ⁶⁺ , potentially dissolved (µg/L)	11	16	N/A
CN (WAD), (µg/L)	N/A	5	N/A
Se, potentially dissolved (µg/L)	4.6	18.4	N/A
Zn, potentially dissolved (µg/L)	324	445.0	N/A
pH (Standard Units) <u>e/</u>	N/A	6.5-9.0	N/A
Oil and grease (mg/L) <u>f/</u>	N/A	10	N/A

- a/ Percentage Removal Requirements (TSS and BOD₅ Limitation): In addition to the concentration limits for total suspended solids and BOD₅ indicated above, the arithmetic mean of the concentration for effluent samples collected in a 30-day consecutive period shall not exceed 15 percent of the arithmetic mean of the concentration for influent samples collected at approximately the same times during the same period (85 percent removal).
- c/ Dissolved oxygen shall not drop below 5 mg/L
- e/ The pH shall not be below 6.5 or above 9.0 standard units
- f/ There shall not be a visible sheen on the discharge.
- g/ See section 1 of the Permit for definition of terms.

Table 19 – Final Ammonia Effluent Limitations (mg/L) for Outfall 001

Month	30-Day Average	Daily Maximum
January	6.9	23.3
February	6.2	24.7
March	4.7	23.1
April	3.7	20.9
May	3.1	21.9
June	2.4	19.9
July	2.3	18.9
August	2.3	20.3
September	2.8	21.6
October	3.5	19.5
November	4.7	21.4
December	6.2	24.9

9.1 Anti-Backsliding

Federal regulations at 40 CFR Part 122.44(l)(1) require that when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit were based have materially and substantially changed since the time the Permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR Part 122.62.

E. coli - The effluent limit for *E. coli* is less stringent in the Permit than in the previous permit. 40 CFR § 122.44(l)(1) allows a permit to be renewed, reissued, or modified that contains a less stringent effluent limitation for a pollutant if the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. The previous permit had 30-day average 126 #/100 mL and 7-day average 252 #/100 mL. The WQS have been updated since the effective date of the previous permit to only include a chronic WQS. The removal of the 7-day average limit is less restrictive effluent limitation and is in conformance with a change in WQS, and therefore compliant with anti-backsliding regulations.

Copper - There is no effluent limit for copper in the Permit, and the previous permit included a 30-day average and daily maximum copper limit. 40 CFR § 122.44(l)(2)(i)(B)(1) allows a permit to be renewed, reissued, or modified that contains a less stringent effluent limitation for a pollutant if “[i]nformation is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.” The previous permit calculated the maximum expected pollutant concentration for copper in the effluent as 63 µg/L. This calculation was conducted using a very limited data set which resulted in an extremely high reasonable potential multiplier (8). The 130 + measurements collected during the previous permit term had a much lower coefficient of variation and reasonable potential multiplier which did not show reasonable potential to exceed the WQS. The removal of the effluent limitation is in conformance with a change in water quality standards, and therefore compliant with anti-backsliding regulations. Copper is identified as a pollutant of concern at wastewater treatment plants so routine monitoring will continue to verify RP does not exist for copper.

The scope of the oil and grease effluent limitation for visual observation has been reduced to only include a sheen observed on the discharge. A sheen on the “receiving water or shore line” has been removed from the Permit’s effluent limitations in conformance with the March 2025 *City and County of San Francisco v. EPA* U.S. Supreme Court decision.

All remaining effluent limitations, standards, and conditions in the Permit are either equal to or more stringent than those in the previous permit.

10 MONITORING REQUIREMENTS

10.1 Self-Monitoring Requirements

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, as required in 40 CFR § 122.41(j), unless another method is required under 40 CFR subchapters N or O. Monitoring requirements for Outfall 001 are detailed in Table 20.

Table 20. Monitoring requirements for Outfall 001

Effluent Characteristic	Monitoring Frequency	Sample Type <u>a/</u>	Data Value Reported on DMR <u>b/</u>
Flow, mgd <u>c/</u>	2/week	Grab	Daily Max. 30-Day Avg. 30-Day Avg. % removal
BOD ₅ , mg/L <u>d/</u>	2/Week	Composite	7-Day Avg. 30-Day Avg. 30-Day Avg. % removal

Effluent Characteristic	Monitoring Frequency	Sample Type a/	Data Value Reported on DMR b/
TSS, mg/L _{d/}	2/Week	Composite	7-Day Avg. 30-Day Avg.
<i>Escherichia coli</i> (<i>E. coli</i>), number/100 mL	2/Week	Grab	Daily Max. 30-Day Avg.
Oil & Grease, visual	Daily	Visual	Narrative
O&G, mg/L	Immediately if visual sheen observed in discharge	Grab	Daily Max.
Dissolved Oxygen, mg/L	Daily	Grab	Daily Min.
Total Ammonia Nitrogen (as N), mg/L	2/Week	Grab	Daily Max. 30-Day Avg.
Nitrate (as N), mg/L	Monthly	Grab	Daily Max. 30-Day Avg.
Nitrite (as N), mg/L	Monthly	Grab	Daily Max. 30-Day Avg.
Temperature, °C	Daily	Grab	Daily Max. 30-Day Avg.
Arsenic, (µg/L)	Annually	Composite	Daily Max.
Cadmium, potentially dissolved (µg/L)	Monthly	Composite	Daily Max
Hexavalent Chromium, potentially dissolved (µg/L)	Monthly	Grab	Daily Max
Copper, potentially dissolved (µg/L)	Quarterly	Composite	Daily Max
Cyanide, (WAD) (µg/L)	Quarterly	Composite	Daily Max
Mercury, Total (µg/L)	Quarterly	Composite	Daily Max
Nonylphenol, total (µg/L)	Monthly	Composite	Daily Max
Selenium, potentially dissolved (µg/L)	Monthly	Composite	Daily Max
Silver, potentially dissolved (µg/L)	Monthly	Composite	Daily Max
Zinc, potentially dissolved (µg/L)	Monthly	Composite	Daily Max
pH, standard units	2/Week	Grab	Minimum Maximum
PFAS, ng/L	Quarterly	Composite	Daily Max
WET at 25° C, Acute	Quarterly	Grab	Narrative

a/ See section 1 of the Permit for definition of terms.

b/ Refer to the Permit for requirements regarding how to report data on the DMR.

c/ Flow measurements of effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained.

Table 21 – Influent monitoring requirements - Outfall 001-I

Influent Characteristic	Monitoring Frequency	Sample Type <u>a/</u>	Data Value Reported on DMR <u>b/</u>
Influent BOD ₅ , mg/L <u>a/</u>	2/Week	Composite	30 Day Avg, 30-Day Avg. % removal
Influent TSS, mg/L <u>a/</u>	2/Week	Composite	30 Day Avg, 30-Day Avg. % removal

a/ Samples shall be collected for these characteristics and calculation on the same day as BOD₅ at final discharge location (Outfall 001).

10.1.1 Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a group of widely used synthetic chemicals that are also known as "forever chemicals" because they don't break down easily. Exposure to PFAS may be harmful to human health. EPA's PFAS Strategic Roadmap directs the Office of Water to leverage NPDES permits to reduce PFAS discharges to waterways "at the source and obtain more comprehensive information through monitoring on the sources of PFAS and quantity of PFAS discharged by these sources."

PFAS monitoring is being required in the Permit based on the December 5, 2022 EPA memorandum, "Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs." This is consistent with the agency's commitments in the October 2021 "PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024 (PFAS Strategic Roadmap)" to restrict the discharge of PFAS at their sources. In addition to reducing PFAS discharges, this program will enable EPA and the states to obtain comprehensive information on the sources and quantities of PFAS discharges, which can be used to inform appropriate next steps to limit the discharges of PFAS.

Based on recommendations in the December 5, 2022 EPA memorandum, "Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs," in the absence of a final 40 CFR Part 136 method, the Permit requires that EPA Draft Method 1633 (in accordance with 40 CFR § 122.21(e)(3)(ii) and 40 CFR § 122.44(i)(1)(iv)(B)) shall be used. Monitoring will include each of the 40 PFAS parameters detectable by Method 1633 and the monitoring frequency will be at least quarterly to ensure that there are adequate data to assess the presence and concentration of PFAS in discharges. Method 1633 may become approved under 40 CFR Part 136 during the life of the Permit. All PFAS monitoring data, including individual PFAS pollutants, must be reported on DMRs, in accordance with 122.41(l)(4)(i). The draft absorbable organic fluorine method 1633 can be used in conjunction with 1633 for compliance purposes.

If the results of the initial eight (8) quarterly PFAS monitoring samples using method 1633 show there are non-detectable levels of PFAS, the Permittee may submit a request to EPA for a waiver from further testing.

Should PFAS positive results occur in effluent samples for any of the 40 PFAS parameters detectable by Method 1633, the Permittee must perform the steps indicated in Section 8.10 of the Permit, which include notification to EPA, additional monitoring, development and implementation of a PFAS source identification and reduction plan (PFAS Plan), and potential best management

practices (BMPs) to control or abate the discharge of PFAS when it is found to be present (see 40 CFR § 122.44(k)). The purpose of these requirements is to identify sources of PFAS and ways to keep PFAS out of the environment.

10.1.2 Physical and Biological Pollutants

The Facility discharges continuously. Effluent flow, BOD₅, TSS, *E. coli*, pH, and influent BOD₅ and TSS are to be monitored two times per week and reported monthly. Since the Facility discharges on a continuous basis, this frequency will allow for characterization of the effluent, influent and receiving water quality and detection of events of noncompliance. Because this is a mechanical plant, composite samples are required for BOD₅ and TSS to capture any variability. Grab samples are required for flow since flow is expected to be consistent and easily measured. Grab samples are required for *E. coli* and pH, because they are not amenable to compositing.

The monitoring requirements for these parameters are the same as the previous permit.

10.1.3 Organic and Nutrient Pollutants of Concern

The organic pollutants of concern are oil and grease and nonylphenol. The Facility discharges continuously. Oil and grease and nonylphenol are to be monitored daily and monthly respectively. Oil and grease monitoring consists of a visual observation can provide information on the operations of the Facility. A daily monitoring requirement is appropriate. Nonylphenol monitoring is required monitored on a monthly basis which is consistent with other toxic pollutant monitoring frequencies. Since the Facility discharges on a continuous basis, these monitoring frequencies will allow for characterization of the effluent, influent and receiving water quality and detection of events of noncompliance. Because oil and grease is not amenable to compositing, a grab sample is required for oil and grease if a sheen is observed. Because this is a mechanical plant, composite samples are required for BOD₅, TSS, and nonylphenol to capture any variability. These pollutants have the same monitoring requirements as the previous permit.

Nitrate and nitrite monitoring will have a monthly frequency. This is the first permit to require separate nitrate and nitrite monitoring. The monitoring results will be used to develop effluent limitations in future permits. Monthly measurements will provide enough data to accurately determine if effluent limitations are needed during permit renewal.

The Facility discharges continuously. Ammonia is to be monitored two times per week with a grab sample. Since the Facility discharges on a continuous basis, these monitoring frequencies will allow for characterization of the effluent, influent and receiving water quality and detection of events of noncompliance. Ammonia is not amenable to compositing. Ammonia monitoring is the same as the previous permit.

10.1.4 Metals

The Facility discharges continuously. All metal monitoring is to be monitored two times per week and reported monthly. Since the Facility discharges on a continuous basis, this frequency will allow for characterization of the effluent, influent and receiving water quality and detection of events of noncompliance. Because this is a mechanical plant, composite samples are required for most metals to capture any variability. The sample type for hexavalent chromium was changed from composite to

grab. This change was made because hexavalent chromium is unstable and quickly reacts with other compounds to become a more stable form of chromium. Monitoring frequency and sample type for the remaining metals is the same as the previous permit.

10.1.5 Temperature

Temperature will be measured on a daily basis with a grab since it is not amenable to compositing. Since the Facility discharges continuously the more frequent temperature measurements combined with the USGS monitoring station data will allow the EPA to determine if a temperature effluent limitation will be necessary at renewal of this permit.

10.2 Industrial Waste Management

The Facility is similar to a Publicly Owned Treatment Works (POTW) as defined in 40 CFR § 403.3(q). The Permit contains requirements for the Permittee to protect the POTW from pollutants which would inhibit, interfere with, or otherwise be incompatible with operation of the treatment works including interference with the use or disposal of municipal sludge. Pass through and interference are defined in 40 CFR §§ 403.3(p), (k), respectively.

The Facility is required to conduct an industrial wastewater survey (IS), as described in Section 5 of the Permit, within one year of the Permit effective date. An IS is required to ensure the Facility can treat the pollutants received and that the proper pollutants are being tracked in the Facility’s effluent.

The industrial wastewater system (IWS) is a system of vehicle and equipment wash bays that empty to the lagoons adjacent to the Facility. If the influent to the IWS exceeds the holding capacity of the IWS’s lagoons, it might be necessary for the IWS to discharge to the Facility. IWS discharge is only to be conducted when the IWS is overloaded and needs to discharge to the Facility. Monitoring is required of the IWS once per discharge. Some pollutants are omitted from the IWS monitoring requirements that are present in the final effluent monitoring requirements for Outfall 001. The Facility, with clarifiers and oxidation ditches and UV disinfection, is designed to readily treat BOD₅, TSS, and *E. coli*. Visual oil and grease monitoring has been replaced with a grab sample. This is because the IWS is expected to have oil and grease in the wastewaters it receives from vehicle washing activities. Temperature and dissolved oxygen are also not required to be monitored in the IWS discharge. The IWS has a residence time greater than a month allowing ample time for elevated water temperatures to equalize with ambient conditions. DO is not a pollutant, or condition, identified to disrupt or pass through the Facility’s operations.

Monitoring requirements for discharges from the IWS are detailed in Table 22. The monitoring is required to occur at a point before mixing with the Facility’s influent or other wastewater.

Table 22 Monitoring requirements for Industrial Wastewater System – Outfall IWS

Effluent Characteristic	Monitoring Frequency	Sample Type <u>a/</u>	Data Value Reported on DMR <u>b/</u>
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Flow, mgd <u>c/</u>	Once per Discharge	Grab	Daily Max. 30-Day Avg.
O&G, mg/L	Once per Discharge	Grab	Daily Max.
Total Ammonia Nitrogen (as N), mg/L	Once per Discharge	Grab	Daily Max. 30-Day Avg.
Nitrate (as N), mg/L	Once per Discharge	Grab	Daily Max. 30-Day Avg.
Nitrite (as N), mg/L	Once per Discharge	Grab	Daily Max. 30-Day Avg.
Total Phosphorus, mg/L	Once per Discharge	Grab	Daily Max. 30-Day Avg.
Arsenic, (µg/L)	Once per Discharge	Composite	Daily Max.
Cadmium, potentially dissolved (µg/L)	Once per Discharge	Composite	Daily Max
Hexavalent Chromium, potentially dissolved (µg/L)	Once per Discharge	Composite	Daily Max
Copper, potentially dissolved (µg/L)	Once per Discharge	Composite	Daily Max
Cyanide,(µg/L)	Once per Discharge	Composite	Daily Max
Mercury, total (µg/L)	Once per Discharge	Composite	Daily Max
Nonylphenol, total (µg/L)	Once per Discharge	Composite	Daily Max
Selenium, potentially dissolved (µg/L)	Once per Discharge	Composite	Daily Max
Silver, potentially dissolved (µg/L)	Once per Discharge	Composite	Daily Max
Zinc, dissolved (µg/L)	Once per Discharge	Composite	Daily Max
pH, standard units	Once per Discharge	Grab	Minimum Maximum
PFAS (ng/L)	Once per Discharge	Grab	Daily Max. 30-Day Avg.

a/ See section 1 of the Permit for definition of terms.

b/ Refer to the Permit for requirements regarding how to report data on the DMR.

c/ Flow measurements of effluent volume shall be made in such a manner that the Permittee can affirmatively demonstrate that representative values are being obtained.

11 REPORTING REQUIREMENTS

Reporting requirements are based on requirements in 40 CFR §§ 122.44, 122.48, and Parts 3 and 127. A discharge monitoring report (DMR) frequency of monthly was chosen, because the Facility is a major facility discharging continuously and collecting monitoring data on a daily basis.

12 COMPLIANCE RESPONSIBILITIES AND GENERAL REQUIREMENTS

12.1 Inspection Requirements

On a daily basis, unless otherwise modified in writing by EPA, the Permittee shall inspect its treatment facility. The permittee shall document the inspection, as required by the Permit. Inspections are required due to identify maintenance or operational issues before they result in non-compliance with the Permit. The inspection is required daily because the facility is a major facility with many treatment steps that require frequent adjustments.

12.2 Operation and Maintenance

40 CFR § 122.41(e) requires permittees to properly operate and maintain at all times, all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. In addition to an operation and maintenance plan, regular facility inspections, an asset management plan (AMP), and consideration of staff and funding resources are important aspects of proper operation and maintenance. Asset management planning provides a framework for setting and operating quality assurance procedures and helps to ensure the permittee has sufficient financial and technical resources to continually maintain a targeted level of service. Consideration of staff and funding provide the permittee with the necessary resources to operate and maintain a well-functioning facility.

An AMP can be used to forecast relevant needs and costs associated with long-term compliance concerns, particularly in communities that could be impacted by emerging or increased flooding risk, risk of wildfires, or drought risk. While flooding and wildfires can lead to damage to critical infrastructure, droughts could reduce flows in receiving waters resulting in more stringent permit limits in the future. Long-term construction, additional operation and maintenance, and funding plans for upgrading or relocating critical infrastructure may be necessary to mitigate these concerns. Facilities may also consider optimizing their energy efficiency, which can yield substantial economic benefits and help cut down on associated emissions.

Operation and maintenance requirements have been established in section 6.3 of the Permit to help ensure compliance with the provisions of 40 CFR § 122.41(e).

13 ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, “listed” species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical (“critical habitat”). See 16 U.S.C. § 1536(a)(2), 50 CFR Part 402. When a Federal agency’s action “may affect” a protected species, that agency is required to consult with the FWS (formal or informal) (50 CFR § 402.14(a)).

The U.S. Fish and Wildlife Information for Planning and Conservation (IPaC) website (<https://ecos.fws.gov/ipac/>) was accessed on January 12, 2026, to determine federally-listed

Endangered, Threatened, Proposed and Candidate Species for the area near the Facility. The IPaC Trust Resource Report findings are provided in Table 23. The designated area utilized was identified in the IPaC search and covers the Facility and downstream riparian corridors including the confluence with Fountain Creek for an area of approximately 750 acres.

Table 23. IPaC Federally listed Threatened and Endangered Species

Species	Scientific Name	Species Status	Designated Critical Habitat
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	Threatened	No designated critical habitat
Eastern Black Rail	<i>Laterallus jamaicensis</i>	Threatened	No designated critical habitat
Piping Plover	<i>Charadrius melodus</i>	Threatened	"There is final critical habitat for this species (published in the Federal Register on May 19, 2009). Your location is outside the critical habitat."
Monarch Butterfly	<i>Danaus plexippus</i>	Proposed Threatened	No designated critical habitat
Suckley's Cuckoo Bumble Bee	<i>Bombus suckleyi</i>	Proposed Endangered	No Designated Critical Habitat
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened	No designated critical habitat

13.1 Biological Evaluation

The justification to support the determination for the species is as follows. The Facility was previously covered under an EPA Region 8 wastewater individual permit. This permit does not authorize consumptive use of surface water resources.

There is no critical habitat listed for the Preble's Meadow Jumping Mouse, Eastern Black Rail, Monarch Butterfly, Suckley's Cuckoo Bumble Bee and Ute Ladies' Tresses. The species are terrestrial species. If these species are present, they may use these creeks for a water source for a short period of time during the year. The pollutants in the discharge are regulated to protect aquatic life and terrestrial species. It is possible the discharge may impact the species. Therefore, EPA's determination for these species is that the discharge "may affect, but is not likely to adversely affect".

Based on the IPaC information generated, the Facility location is outside of the critical habitat for the Piping Plover. According to IPaC this species only needs to be considered if the project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska. The discharge will have no effect on piping plover because the Facility is not discharging in the identified area.

Before going to public notice, a copy of the draft Permit and this Statement of Basis was sent to the FWS requesting concurrence with EPA's finding that reissuance of this NPDES Permit "may affect,

but is not likely to adversely affect" species listed as threatened or endangered in the action area under the Endangered Species Act.

14 NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

Section 106 of the National Historic Preservation Act of 1966 (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The implementing regulations of the NHPA can be found at 36 CFR Part 800. An "undertaking," as defined at 36 CFR § 800.16(y), includes projects requiring a federal permit. Therefore, the issuance of this permit constitutes an undertaking. The first step in this analysis is to consider whether the undertaking is a type of activity that has the potential to cause effects on historic properties. See 36 CFR § 800.3(a). Permit renewals where there is no new construction are generally not the type of action with the potential to cause effects on historic properties.

15 401 CERTIFICATION CONDITIONS

Colorado is the CWA Section 401 certifying authority for the Permit, and a CWA Section 401 certification will be requested prior to Permit finalization.

16 MISCELLANEOUS

The effective date of the Permit and the Permit expiration date will be determined upon issuance of the Permit. The intention is to issue the Permit for a period not to exceed 5 years.

Permit drafted by Paul Garrison, U.S. EPA, 303-312-6016 July 2025

ADDENDUM (To be completed after public notice)

AGENCY CONSULTATIONS

On [Month Day, Year], the FWS [concurred/disagreed] with EPA's preliminary conclusion that the Permit reissuance [is not likely to adversely affect listed species].

On [Month Day, Year], the [Colorado State] Historic Preservation Office [agreed with/disagreed with/did not comment on] EPA's preliminary determination that the Permit reissuance will not impact any historic properties.

On [Month Day, Year], EPA sent a sent a CWA Section 401 certification request to Colorado. Colorado [certified without Section 401 requirements/certified with the following Section 401 certification requirements/waived Section 401 certification]. Any review or appeal of these conditions must be made through [State/Tribal] procedures pursuant to 40 CFR § 124.55(e).]

- [List any 401 certification requirements.]

PUBLIC NOTICE AND RESPONSE TO COMMENTS

IF TAS: [The Permit and statement of basis were public noticed [on EPA's website and in the newspaper name] on [Month Day, Year]. The comment(s) received and the response(s) are provided below/No comments were received.

Comment:

The commenter noted that ...

Response:

The following language was added to the final Permit./No changes were made to the final Permit: