STATEMENT OF BASIS

Applicant:	United States Forest Service – Boxelder Job Corps Civilian Conservation Center
Permit Number:	SD0020834
Contact Person:	Bonnie Fuller, Center Director Casey Bifulco, Wastewater Manager PO Box 110 Nemo, SD 57759
Phone:	(605) 626-9170 (Center Director) (605) 626-9152 (Wastewater Manager)
Permit Type:	Minor Federal - Renewal

This document is intended to explain the basis for the requirements contained in the draft Surface Water Discharge Permit. This document provides guidance to aid in complying with the permit requirements. This guidance is not a substitute for reading the draft permit and understanding its requirements.

SUMMARY OF DRAFT PERMIT CHANGES

- SSO sampling requirements have been removed.
- Effluent limits for dissolved oxygen are more stringent in some months. See permit **Section 3.6**.
- Instream upstream and downstream water temperature monitoring frequency and limits have changed. See permit **Section 3.6**.
- Monitoring frequency of dissolved oxygen has increased. See permit **Section 3.6**.

DESCRIPTION

The United States Forest Service operates a wastewater treatment facility at the Boxelder Job Corps Civilian Conservation Center (Boxelder JCCCC) located in the Northwest ¼ of Section 20, Township 3 North, Range 5 East, in Lawrence County, South Dakota (Latitude 44.208984°, Longitude -103.547589°, Navigational Quality GPS). Boxelder JCCCC is an education and career technical training campus for youth ages 16-24. Boxelder JCCCC has multiple buildings for career training as well as dorms as the students live full-time at Boxelder JCCCC.

The wastewater treatment facility (WWTF) for Boxelder JCCCC is an activated sludge plant. Wastewater is conveyed to the headworks of the wastewater plant via a gravity system aided by one area lift station. During normal operation, the wastewater flows through a manually cleaned bar screen to an aerated equalization basin (12,400 gallons). Following the aerated equalization basin the wastewater is routed to an aeration basin (12,400 gallons) followed by a clarifier (5,494 gallons) and two mixed media sand filters. Effluent is routed to a clear well (2,310 gallons) prior to disinfection using an ultraviolet (UV) disinfection unit. The water is then discharged to the facility's outfall on Box Elder Creek. Typical activated sludge systems are capable of multiple process flow recycles within the system, allowing continuous recirculation and wasting of activated sludge and other process flows. Boxelder JCCCC can either recycle settled sludge from the plant's clarifier to the flow equalization basin, aeration basin, or waste sludge to the sludge storage tank (4,000 gallons). Decant from the storage tank is periodically reintroduced into the equalization basin. A septic service hauls the wasted sludge to the Lead-Deadwood Sanitary District for further treatment and disposal. Backwash water from regenerating the mixed media sand filters is also recycled back to the equalization basin.

The WWTF also uses components of the former treatment plant as auxiliary flow equalization during high flow periods. The former plant consists of an aeration basin, clarifier, two concrete chlorine contact chambers, and a polishing pond. The polishing pond cannot receive any influent as the conduit between the contact chambers and the pond has been plugged. The former treatment plant is non-operational and is only used to provide additional flow equalization. As influent flows subside, the bypassed wastewater is diverted back to the head works of the current plant (flow equalization basin) for treatment. Attachment 1 depicts a process flow diagram of the plant.

Boxelder JCCCC has an average design flow of 0.0244 million gallons per day (MGD) and a peak design flow of 0.03 MGD. The average design organic loading for the facility is 280 mg/L Five-day Biochemical Oxygen Demand (BOD_5), and 400 mg/L total suspended solids (TSS). The current facility was constructed in 1980, as an upgrade to the former activated sludge facility.

This wastewater treatment facility serves a population of 200 persons (2024 permit application), with no known industrial users contributing flow to the system.

RECEIVING WATERS

Any discharge from this facility will enter Box Elder Creek which is classified by the South Dakota Surface Water Quality Standards (SDSWQS), Administrative Rules of South Dakota (ARSD), Sections 74:51:03:01 and 74:51:03:11 for the following beneficial uses:

(2) Coldwater permanent fish life propagation waters;
(8) Limited contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

TOTAL MAXIMUM DAILY LOAD

Section 303(d) of the federal Clean Water Act requires states to develop Total Maximum Daily Loads (TMDLs) for waters at levels necessary to achieve and maintain water quality standards. TMDLs are calculations of the amount of pollution a waterbody can receive and still maintain applicable water quality standards. According to the federal Clean Water Act, the state must develop TMDLs for all waters identified on their Section 303(d) list of impaired waters, according to their priority ranking on that list. Every two years, the state assesses its water quality and publishes the list of impaired water bodies as part of its Integrated Report.

TMDLs address specific waterbodies, segments of waterbodies, or even entire watersheds, and are pollutant specific. TMDLs must allow for seasonal variations and a margin of safety, which accounts for any lack of knowledge concerning the relationship between pollutant loads and water quality. A wasteload allocation is developed for any point sources that cause or contribute to the water quality impairment.

This segment of the receiving waterbody has not been identified as being impaired; therefore, a TMDL is not needed.

ANTIDEGRADATION

SDDANR has fulfilled the antidegradation review requirements for this permit. In accordance with South Dakota's *Antidegradation Implementation Procedures* (SDDANR, October 1998) and the SDSWQS, it was determined that the discharge at the draft permit limits will cause an insignificant change in water quality. The results of SDDANR's review are included in Attachment 2 (Antidegradation Review). The antidegradation review and conclusions will be public noticed for public comment at the same time as the draft permit.

MONITORING DATA

Boxelder JCCCC has been submitting Discharge Monitoring Reports (DMRs) as required under the current permit. As shown in Attachment 3, this facility has had the following violations since December 1, 2019:

Parameter	Violation Type	Number of Violations
BOD_5	Daily Maximum	At least 2
E. coli	30-Day Geometric Mean	2
	Daily Maximum	At least 3
	Failure to Sample	1
Ammonia	Daily Maximum	At least 4
	30-Day Average	2
	Failure to Sample	1
Total Nitrogen	Failure to Sample	1
Dissolved Oxygen	Daily Minimum	At least 1
Total Phosphorus	Failure to sample	1
Total Suspended Solids	Daily Maximum	At least 1
pH	Daily Maximum	At least 10

Note: All the pH violations occurred before the modification to current standards, none of the violations are above the current effluent limits.

Public access to facility's monitoring data is available at EPA's Enforcement and Compliance History Online (ECHO) website: https://echo.epa.gov/.

INSPECTIONS

Personnel from SDDANR conducted a Compliance Inspection of Boxelder JCCCC's wastewater treatment facility on March 13, 2024. The following comments and corrective actions were required in order to come into compliance with Boxelder JCCCC's Surface Water Discharge (SWD) permit:

COMMENTS	REQUIRED CORRECTIVE ACTIONS
The permittee does not inspect the lift station as frequently as required by the permit.	According to **Section 3.4**, the permittee must inspect the lift station(s) at least on a weekly basis. During any sanitary sewer overflow, the lift stations must be inspected on a daily basis
The *E. coli* 30 day geometric mean was reported as 1330 #/100mL when it was actually 682 #/100mL for the May 2023 DMR. In addition, the daily maximum for May 1 to September 30 for your facility is 1,178 #/100mL.	The wastewater treatment system **must** meet effluent limits and the correct values must be reported on the DMR's. **The 5/2023 DMR must be corrected and resubmitted.**
The August 31, 2023 DMR shows DO was under the required minimum; the 6/30/23 DMR Ammonia above the limit; the 5/31/23 DMR has E. coli, as over the permitted limits for daily maximum and 30 day averages; the April 30, 2023 has ammonia over the limit for both daily maximum and 30 day average; the 6/30/21 DMR shows BOD 5-day as over the maximum; the 10/31/19 DMR shows ammonia being over the limit for daily maximum; the 11/30/18 DMR showed ammonia over the limit for both Daily Max and 30 day average; the 10/31/18 DMR showed ammonia over the limit for both Daily Max and 30 day average. Since the last inspection there were 13 Effluent Violation Warning Letters sent to the facility.	The wastewater treatment system **must** meet effluent limits as shown in **Section 3.5** of your permit.
The number of exceedances (No. EX) column is not being completed properly on the Discharge Monitoring Report (DMR) forms because the sample results are not being reported correctly.	If any sample result or calculated value exceeds the permit limits, it must be marked as an exceedance on the DMR. If you have questions about filling out DMRs, please contact this office for assistance.
There was a failure to sample letter sent in January 2023.	Self-Monitoring requirements are detailed in **Section 3.5** of your permit.

EFFLUENT LIMITS

Outfall 001 – Any discharge from the UV disinfection unit at the Boxelder JCCCC WWTF to Box Elder Creek (Latitude 44.209147°, Longitude -103.546989°, Navigational Quality GPS).

During any discharge, the permittee shall comply with the effluent limits specified below which are based on the Secondary Treatment Standards (ARSD Section 74:52:06:03), the SDSWQS, permit writer's judgment, and the current permit limits.

1. The Five-Day Biochemical Oxygen Demand (BOD_5) concentration shall not exceed 10 mg/L (30-day average) or 17.5 mg/L (daily maximum). These limits are based on the coldwater permanent fish life propagation waters classification of Box Elder Creek, the SDSWQS (ARSD Section 74:51:01:32), and BPJ and are being included because SDDANR has determined there is a reasonable potential for BOD_5 to be present in the discharge at levels that may violate the SDSWQS. These limits are more restrictive than the Secondary Treatment Standards and will ensure compliance with ARSD Sections 74:52:03:17 and 74:52:06:03, therefore 7-day average limits will not be required for this discharge.

2. The Total Suspended Solids (TSS) concentration shall not exceed 10 mg/L (30-day average) or 17.5 mg/L (daily maximum). These limits are based on the coldwater permanent fish life propagation waters classification of Box Elder Creek, the SDSWQS (ARSD Section 74:51:01:32), and BPJ and are being included because SDDANR has determined there is a reasonable potential for TSS to be present in the discharge at levels that may violate the SDSWQS. These limits are more restrictive than the Secondary Treatment Standards and will ensure compliance with ARSD Sections 74:52:03:17 and 74:52:06:03, therefore 7-day average limits will not be required for this discharge.

3. The arithmetic mean of the BOD_5 concentration for effluent samples collected in a calendar month 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). This limit is based on the Secondary Treatment Standards.

4. The arithmetic mean of the TSS concentration for effluent samples collected in a calendar month 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). This limit is based on the Secondary Treatment Standards.

5. The pH shall not be less than 6.5 standard units or greater than 9.0 standard units in any single analysis and/or measurement. These limits are based on coldwater permanent fish life propagation waters classification of Box Elder Creek and the Secondary Treatment Standards and are being included because SDDANR has determined there is a reasonable potential for the pH of the effluent to violate the SDSWQS. The minimum pH required under the Secondary Treatment Standards is 6.0 standard units; the minimum pH required by the beneficial uses assigned to Box Elder Creek is 6.5 standard units. Therefore, the

more stringent limit of 6.5 standard units shall be applied to this discharge to ensure compliance with both the Secondary Treatment Standards and the SDSWQS.

Note: SDDANR specifies that pH analyses are to be conducted within 15 minutes of sample collection with a pH meter. Therefore, the permittee must have the ability to conduct onsite pH analyses. The pH meter used must be capable of simultaneous calibration to two points on the pH scale that bracket the expected pH and are approximately three standard units apart. The pH meter must read to 0.01 standard units and be equipped with temperature compensation adjustment. Readings shall be reported to the nearest 0.1 standard units.

6. The *Escherichia coli* (*E. coli*) organisms shall not exceed a concentration of 630 per 100 milliliters as a geometric mean based on a minimum of five samples obtained during separate 24-hour periods for any calendar month. *This limit is only applicable if five or more samples are taken and is only effective from May 1 to September 30.*

   In addition, the *E. coli* organisms shall not exceed 1,178 per 100 milliliters in any one sample from May 1 to September 30. These limits are based on the limited-contact recreation beneficial use classification of Box Elder Creek and the SDSWQS (ARSD Section 74:51:01:51) and are being included because SDDANR has determined there is a reasonable potential for *E. coli* to be present in the discharge at levels that may violate the SDSWQS.

7. The ammonia-nitrogen (as N) concentration shall not exceed the limits specified in the table below. These limits are based on the coldwater permanent fish life propagation waters classification of Box Elder Creek, the SDSWQS (ARSD Section 74:51:01:45), the current permit limits, and permit writer's professional judgment and are being included because SDDANR has determined there is a reasonable potential for ammonia-nitrogen to be present in the discharge at levels that may violate the SDSWQS. See Attachment 4 for more detail.

Season	**Ammonia-Nitrogen (as N) Limits**	
	30-Day Average (mg/L)	**Daily Maximum (mg/L)**
January 1 – January 31	4.9	9.7
February 1 – February 29	4.7	9.4
March 1 – May 31	4.6	8.3
June 1 – July 31	2.7	5.3
August 1 – August 31	2.5	5.3
September 1 – September 30	2.7	5.3
October 1 – November 30	2.6	4.6
December 1 – December 31	5.3	9.7

8. If the effluent temperature is greater than 75.2 °F, Boxelder JCCCC shall be required to sample Box Elder Creek 50 feet upstream and 50 feet downstream of the discharge. The

discharge shall not cause the instream temperature of Boxelder Creek to change by more than 2.0 °F. This limit is based on the coldwater permanent fish life propagation waters classification of Box Elder Creek, the SDSWQS (ARSD Sections 74:51:01:31 74:51:01:45), and permit writers professional judgment.

9. The Dissolved Oxygen (DO) daily minimum concentration shall not be less than 7.0 mg/L. These limits are based on the coldwater permanent fish life propagation waters classification of Box Elder Creek and the SDSWQS (ARSD Section 74:51:01:45).These limits are included because SDDANR has determined there is reasonable potential for DO to be present in the discharge at levels that may violate the SDSWQS.

10. No chemicals, such as chlorine, shall be used without prior review from SDDANR. This limit is based on permit writer's professional judgment.

SDDANR does not believe there is a reasonable potential for other pollutants to violate the SDSWQS. The limits and monitoring in the draft permit will be sufficient to ensure the protection of the water quality near Boxelder JCCCC's discharge.

SELF MONITORING REQUIREMENTS

The draft permit requires the permittee to monitor all discharges for BOD_5 (mg/L), TSS (mg/L), pH (su), ammonia-nitrogen (as N, mg/L), effluent water temperature (°F), DO (mg/L), BOD_5 percent removal (%), TSS percent removal (%), and *E. coli* (#/100mL). These monitoring requirements are based on the limits in the draft permit for these parameters. Influent BOD_5 (mg/L), influent TSS (mg/L), total nitrogen (as N, mg/L), total phosphorus (as P, mg/L), contingent upstream and downstream instream water temperature (°F), and flow rate (MGD) shall be monitored, but will not have a limit. These monitoring requirements are based on the need to fully characterize the discharge.

Effluent monitoring results shall be summarized for each month and recorded on a DMR to be submitted via NetDMR to SDDANR on a **monthly** basis. If no discharge occurs during a month, it shall be stated as such on the DMR.

Monitoring shall consist of **at least five per week** inspections of the facility and the outfall to verify that proper operation and maintenance procedures are being practiced and whether or not there is a discharge occurring from this facility. Each lift station shall be inspected on at least a **weekly** basis, although **daily** inspections are recommended. The frequency of on-site inspections may be reduced at the Secretary's discretion with reasonable justification. During any sanitary overflow, the lift stations shall be inspected on a **daily** basis. Documentation of each of these visits shall be kept in a log in either paper or electronic format to be reviewed by SDDANR or EPA personnel when an inspection occurs.

WHOLE EFFLUENT TOXICITY

The SDDANR *Reasonable Potential Implementation Procedure for SWD Permits* was reviewed to determine if Whole Effluent Toxicity (WET) testing is applicable to Boxelder JCCCC.

Following the guidance document, Boxelder JCCCC is not believed to have reasonable potential to cause or contribute to an exceedance of the SDSWQS for toxicity.

The draft permit will not include WET monitoring or limits. SDDANR has determined that due to the facility's minor discharge status and the lack of significant industrial contributions to the wastewater treatment facility, there is no reasonable potential for WET. SDDANR has the authority to reopen the permit to add WET effluent limits, compliance schedules, monitoring, or other appropriate requirements.

PRETREATMENT

Publicly Owned Treatment Works (POTWs) with a 5 MGD or greater design flow which receive wastewater from a significant industrial user are required under 40 CFR 403.8 to develop a pretreatment program. The state may also require a POTW with a lower design flow to develop a program to prevent Pass Through or Interference with the POTW, including biosolids.

Boxelder JCCCC is not considered a POTW and therefore pretreatment regulations do not apply at this facility.

SLUDGE

The sludge produced at Boxelder JCCCC is transferred to the Lead-Deadwood Sanitary District for further treatment and land application. Boxelder JCCCC must inform the SDDANR at least 180 days prior to any significant change in the biosolids generation and handling processes at the plant and any major change in use and disposal practices. This includes but is not limited to: a change in the current sludge disposal plan, the addition or removal of biosolids treatment units (e.g. digesters, drying beds, etc.), and/or any other change that would require coverage under a Biosolids Management permit.

ENDANGERED SPECIES

This is a renewal of an existing permit. No listed endangered species are expected to be impacted by activities related to this permit. However, the table below shows the species that may be present in Boxelder JCCCC's geographic area.

COUNTY	GROUP	SPECIES
Lawrence	Mammal	Northen Long-eared Bat

This information was accessible at the following US Fish and Wildlife Service website as of February 26, 2026: https://ipac.ecosphere.fws.gov/.

PERMIT EXPIRATION

A five-year permit is recommended.

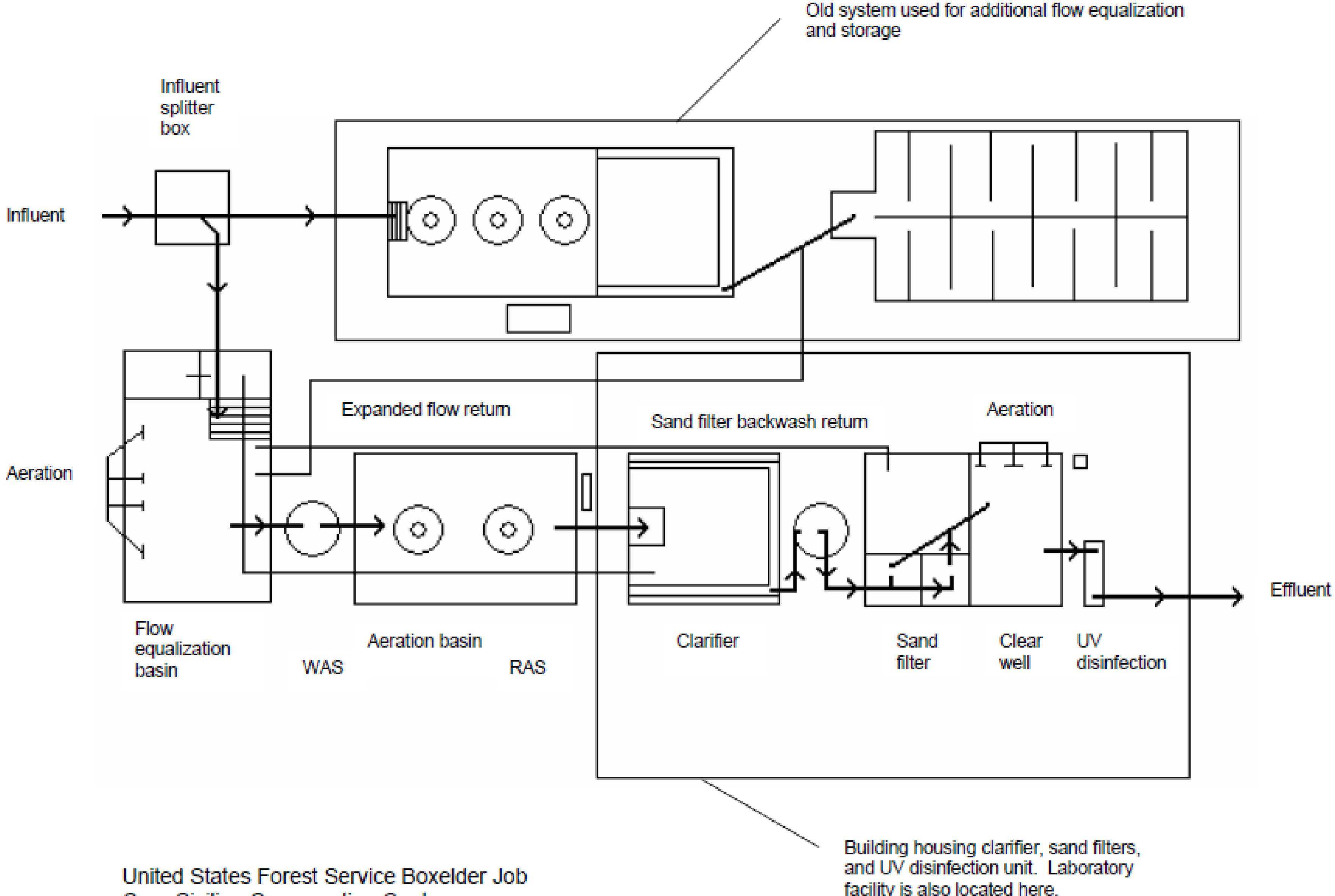
PERMIT CONTACT

This statement of basis and the draft permit were developed by Tom Anderson, Environmental Engineer for the Water Quality Program. Any questions pertaining to this statement of basis or the draft permit can be directed to the Water Quality Program, at (605) 773-3351.

February 26, 2026

ATTACHMENT 1

Process Flow Diagram



United States Forest Service Boxelder Job Corp Civilian Conservation Center Wastewater Treatment Facility

ATTACHMENT 2

Antidegradation Review

Permit Type: **Minor Municipal - Renewal** Applicant: **USFS-Boxelder JCCCC**
Date Received: **2/5/2024** Permit #: **SD0020834**
County: **Lawrence** Legal Description: **NW ¼, S20, T3N, R5E**
Receiving Stream: **Box Elder Creek** Classification: **2, 8, 9, 10**
If the discharge affects a downstream waterbody with a higher use classification, list its name and uses: **N/A**

APPLICABILITY

1. Is the permit or the stream segment exempt from the antidegradation review process under ARSD 74:51:01? Yes ☐ No ☒ If no, go to question #2. If yes, check those reasons why the review is not required:

- ☐ Existing facility covered under a surface water discharge permit is operating at or below design flows and pollutant loadings;
- ☐ Existing effluent quality from a surface water discharge permitted facility is in compliance with all discharge permit limits;
- ☐ Existing surface water discharge permittee was discharging to the current stream segment prior to March 27, 1973, and the quality and quantity of the discharge has not degraded the water quality of that segment as it existed on March 27, 1973;
- ☐ The existing surface water discharge permittee, with DANR approval, has upgraded or built new wastewater treatment facilities between March 27, 1973, and July 1, 1988;
- ☐ The existing surface water discharge permittee discharges to a receiving water assigned only the beneficial uses of (9) and (10); the discharge is not expected to contain toxic pollutants in concentrations that may cause an impact to the receiving stream; and DANR has documented that the stream cannot attain a higher use classification. This exemption does not apply to discharges that may cause impacts to downstream segments that are of higher quality;
- ☐ Receiving water meets Tier 1 waters criteria. Any permitted discharge must meet water quality standards;
- ☐ The permitted discharge will be authorized by a Section 404 Corps of Engineers Permit, will undergo a similar review process in the issuance of that permit, and will be issued a 401 certification by the department, indicating compliance with the state's antidegradation provisions; or
- ☐ Other: ______________________________

FORMAL REVIEW

2. Is the stream segment classified as an OSRW? Yes ☐ No ☒ If no, go to question #3. **If yes, no change in water quality allowed. No further review required.**

3. Will there be an insignificant change in water quality? Yes ☒ No ☐ If no, go to question #4. **If yes, no further review required. List reason why discharge is insignificant**

   ☐ Only temporary change in water quality will result from the discharge;
   ☐ Resulting change in water quality from the discharge will only affect a water quality parameter that is only regulated by a narrative standard and the discharge will not adversely impact the stream's beneficial uses;
   ☐ Volume of the proposed discharge is small compared to the flow in the stream. The ratio of the average stream flow to discharge flow is greater than 50:1;
   ☐ The increase in pollutant loading at critical low flow is expected to be less than 20% of the stream's assimilative capacity;
   ☐ The resulting change in water quality from the discharge is less than one standard deviation of the mean concentration of the ambient water quality; or
   ☒ Other: **This permit does not authorize an increase in effluent limits.**

4. Are existing, regulated point or nonpoint sources located in the area in compliance with required controls or has a compliance schedule been established for these sources? Yes ☐ No ☐ If no, establish an appropriate compliance schedule prior to approving, as proposed, the activity under review.

5. Based on available information, are there existing uses that are better than the currently designated uses? Yes ☐ No ☐ If yes, use protection of the higher existing use(s) as the basis for antidegradation decision-making and arrange to upgrade the currently designated use(s).

6. Will existing uses be fully maintained and protected? Yes ☐ No ☐ If no, recommend denial of the activity as proposed.

PERMIT APPLICATION

7. Has the applicant submitted all information listed in the antidegradation implementation Procedure? Yes ☐ No ☐ If no, why not? ______________________

PUBLIC NOTICE AND OPPORTUNITY FOR HEARING

8. Has the application been properly public noticed? Yes ☐ No ☐ Date notice occurred In paper: ________________ Paper notice appeared in: ________________________

9. Has anyone petitioned the department for a public hearing on the application? Yes ☐ No ☐
If no, no further review required. Proceed with writing permit based on outcome of antidegradation review. If yes, schedule time before the Water Management Board for public hearing on application.
Date and time of hearing: ____
Location of hearing: ____

10. Did the Board of Water Management approve the application? Yes ☐ No ☐ Attach a copy of the board minutes to this worksheet.

ANTIDEGRADATION REVIEW SUMMARY

11. The outcome of the review is:
- ☐ A formal antidegradation review was not required for reasons stated in this worksheet. Any permitted discharge must ensure water quality standards will not be violated.
- ☐ The review has determined that degradation of water quality should not be allowed. Any permitted discharge would have to meet effluent limits or conditions that would not result in any degradation estimated through appropriate modeling techniques based on ambient water quality in the receiving stream, or pursue an alternative to discharging to the waterbody.
- ☒ The review has determined that the discharge will cause an insignificant change in water quality in the receiving stream. The appropriate agency may proceed with permit issuance with the appropriate conditions to ensure water quality standards are met.
- ☐ The review has determined, with public input, that the permitted discharge is allowed to discharge effluent at concentrations determined through a total maximum daily load (TMDL). The TMDL will determine the appropriate effluent limits based on the upstream ambient water quality and the water quality standard(s) of the receiving stream.
- ☐ The review has determined that the discharge is allowed. However, the full assimilative capacity of the receiving stream cannot be used in developing the permit effluent limits or conditions. In this case, a TMDL must be completed based on the upstream ambient water quality and the assimilative capacity allowed by the antidegradation review.
- ☐ Other: ____
____
____
____

12. Describe any other requirements to implement antidegradation or any special conditions That are required as a result of this antidegradation review: ____________________________

Tom Anderson
Permit Writer

2/26/2026
Date

Kyle Doerr
Reviewer

3/18/2026
Date

ATTACHMENT 3

Monitoring Data

MONITORING DATA
SD0020834, USFS – Box Elder JCCCC

The monitoring data was obtained from the facility's DMRs and retrieved through the ICIS database, accessed February 25, 2026. The period of the data is from December 1, 2019 through December 31, 2025. Public access to the facility's monitoring data is available at EPA's Enforcement and Compliance History Online (ECHO) website: https://echo.epa.gov/

NR is Not Required. No sample was required for this parameter during the monitoring period.
NS is No Sample. No sample is available for these parameters.
WR is Weather Related. No sample was taken. Environmental Conditions – Monitoring not Possible
The highlighted value was reported incorrectly.
Violations are bolded, shaded, and larger font.

	BOD_5		*E. coli*		Flow Rate	
	30-Day Average	Daily Maximum	30-Day Geometric Mean	Daily Maximum	30-Day Average	Daily Maximum
	10 mg/L	17.5 mg/L	630 #/100mL	1178 #/100mL	MGD	MGD
Dec 2019	3	3	NR	NR	.002	.005
Jan 2020	3.02	3.1	NR	NR	.007	.014
Feb 2020	3	3	NR	NR	.008	.012
Mar 2020	3	3.2	NR	NR	.007	.01
Apr 2020	3	3	NR	NR	.004	.009
May 2020	3.2	3.9	.8	12.2	.003	.005
Jun 2020	4.2	7.9	3.8	18.9	.004	.006
Jul 2020	3	3	< .05	< .05	.004	.006
Aug 2020	3	3	1	1	.002	.007
Sep 2020	3.2	3.7	27.8	37.3	.003	.004
Oct 2020	3	3	NR	NR	.004	.006
Nov 2020	3	3	NR	NR	.005	.008
Dec 2020	3	3	NR	NR	.006	.009
Jan 2021	3.5	4.3	NR	NR	.006	.009
Feb 2021	3	3	NR	NR	.008	.012
Mar 2021	3	3	NR	NR	.006	.012
Apr 2021	3	3	NR	NR	.006	.009
May 2021	3	3	< 1	< 1	.005	.008
Jun 2021	8	**28**	1	1	.005	.008
Jul 2021	3	3	11	1	.006	.01
Aug 2021	3.3	4.1	1	1	.005	.01
Sep 2021	3	3	< 1	< 1	.005	.008
Oct 2021	3	3	NR	NR	.007	.012

	BOD$_5$		*E. coli*		Flow Rate	
	30-Day Average	**Daily Maximum**	**30-Day Geometric Mean**	**Daily Maximum**	**30-Day Average**	**Daily Maximum**
	10 mg/L	**17.5 mg/L**	**630 #/100mL**	**1178 #/100mL**	**MGD**	**MGD**
Nov 2021	3	3	NR	NR	.006	.017
Dec 2021	3	3	NR	NR	.005	.013
Jan 2022	3	3	NR	NR	.006	.01
Feb 2022	3	3	NR	NR	.005	.011
Mar 2022	3	3	NR	NR	.004	.14
Apr 2022	3	4	NR	NR	.004	.007
May 2022	3	3	62.3	219	.18	.016
Jun 2022	3	3	139.6	613	.005	.016
Jul 2022	< 3	< 3	32.1	140	.005	.016
Aug 2022	3.4	4.7	294.5	687	.004977	.011295
Sep 2022	< 3	< 3	3.95	7.5	.0038	.011424
Oct 2022	< 3	< 3	NR	NR	.005278	.009237
Nov 2022	< 3	< 3	NR	NR	.003648	.005868
Dec 2022	< 3	< 3	NR	NR	.155157	.01887
Jan 2023	< 3	< 3	NR	NR	.004509	.007638
Feb 2023	< 3	< 3	NR	NR	.006552	.014993
Mar 2023	< 3	< 3	NR	NR	.005107	.009933
Apr 2023	3.28	3.7	NR	NR	.176387	.011136
May 2023	5.4	8.3	**682**	**2420**	.00747	.0126
Jun 2023	4.1	5.3	314	770	.00743	.0138
Jul 2023	< 3	< 3	48	95.9	.00763	.0152
Aug 2023	< 3	< 3	223	517	.00459	9230
Sep 2023	< 3	< 3	< 264	< 579	.00675	.0093
Oct 2023	<= 6.4	11	NR	NR	.00612	.0157
Nov 2023	3.3	3.9	NR	NR	.00423	.00828
Dec 2023	< 3	< 3	NR	NR	.003573	.00754
Jan 2024	< 4.82	10	NR	NR	.00762	.02106
Feb 2024	< 3	< 3	NR	NR	.00572	.0103
Mar 2024	< 3	< 3	NR	NR	.00502	.011845
Apr 2024	< 3	3.1	NR	NR	.00747	.0171
May 2024	3.2	3.9	365	517	.00922	.0168
Jun 2024	< 3	< 3	38.2	687	.00719	.0105
Jul 2024	< 3.08	3.2	208	**2420**	.00812	.0123
Aug 2024	4.3	8.5	**719**	**< 2420**	.00788	.0126
Sep 2024	< 3	< 3	6.24	48.7	.0082	.0118
Oct 2024	< 3.06	3.3	NR	NR	.00748	.0119
Nov 2024	3.7	5.7	NR	NR	.00627	.011632

	BOD5		*E. coli*		Flow Rate	
	30-Day Average	Daily Maximum	30-Day Geometric Mean	Daily Maximum	30-Day Average	Daily Maximum
	10 mg/L	17.5 mg/L	630 #/100mL	1178 #/100mL	MGD	MGD
Dec 2024	< 3.8	6.1	NR	NR	.00576	.0149
Jan 2025	5.12	10	NR	NR	.00723	.113
Feb 2025	< 3	< 3	NR	NR	.00643	.0126
Mar 2025	< 3	< 3	NR	NR	.00541	.00877
Apr 2025	4.6	9.3	NR	NR	.005687	.009108
May 2025	< 3	< 3	1.95	14.6	.006093	.010583
Jun 2025	< 3	< 3	2.93	8.5	.005	.011699
Jul 2025	4.2	6.8	4.06	32.7	.00985	.0113
Aug 2025	< 3	< 3	3.25	48.2	.00612	.19
Sep 2025	3.55	5.2	**NS**	**NS**	.004175	.008543
Oct 2025	9.48	**27**	NR	NR	.004642	.010052
Nov 2025	3.8	5.5	NR	NR	.004166	.012884
Dec 2025	3.8	5.1	NR	NR	.003553	.010144

	Ammonia-Nitrogen (as N)		Total Nitrogen	DO	pH	
	30-Day Average	Daily Maximum	Daily Maximum	Daily Minimum	Daily Minimum	Daily Maximum
	Varies, mg/L	Varies, mg/L	mg/L	Varies, mg/L	Varies, s.u.	Varies, s.u.
Dec 2019	.051	.054	27.9	9	7.81	8.14
Jan 2020	.192	.758	25.4	10.3	7.07	8.3
Feb 2020	.05	.05	23.5	11.7	7.8	8
Mar 2020	.051	.055	30.3	9.8	7.7	7.9
Apr 2020	.05	.05	23.3	8.1	8.1	8.3
May 2020	.051	.055	21	8.6	8.1	8.3
Jun 2020	.05	.05	21.2	8	8.1	**8.8**
Jul 2020	.05	.05	7.11	7.2	8.6	**8.7**
Aug 2020	.21	.691	8.56	6.9	8.5	**8.8**
Sep 2020	.05	.05	10.8	7.6	8.7	**8.91**
Oct 2020	.066	.115	9.96	8.6	8.2	**8.8**
Nov 2020	.05	.05	9.24	9.4	8.6	**8.8**
Dec 2020	.053	.064	10.9	10.2	8.18	**8.7**
Jan 2021	.05	.05	15.5	10.5	8.4	**8.6**
Feb 2021	.395	1.05	14.4	10.8	8.1	**8.6**

	Ammonia-Nitrogen (as N)		Total Nitrogen	DO	pH	
	30-Day Average	Daily Maximum	Daily Maximum	Daily Minimum	Daily Minimum	Daily Maximum
	Varies, mg/L	Varies, mg/L	mg/L	Varies, mg/L	Varies, s.u.	Varies, s.u.
Mar 2021	.067	.117	11.9	9.8	7.9	**8.5**
Apr 2021	.05	.05	15.5	8.5	8	8.3
May 2021	.225	.562	26.7	7.7	7.65	8.3
Jun 2021	.016	.061	32.1	6.9	7.69	8.22
Jul 2021	.05	.05	24.7	6.3	7.5	8.3
Aug 2021	.05	.05	21.3	6.3	7.9	8.7
Sep 2021	.086	.215	17	7.1	8.1	8.4
Oct 2021	.472	1.39	16.7	7.2	7.62	8.7
Nov 2021	.052	.061	7	8.5	7.9	8.7
Dec 2021	.115	.244	15.8	9.3	7.8	8.2
Jan 2022	.27	.893	15.6	10.3	8.04	8.32
Feb 2022	.19	.42	30.4	74	7.96	8.16
Mar 2022	.16	.25	28.7	9.8	7.97	8.7
Apr 2022	.05	.05	33.7	9.5	7.53	8.13
May 2022	.18	.37	38.2	6.4	7.2	8.36
Jun 2022	.115	.36	37.3	12.3	7.61	7.17
Jul 2022	.339	.739	30.6	8.2	7.1	8.2
Aug 2022	.618	1.83	32.8	7.1	7.32	7.86
Sep 2022	.579	1.53	18.3	9.9	8.2	7.26
Oct 2022	.062	.172	27.2	12.6	7.22	7.9
Nov 2022	**NS**	**NS**	**NS**	7.2	7.63	8.23
Dec 2022	.086	.132	21.5	14.7	7.11	7.73
Jan 2023	2.03	7.98	13.5	7.6	7.16	7.92
Feb 2023	.353	.867	27	19.2	7.44	8.09
Mar 2023	2.06	3.25	15.6	9.5	7.24	7.97
Apr 2023	**11.4**	**17.3**	14.4	9.8	7.27	7.97
May 2023	**6.9**	**20.2**	22.7	7.4	7.2	8.2
Jun 2023	2.5	**5.96**	19.4	7.2	7.15	7.99
Jul 2023	< .05	< .05	17.1	7.8	7.39	8.22
Aug 2023	.107	.304	38.8	**5.2**	7.22	7.92
Sep 2023	1	2.42	26.6	8.1	7.23	8.05
Oct 2023	<= 1.12	3.13	25.6	8.6	7.15	7.77
Nov 2023	.252	.714	35.2	9.8	6.92	7.52
Dec 2023	.955	2.75	52.4	8.8	6.98	7.98
Jan 2024	.296	1.08	27.6	9.2	7.07	7.91
Feb 2024	.087	.13	35.4	9.2	6.9	7.78

	Ammonia-Nitrogen (as N)		Total Nitrogen	DO	pH	
	30-Day Average	Daily Maximum	Daily Maximum	Daily Minimum	Daily Minimum	Daily Maximum
	Varies, mg/L	Varies, mg/L	mg/L	Varies, mg/L	Varies, s.u.	Varies, s.u.
Mar 2024	< .525	1.41	36.6	9.5	6.9	8.07
Apr 2024	.212	.44	47.8	8.7	7.07	7.84
May 2024	< .0575	.08	24.4	9.3	7.01	7.72
Jun 2024	< .115	< .3	41.2	7.6	7.12	7.69
Jul 2024	< .05	< .05	30.2	7	7.56	7.98
Aug 2024	1.16	3.08	8.03	6.3	7.49	8.2
Sep 2024	.4	.96	10.1	7.2	7.59	8.11
Oct 2024	< .142	.5	17.2	8.7	7.04	7.93
Nov 2024	< .05	< .05	31.5	8.3	7.11	7.83
Dec 2024	< .05	< .05	44.1	8.2	7.11	8.01
Jan 2025	.126	.4	22.1	8.6	7.31	7.92
Feb 2025	< .25	.54	30.9	7.3	6.7	7.79
Mar 2025	.0825	.15	34.6	8.5	6.9	7.2
Apr 2025	.223	.56	37.6	9.1	7.03	7.59
May 2025	.175	.39	39.6	9.4	6.83	7.66
Jun 2025	1.0025	1.59	29	7.6	7.04	7.57
Jul 2025	.47	.78	24.3	7.8	7.21	7.91
Aug 2025	.1	.19	11.2	7.8	7.43	8.22
Sep 2025	.46	.76	28.4	7.4	7.42	7.97
Oct 2025	2.57	**6.25**	15.8	8.5	6.95	7.7
Nov 2025	1.11	3.25	32	7.3	7.02	7.47
Dec 2025	1.1	3.51	30.4	7.1	6.77	7.33

	Total Phosphorus	TSS		Water Temperature	
	Daily Maximum	30-Day Average	Daily Maximum	Daily Maximum	Maximum 7-Day Average
	mg/L	10 mg/L	17.5 mg/L	deg F	deg F
Dec 2019	3.62	4	4	50.7	42.5
Jan 2020	3.15	4	4	46.2	46.2
Feb 2020	3.71	4	4	45.7	46
Mar 2020	3.71	4.2	4.8	46	45
Apr 2020	4.09	4	4	51	48

	Total Phosphorus	TSS		Water Temperature	
	Daily Maximum	30-Day Average	Daily Maximum	Daily Maximum	Maximum 7-Day Average
	mg/L	10 mg/L	17.5 mg/L	deg F	deg F
May 2020	5.03	4	4	56	53
Jun 2020	4.55	4.9	7.6	63	61
Jul 2020	1.86	4	4	68	67
Aug 2020	3.11	4	4	69	69
Sep 2020	3.46	4	4	65	61
Oct 2020	3.78	4	4	56.5	52.2
Nov 2020	2.37	4	4	50	48
Dec 2020	4.03	4	4	57	57
Jan 2021	2.65	4	4	43	42
Feb 2021	1.88	4	4	43	39
Mar 2021	1.84	4	4	47	44
Apr 2021	3.36	4	4	53	48
May 2021	4.3	4	4	57	57
Jun 2021	5.31	4	4	67	67
Jul 2021	4.63	4	4	68	67
Aug 2021	4.49	4	4	69	67
Sep 2021	4.49	4	4	66	65
Oct 2021	2.98	4	4	60	56
Nov 2021	2.2	4	4	53	52
Dec 2021	3.32	4	4	49	49
Jan 2022	2.05	4.3	5.2	44	43
Feb 2022	4.89	4	4	44	42
Mar 2022	4.89	4	4	47	44
Apr 2022	7.37	3	4	56.5	37
May 2022	6.53	4	4	57	54
Jun 2022	6.79	4	4	46	56.5
Jul 2022	7.1	< 4	< 4	69	71.8
Aug 2022	5.65	< 4	< 4	72	71.4
Sep 2022	4.4	< 4	< 4	69.5	68.7
Oct 2022	5.26	< 4	< 4	64	62.7
Nov 2022	**NS**	< 4	< 4	56.4	55.1
Dec 2022	3.25	< 4	< 4	49.8	47.7
Jan 2023	1.96	< 4	< 4	52.9	49.3
Feb 2023	3.23	< 4	< 4	51.1	48.2
Mar 2023	3.19	< 4	< 4	51.8	47.7
Apr 2023	4.03	< 4	< 4	55	52.9
May 2023	5.52	< 4	< 4	63.5	62

	Total Phosphorus	TSS		Water Temperature	
	Daily Maximum	30-Day Average	Daily Maximum	Daily Maximum	Maximum 7-Day Average
	mg/L	10 mg/L	17.5 mg/L	deg F	deg F
Jun 2023	3.23	< 4	< 4	67.2	66
Jul 2023	3.3	< 4	< 4	71.5	69.6
Aug 2023	5.82	< 4	< 4	71.5	70.7
Sep 2023	3.61	< 4	< 4	71.4	69.5
Oct 2023	4.19	< 4	< 4	64.8	62.7
Nov 2023	3.5	< 4	< 4	57.2	54.6
Dec 2023	5.81	< 4	< 4	66.1	55.1
Jan 2024	1.51	< 4.24	5.2	52.3	48.7
Feb 2024	4.11	< 4	< 4	59.2	54.7
Mar 2024	7.71	< 4	< 4	56.6	55.4
Apr 2024	7.23	< 4.08	4.4	60.9	56.2
May 2024	4.08	< 4	< 4	63.6	61.6
Jun 2024	6.23	4.1	4.4	68.3	67.4
Jul 2024	3.99	< 4	< 4	72.9	71
Aug 2024	3.92	< 4	< 4	72.7	71.5
Sep 2024	2.49	< 4	< 4	70	67.6
Oct 2024	3.36	< 4	< 4	66.9	64.22
Nov 2024	3.95	< 4	< 4	62.6	58.3
Dec 2024	4.73	< 7.2	< 17	62.9	58.6
Jan 2025	2.35	< 4.56	6	56.1	54.5
Feb 2025	3.44	< 4	< 4	54.9	52
Mar 2025	4.55	< 4	< 4	58.9	54.3
Apr 2025	5.88	7.9	**19.6**	58.6	57.4
May 2025	6.54	< 4	< 4	66.5	64.3
Jun 2025	6.13	< 4	< 4	69.1	67.2
Jul 2025	5.86	6.5	15.6	72.1	69.3
Aug 2025	4.1	< 4	< 4	73.1	70.9
Sep 2025	5.81	4.3	5.2	71.9	68.9
Oct 2025	5.34	< 4.48	< 6.4	71	65.7
Nov 2025	4.75	< 4	< 4	63.8	60.9
Dec 2025	3.71	4.08	4.4	61.6	58.8

Outfall 001A, Downstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Dec 2019	WR	WR
Jan 2020	WR	WR
Feb 2020	WR	WR
Mar 2020	WR	WR
Apr 2020	WR	WR
May 2020	54	50
Jun 2020	48	43
Jul 2020	70	69
Aug 2020	68	62
Sep 2020	67	54
Oct 2020	48	39.8
Nov 2020	38	35
Dec 2020	WR	WR
Jan 2021	WR	WR
Feb 2021	WR	WR
Mar 2021	38	32
Apr 2021	46	44
May 2021	49	46
Jun 2021	65	63
Jul 2021	66	63
Aug 2021	64	61
Sep 2021	59	59
Oct 2021	47	46
Nov 2021	40	36
Dec 2021	WR	WR
Jan 2022	WR	WR
Feb 2022	WR	WR
Mar 2022	WR	WR
Apr 2022	43.3	36.8
May 2022	59	59
Jun 2022	71.4	59.1
Jul 2022	57.9	67.9
Aug 2022	74.4	70.2
Sep 2022	74.1	69.6
Oct 2022	57.4	32.3

Outfall 001A, Percent Removal

	BOD_5 Percent Removal	TSS Percent Removal
	Month Average Minimum	Month Average Minimum
	85 %	85 %
Dec 2019	99.8	99.3
Jan 2020	99.75	99.25
Feb 2020	99.51	98.3
Mar 2020	99.2	99.6
Apr 2020	95.2	96
May 2020	97	96
Jun 2020	95	98
Jul 2020	92	91
Aug 2020	98	99
Sep 2020	98	99
Oct 2020	97.3	98.1
Nov 2020	96	96
Dec 2020	97	96
Jan 2021	98.7	97.7
Feb 2021	98.8	98.6
Mar 2021	98.4	98.4
Apr 2021	99	99.1
May 2021	98.8	99
Jun 2021	99.9	98.25
Jul 2021	96	98
Aug 2021	94.2	95.7
Sep 2021	97.3	97.5
Oct 2021	96.2	96.3
Nov 2021	96.1	96.1
Dec 2021	98.3	98.7
Jan 2022	99.5	99.5
Feb 2022	98.6	98.4
Mar 2022	97.1	97.6
Apr 2022	98.4	98.78
May 2022	98.5	98.5
Jun 2022	98.59	98.67
Jul 2022	92.1	92.3
Aug 2022	99.979	99.984
Sep 2022	98.7	98.8
Oct 2022	99.2	99.2

Outfall 001A, Downstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Nov 2022	49.4	39.1
Dec 2022	WR	WR
Jan 2023	WR	WR
Feb 2023	WR	WR
Mar 2023	WR	WR
Apr 2023	49.3	42.8
May 2023	66.6	64.5
Jun 2023	69	65.3
Jul 2023	75.6	71.2
Aug 2023	71.4	67.3
Sep 2023	67.1	56.3
Oct 2023	55.9	52.1
Nov 2023	42.7	41.7
Dec 2023	WR	WR
Jan 2024	WR	WR
Feb 2024	WR	WR
Mar 2024	34.9	32.6
Apr 2024	46.1	42
May 2024	56.6	48
Jun 2024	67.8	60.5
Jul 2024	63.8	58.1
Aug 2024	71	65.9
Sep 2024	62	57
Oct 2024	55.4	39.9
Nov 2024	39.5	33.9
Dec 2024	29.1	25.9
Jan 2025	WR	WR
Feb 2025	WR	WR
Mar 2025	48.4	42.6
Apr 2025	49.4	38.7
May 2025	60.2	51.9
Jun 2025	71.6	62.6
Jul 2025	70.3	68.3
Aug 2025	67.5	65
Sep 2025	67.5	65

Outfall 001A, Percent Removal

	BOD_5 Percent Removal	TSS Percent Removal
	Month Average Minimum	Month Average Minimum
	85 %	85 %
Nov 2022	98.6	97.9
Dec 2022	98.5	98.2
Jan 2023	98.7	99.1
Feb 2023	> 97.9	> 97.6
Mar 2023	> 99.1	> 99
Apr 2023	98.4	98.8
May 2023	> 98.2	> 98.8
Jun 2023	98.4	98.5
Jul 2023	98.3	98.6
Aug 2023	98.6	98.3
Sep 2023	98.7	99.1
Oct 2023	96.6	98.3
Nov 2023	99.1	99.1
Dec 2023	98.4	98.7
Jan 2024	97.4	98.8
Feb 2024	98.5	99.2
Mar 2024	98.8	98.7
Apr 2024	98.2	97.9
May 2024	99.6	99.8
Jun 2024	97.9	96.7
Jul 2024	98.4	97.8
Aug 2024	99.1	99.5
Sep 2024	98.6	99.8
Oct 2024	99.4	99.7
Nov 2024	99.7	99.91
Dec 2024	99.6	99.8
Jan 2025	99.2	99.2
Feb 2025	99.7	99.89
Mar 2025	99.91	99.95
Apr 2025	99.82	99.8
May 2025	99.3	99.4
Jun 2025	99.6	99.8
Jul 2025	99.3	99.7
Aug 2025	98.7	99.8
Sep 2025	99.3	99.7

Outfall 001A, Downstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Oct 2025	63.9	62.1
Nov 2025	50.6	46.8
Dec 2025	42.7	39.9

Outfall 001A, Percent Removal

	BOD_5 Percent Removal	TSS Percent Removal
	Month Average Minimum	Month Average Minimum
	85 %	85 %
Oct 2025	96.7	99.2
Nov 2025	98.34	98.21
Dec 2025	98.2	97.9

Outfall 001A, Raw Sewage Influent

	Influent BOD_5	Influent TSS
	30-Day Average	30-Day Average
	mg/L	mg/L
Dec 2019	279	572
Jan 2020	382	698.4
Feb 2020	617	244
Mar 2020	1070	388.5
Apr 2020	62	99.8
May 2020	77.2	126
Jun 2020	91.8	207
Jul 2020	97.4	42.4
Aug 2020	171	403
Sep 2020	168	3.25
Oct 2020	111.25	213
Nov 2020	68.25	95
Dec 2020	89	90.48
Jan 2021	149	303.5
Feb 2021	257.5	289.25
Mar 2021	182.5	243
Apr 2021	247.5	407.25
May 2021	248	421
Jun 2021	138	228.4
Jul 2021	10.8	23.9
Aug 2021	56	94
Sep 2021	112.4	177.8
Oct 2021	79.25	107.75

Outfall 001A, Upstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Dec 2019	WR	WR
Jan 2020	WR	WR
Feb 2020	WR	WR
Mar 2020	WR	WR
Apr 2020	WR	WR
May 2020	51	49
Jun 2020	48	43
Jul 2020	70	69
Aug 2020	67	62
Sep 2020	67	51
Oct 2020	48	39.8
Nov 2020	38	35
Dec 2020	WR	WR
Jan 2021	WR	WR
Feb 2021	WR	WR
Mar 2021	37	32
Apr 2021	45	43
May 2021	49	46
Jun 2021	65	63
Jul 2021	66	63
Aug 2021	64	61
Sep 2021	59	59
Oct 2021	46	45

Outfall 001A, Raw Sewage Influent

	Influent BOD_5	Influent TSS
	30-Day Average	30-Day Average
	mg/L	mg/L
Nov 2021	76.6	102
Dec 2021	170	299
Jan 2022	525	796
Feb 2022	219	256
Mar 2022	164	27
Apr 2022	306.25	306.25
May 2022	208	275
Jun 2022	212.2	300.2
Jul 2022	154	229
Aug 2022	165.5	264.3
Sep 2022	231.25	331
Oct 2022	391	531
Nov 2022	214	191
Dec 2022	197.5	231
Jan 2023	235	451
Feb 2023	145.3	165.3
Mar 2023	334	403
Apr 2023	202.5	326
May 2023	302	339
Jun 2023	391	331
Jul 2023	175	276
Aug 2023	228	243
Sep 2023	238	459
Oct 2023	191	245
Nov 2023	360	495
Dec 2023	192	312
Jan 2024	166	180
Feb 2024	205	523
Mar 2024	240	301
Apr 2024	166	196
May 2024	772	1970
Jun 2024	143	126
Jul 2024	196	182.4
Aug 2024	528	950
Sep 2024	214	2450
Oct 2024	553.6	1803.8

Outfall 001A, Upstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Nov 2021	40	36
Dec 2021	WR	WR
Jan 2022	WR	WR
Feb 2022	WR	WR
Mar 2022	WR	WR
Apr 2022	43.1	36.2
May 2022	35	58
Jun 2022	68.8	47.6
Jul 2022	58.3	66.9
Aug 2022	72	67.9
Sep 2022	70.4	66.6
Oct 2022	57.5	48.7
Nov 2022	47.8	38.8
Dec 2022	WR	WR
Jan 2023	WR	WR
Feb 2023	WR	WR
Mar 2023	WR	WR
Apr 2023	47.8	42.1
May 2023	64.1	61.9
Jun 2023	63.5	60.9
Jul 2023	74.8	68.8
Aug 2023	71.8	67.3
Sep 2023	66.9	56.8
Oct 2023	55.6	52.5
Nov 2023	43.3	42.4
Dec 2023	WR	WR
Jan 2024	WR	WR
Feb 2024	WR	WR
Mar 2024	35.8	34.4
Apr 2024	46.9	44.7
May 2024	53.7	48
Jun 2024	63.5	59.4
Jul 2024	63.8	59
Aug 2024	72.4	66.4
Sep 2024	60.8	57.2
Oct 2024	54.7	40.3

Outfall 001A, Raw Sewage Influent

	Influent BOD_5	Influent TSS
	30-Day Average	30-Day Average
	mg/L	mg/L
Nov 2024	1238	4730
Dec 2024	915	4070
Jan 2025	506	578
Feb 2025	995	3750
Mar 2025	3643	7477.5
Apr 2025	1690	4512
May 2025	432.5	651.5
Jun 2025	800	2335
Jul 2025	636	2548
Aug 2025	238	1702
Sep 2025	543	1480
Oct 2025	286	566.2
Nov 2025	230	< 223
Dec 2025	212	198.2

Outfall 001A, Upstream Monitoring

	Water Temperature	
	Daily Maximum	Maximum 7-Day Average
	deg F	deg F
Nov 2024	37.9	34.9
Dec 2024	29.2	25.2
Jan 2025	WR	WR
Feb 2025	WR	WR
Mar 2025	47.5	42.9
Apr 2025	46.1	38.4
May 2025	57.2	51.3
Jun 2025	70.7	61.8
Jul 2025	70	67
Aug 2025	64.6	62.8
Sep 2025	64.6	62.8
Oct 2025	68.4	61.7
Nov 2025	50.6	45.9
Dec 2025	40.4	38.4

ATTACHMENT 4

Ammonia Limits Development
for the
USFS – Box Elder JCCCC Treatment Facility

in Box Elder Creek
near
Nemo, South Dakota

Prepared by

South Dakota Department of Agriculture and Natural Resources

February 2026

INTRODUCTION

Under Section 303(c) of the federal Clean Water Act, states have been required to develop water quality standards to protect public health and enhance water quality. In accordance with the Clean Water Act, the state of South Dakota has assigned beneficial uses to all waters of the state and developed water quality criteria to protect those uses. South Dakota's surface water quality standards and assigned beneficial uses are found in the Administrative Rules of South Dakota (ARSD) Article 74:51.

To ensure the protection of the state's surface water quality standards, the Clean Water Act authorized a permitting program for point source discharges of pollutants. The U.S. Environmental Protection Agency delegated this permitting program to the South Dakota Department of Agriculture and Natural Resources on December 30, 1993.

The department issues Surface Water Discharge permits containing, at a minimum, technology-based effluent limits. However, these limits are not always adequate to protect South Dakota's water quality. In those cases, the Department of Agriculture and Natural Resources develops water quality-based effluent limits. In accordance with the procedures and requirements outlined below, water quality-based effluent limits for ammonia will be developed for Boxelder JCCCC's wastewater treatment facility (WWTF). These limits will ensure the surface water quality standards for Box Elder Creek near Nemo are maintained and protected.

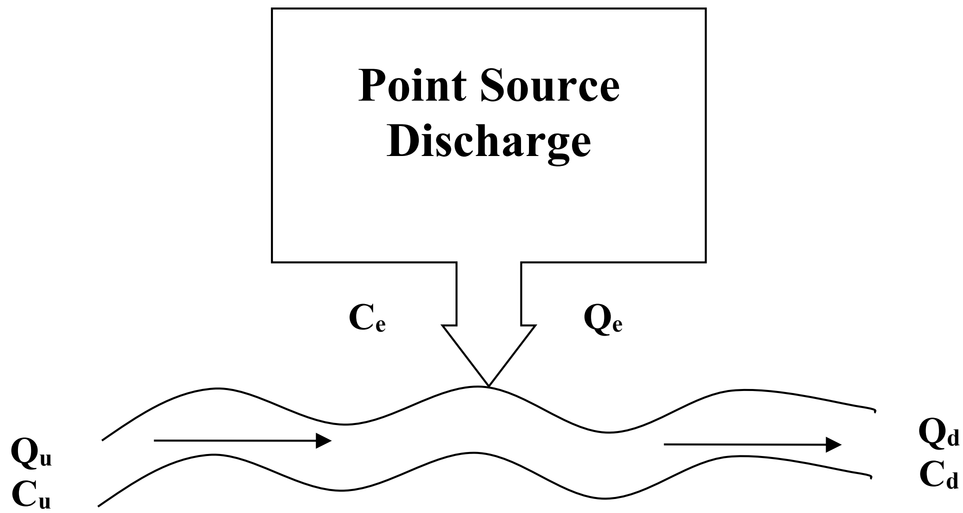
Developing the ammonia limits for Boxelder JCCCC is a matter of determining the maximum level of ammonia that can be present in Box Elder Creek without causing the applicable South Dakota Surface Water Quality Standards (SDSWQS) for ammonia to be exceeded.

The effluent limits for ammonia are developed for critical conditions to be conservative, thereby assuring water quality standards are maintained under less critical conditions. Critical conditions are those at which the surface water quality standards are most likely to be violated. Critical conditions can be defined by several factors, including, but not limited to the following:

- stream flow (e.g., high, low);
- storm event occurrence and intensity;
- ambient water quality conditions (e.g., pH, temperature, etc.);
- diurnal variations in water column conditions;
- temporal occurrence of pollutant loadings from natural and human-induced activities; and
- the presence or absence of salmonids.

The following mass balance equation will be used to determine the ammonia limits for Boxelder JCCCC:

Figure 1: Mass Balance of Receiving Stream



$$Q_u C_u + Q_e C_e = Q_d C_d$$

Where:

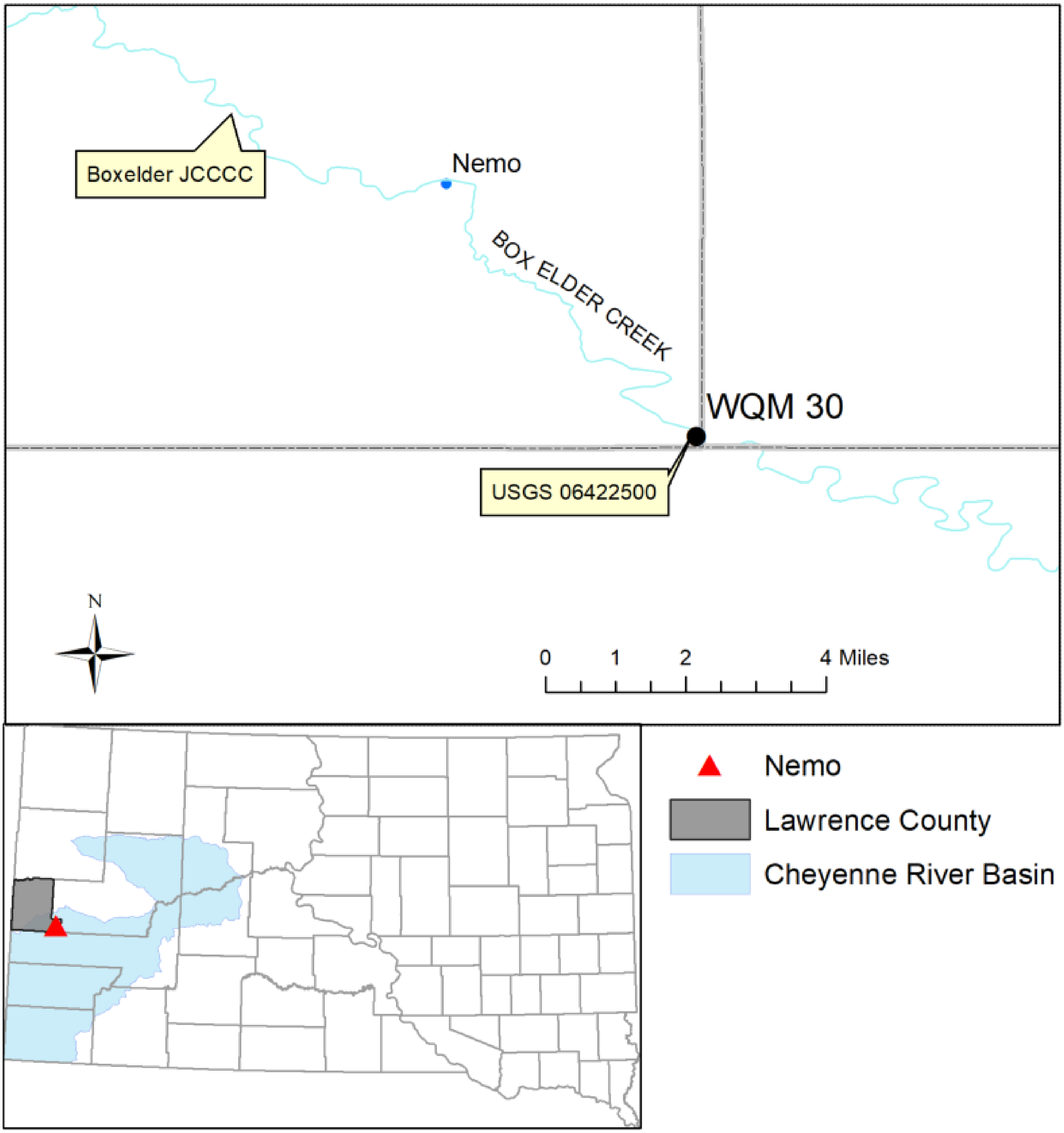
- Q_u = Receiving stream flow, in cubic feet per second (cfs);
- C_u = Ambient upstream ammonia concentration, in milligrams per liter (mg/L);
- Q_e = Effluent discharge flow rate, in cfs;
- C_e = Water quality based effluent limit for ammonia in mg/L;
- Q_d = Downstream flow (equal to $Q_u + Q_e$), in cfs; and
- C_d = Allowable instream ammonia concentration (based on the SD Surface Water Quality Standards), in mg/L.

Using the mass balance equation and the following information, the water quality-based effluent limits for ammonia can be determined for Boxelder JCCCC's discharge into Box Elder Creek.

GEOGRAPHICAL EXTENT

Box Elder Creek is located in the Cheyenne River Basin in the western portion of the state. The Cheyenne River Basin drains approximately 9,732 square miles of land in South Dakota, which is comprised of the Black Hills, Badlands, rangeland, cropland, and mining areas. Figure 2 shows Box Elder Creek near Boxelder JCCCC.

Figure 2: Boxelder JCCCC WWTF in the Cheyenne River Basin



Past experience has shown that, due to the decay and transformation of organic pollutants such as ammonia, most adverse effects are generally exhibited within 10 miles of pollutant loading. While this rule of thumb can certainly vary depending on the source of the pollutant, fate and transport characteristics, hydrologic conditions, and other factors, it has generally held true in past instances. Therefore, the development of the ammonia limits for Boxelder JCCCC's discharge into Box Elder Creek will be relatively narrow in spatial extent.

ALLOWABLE INSTREAM AMMONIA CONCENTRATION (C_d)

South Dakota Surface Water Quality Standards

The SDSWQS specify the beneficial uses assigned to specific water bodies. The SDSWQS also contain specific narrative and numeric criteria that must be met to ensure the protection of each beneficial use. Box Elder Creek is classified for the following beneficial uses:

(2) Coldwater permanent fish life propagation waters;
(8) Limited-contact recreation waters;
(9) Fish and wildlife propagation, recreation, and stock watering waters; and
(10) Irrigation waters.

Waterbodies designated in the SDSWQS with the beneficial use classification of either coldwater permanent or coldwater marginal fish life propagation are suitable for supporting salmonids. Waterbodies with the beneficial use classifications of warmwater permanent, warmwater semipermanent, or warmwater marginal fish life propagation will likely not have salmonids. Salmonids are expected to be present in Box Elder Creek.

Allowable Instream Ammonia Levels

New ammonia-nitrogen (as N) criteria have been adopted as part of SDDANR's 2021 triennial review of the SDSWQS. Previous ammonia-nitrogen (as N) permit effluent limits were calculated based on the U.S. Environmental Protection Agency's (US EPA) 1999 criteria. The updated criteria, which are to be utilized for permits with an effective date on or after July 1, 2021, are based on EPA's 2013 criteria. For more information about the development of these ammonia-nitrogen (as N) criteria, see *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013* (US EPA, April 2013).

Based on the beneficial uses of Box Elder Creek, the following equations can be used to determine the total allowable ammonia concentration in the receiving stream (SDSWQS, ARSD Chapter 74:51:01, Appendix A):

Equation 1: Daily Maximum (Salmonids present)

$$\mathrm{Cd} = \mathrm{MIN}\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\right.$$
$$\left.\left(0.7249 \text{ x } \left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right) \text{ x } \left(23.12 \text{ x } 10^{0.036 \text{ x } (20-T)}\right)\right)\right)$$

Equation 2: Daily Maximum (Salmonids NOT present)

$$\mathrm{Cd} = 0.7249 \text{ x } \left(\frac{0.0114}{1+\ 10^{7.204-pH}} + \frac{1.6181}{1+\ 10^{pH-7.204}}\right) \text{x MIN } (51.93, 23.12 \text{ x } 10^{0.036 \text{ x } (20-T)})$$

Equation 3: 30-day Average

$$\mathrm{Cd} = 0.8876 \text{ x } \left(\frac{0.0278}{1+\ 10^{7.688-pH}} + \frac{1.1994}{1+\ 10^{pH-7.688}}\right) \text{x } (2.126 \text{ x } 10^{0.028\, x\, (20-MAX\,(T,7))})$$

Where:

pH	=	the pH of the water quality sample in standard units
T	=	the water temperature of the sample in degrees Centigrade
MIN	=	use either 51.93 or the value of 23.12 x $10^{0.036 \text{ x } (20\text{-}T)}$, whichever is the smaller value
MAX	=	use either the water temperature (T) for the sample or 7, whichever is the greater value

To develop the ammonia limits for Boxelder JCCCC, equations 1 and 3 will be used to determine the instream ammonia concentration, C_d, allowed in Box Elder Creek. C_d will be expressed as both 30-day average and daily maximum concentrations. The seasons have been determined based on the availability of instream water quality monitoring data and the current permit seasons.

Instream Water Quality Monitoring

The department maintains a statewide network of fixed monitoring stations to gain a historic record of water quality for various streams around the state. This water quality monitoring (WQM) network consists of 153 monitoring stations, which are sampled at monthly, quarterly, or seasonal intervals. The goal of this sampling is to collect reliable water quality data that reflects actual stream conditions; to collect data to determine the effectiveness of controls on point and nonpoint sources of pollution; and to collect data to evaluate the appropriateness of current beneficial use designations.

Water quality samples are collected at a WQM station on Box Elder Creek. A description of the station is listed below. Figure 2 denotes the location of WQM 30.

WQM 30	At Duren Rd. bridge, 4.8 miles Southeast of Nemo on Nemo Rd, 0.2 miles West of Lawrence-Meade County Line, or 2.6 miles from Norris Peak Rd (Latitude 44.144435°, Longitude -103.454430, Navigational Quality GPS).

Ambient water temperature, pH, and ammonia data at WQM 30 were obtained to represent instream conditions. The water quality information obtained from WQM 30 is presented in Attachment 5. The pH and temperature data are summarized in Table 1 below.

Calculation of Allowable Instream Ammonia Concentration (C_d)

The SDSWQS specify the total ammonia concentration that is allowed at a given pH and temperature. The 80^{th} percentile of the pH and temperature at WQM 30 was determined to ensure the ammonia standards are maintained during critical conditions. This information was used to calculate the allowable instream ammonia concentrations for each month. Table 1 summarizes the allowable instream ammonia (C_d) for Box Elder Creek.

Table 1: Allowable Instream Total Ammonia Concentrations for Box Elder Creek

Season	Temperature (°C)	pH (s.u.)	C_d, Allowable Total Ammonia (mg/L)	
			30-Day Average	Daily Maximum
January	0.00	8.60	0.68	1.77
February	0.00	8.70	0.57	1.47
March	7.00	8.60	0.68	1.77
April	9.00	8.60	0.60	1.77
May	15.48	8.70	0.33	1.47
June	20.60	8.80	0.20	0.82
July	23.20	8.80	0.17	0.66
August	21.90	8.72	0.21	0.84
September	15.00	8.72	0.33	1.42
October	9.00	8.70	0.50	1.47
November	5.00	8.80	0.49	1.23
December	1.00	8.80	0.49	1.23

AMBIENT AMMONIA CONCENTRATION (C_u)

The ammonia data at WQM 30 was reviewed to determine the ambient water quality in Box Elder Creek. The 80th percentile of the ammonia data was determined to ensure the ammonia standards are maintained during critical conditions. The ammonia data from WQM 30 is presented in Attachment 5. Table 2 below summarizes the 80th percentile ammonia data for each season. This data represents the ambient ammonia concentration for Box Elder Creek (C_u).

Table 2: Ambient Ammonia Data for Box Elder Creek

Season	Ammonia (mg/L)
January	0.05
February	0.05
March	0.05
April	0.05
May	0.05
June	0.05
July	0.05
August	0.05
September	0.05
October	0.05
November	0.05
December	0.05

EFFLUENT DISCHARGE FLOW RATE (Q_e)

The effluent discharge flow rate, Q_e, can be determined in several different ways. If effluent data is available for the discharger, the 50th or 80th percentile of the daily flow can be used. The effluent design flow rate of the wastewater treatment facility may be used as the expected effluent flow rate in the absence of actual discharge data. Alternatively, for stabilization pond systems, it may be appropriate to develop an effluent flow rate based on expected performance.

For the purposes of developing ammonia limits for Boxelder JCCCC, 0.0228 cfs was used for Q_e based on the 80th percentile of the daily maximum effluent flow rate submitted by Boxelder JCCCC via NetDMR. This will ensure the ammonia standards are maintained during critical conditions. See Attachment 6 for more details.

Table 3 summarizes the effluent flow rate used in these calculations.

RECEIVING STREAM FLOW (Q_u)

The United States Geological Survey (USGS) maintains hundreds of flow monitoring sites in South Dakota. The receiving stream flow rate, Q_u, is determined from an analysis of stream flow data available, incorporating the flow considerations required by *South Dakota's Mixing Zone and Dilution Implementation Procedures*.

Critical conditions for ammonia presumably occur when stream flows are relatively low. Therefore, the ammonia limits will be developed for low stream flow conditions. Should it be determined that water quality standards are violated at other flow conditions, the permit would be reopened and new limits would be developed.

ARSD Section 74:51:01:29 specifies that surface water quality standards apply to high quality fishery waters when flows meet or exceed the minimum 7-day average low flow that can be expected to occur once every 25 years (7Q25). The 7Q25 is therefore the minimum, or critical, flow for which the SDSWQS must be maintained, although all Surface Water Discharge permit limits remain in force below this minimum flow.

The seasonal 7Q25 flows were determined using data retrieved from the USGS gauging station 06422500 and a Log Pearson type III statistical analysis. The seven-day averages are calculated for the entire data set. After the averages are calculated, the data is split into the selected seasons. Analysis is then done in accordance with the EPA guidance document *Technical Guidance Manual for Performing Wasteload Allocation* to determine the seasonal 7Q25 flow. A description of the station is listed below. Figure 2 denotes the location of the USGS gauging station.

USGS 06422500	At Duren Rd. bridge, 4.8 miles Southeast of Nemo on Nemo Rd, 0.2 miles West of Lawrence-Meade County Line, or 2.6 miles from Norris Peak Rd (Latitude 44.144350°, Longitude -103.454100, USGS Site Description).

South Dakota's water quality standards allow a zone of mixing for discharges. In accordance with the SDSWQS, chronic and acute ammonia water quality criteria must be met at the end of the mixing zone. The mixing zone is therefore a limited portion of a water body where mixing of the effluent and receiving stream is in progress, but not complete. In some cases, the discharge will not completely mix with the entire receiving stream. There are many factors that influence the rate of mixing in a stream. A few of these factors are the flow and velocity of the receiving stream, the flow and velocity of the effluent, the slope of the stream, and other stream characteristics.

The *South Dakota Mixing Zone and Dilution Implementation Procedures* outlines an approach for modeling the mixing zone. Using these procedures, the 7Q25 is adjusted to account for the allowable ratio of flow available in the receiving stream. This adjusted flow represents the receiving stream flow rate (Q_u).

Table 3 and Attachment 7 summarize the flow data and the determination of Q_u for Box Elder Creek.

Table 3: Critical Low Flow Values for Box Elder Creek

Season	7Q25 Low Flow (cfs)	Effluent Flow (cfs)	Ratio of Effluent to 7Q25	Allowable Ratio of 7Q25	Critical Low Flow Q_u (cfs)
January	1.12	0.02	0.02	0.50	0.56
February	1.23	0.02	0.02	0.50	0.62
March	1.97	0.02	0.01	0.50	0.98
April	4.31	0.02	0.01	0.50	2.15
May	3.76	0.02	0.01	0.50	1.88
June	2.87	0.02	0.01	0.50	1.43
July	1.55	0.02	0.01	0.50	0.77
August	0.81	0.02	0.03	1.00	0.81
September	1.10	0.02	0.02	0.50	0.55
October	1.64	0.02	0.01	0.50	0.82
November	1.86	0.02	0.01	0.50	0.93
December	1.42	0.02	0.02	0.50	0.71

Topeka Shiners have been found in South Dakota's James River, Missouri River, and Vermillion River watersheds. At this facility's discharge location, the receiving stream has been identified as having a low probability of Topeka Shiners (U.S. Fish and Wildlife Service's Topeka Shiner Probability Data GIS Layer, 2014), (U.S. Fish and Wildlife Service's Topeka Shiner Range Map, 2023). Based on this information, Topeka Shiners are not expected to be present in proximity of the discharge. The critical low flows proposed for effluent limits development in this draft permit are protective of this endangered species, as the updated ammonia criteria (EPA 2013) were developed to protect a more sensitive mussel species.

DOWNSTREAM FLOW RATE (Q_d)

The downstream flow rate, Q_d, is simply the sum of the upstream flow rate (Q_u) and the effluent flow rate (Q_e). The downstream flow rate used for the calculation of the ammonia limits for Boxelder JCCCC's discharge into Box Elder Creek is summarized in Table 4 below.

CALCULATION OF AMMONIA LIMIT (C_e)

Each of the variables determined above is summarized in Table 4. Using the mass balance equation, the ammonia limits for Boxelder JCCCC's discharge into Box Elder Creek can be calculated as follows:

Equation 4: Mass Balance Equation

$$Ce = \frac{(Qd * Cd) - (Qu * Cu)}{Qe}$$

The water quality-based effluent limits for ammonia for Boxelder JCCCC's discharge into Box Elder Creek are presented in Table 4.

Table 4: Variables Calculated for Mass Balance Equation

Season	C_u, mg/L	C_d, mg/L		Q_e, cfs	Q_d, cfs	C_e, mg/L	
		30-day Average	Daily Maximum			30-Day Average	Daily Maximum
January	0.05	0.68	1.77	0.02	0.58	**16.1**	**44.1**
February	0.05	0.57	1.47	0.02	0.64	**14.8**	**39.9**
March	0.05	0.68	1.77	0.02	1.01	**27.8**	**76.0**
April	0.05	0.60	1.77	0.02	2.18	**52.3**	**164.3**
May	0.05	0.33	1.47	0.02	1.90	**23.7**	**118.9**
June	0.05	0.20	0.82	0.02	1.46	**9.8**	**48.9**
July	0.05	0.17	0.66	0.02	0.80	**4.3**	**21.3**
August	0.05	0.21	0.84	0.02	0.83	**6.0**	**29.0**
September	0.05	0.33	1.42	0.02	0.57	**7.1**	**34.4**
October	0.05	0.50	1.47	0.02	0.84	**16.8**	**52.5**
November	0.05	0.49	1.23	0.02	0.95	**18.3**	**49.4**
December	0.05	0.49	1.23	0.02	0.73	**14.1**	**38.1**

Boxelder JCCCC's current permit contains ammonia limits. The current effluent limits were compared to the limits calculated using the information presented above. A comparison of the two limits is presented in Table 5 below.

Boxelder JCCCC's current limits are adequate to protect the beneficial use and the water quality criteria for Box Elder Creek. These limits will be continued in the draft permit, to prevent backsliding. The shaded values in Table 5 indicate the limits that will be included for Boxelder JCCCC.

Table 5: Comparison of Current and Draft Effluent Limits

Month	Current Effluent Limits		Calculated Effluent Limits	
	30-Day Average (mg/L)	Daily Maximum (mg/L)	30-Day Average (mg/L)	Daily Maximum (mg/L)
January	4.9	9.7	16.1	44.1
February	4.7	9.4	14.8	39.9
March	4.6	8.3	27.8	76.0
April	4.6	8.3	52.3	164.3
May	4.6	8.3	23.7	118.9
June	2.7	5.3	9.8	48.9
July	2.7	5.3	4.3	21.3
August	2.5	5.3	6.0	29.0
September	2.7	5.3	7.1	34.4
October	2.6	4.6	16.8	52.5
November	2.6	4.6	18.3	49.4
December	5.3	9.7	14.1	38.1

Based on recent facility performance (Attachment 3, Monitoring Data), the 30-day average limits are expected to be applicable for a typical discharge from this facility, and the facility is expected to be able to meet the ammonia-nitrogen (as N) effluent limits proposed in the draft permit. A compliance schedule is not recommended to carry over the current permit's limits temporarily (interim limits) to allow the facility additional time to make operational adjustments to meet these proposed effluent limits (final limits).

ATTACHMENT 5

Water Quality Data

WATER QUALITY DATA
WQM 30

WQM data was obtained from the water quality monitoring station WQM 30. The period of the data is from January 15, 2015 through December 11, 2025. This data can be obtained at https://www.waterqualitydata.us/portal/.

SDDANR considers ammonia-nitrogen (as N) to have a reporting limit of 0.05 mg/L. For ammonia nitrogen values reported as "Below Detection," "Present Below Quantification Limit," or less than 0.05 mg/L, 0.05 mg/L was used calculations.

WQM 30 Data

January			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
01/15/2015	0.1	0	8.1
01/06/2016	0.05	0	8.4
01/17/2017	0.05	0	8.7
01/03/2018	0.05	0	8.1
01/15/2019	0.05	0	8.2
01/09/2020	0.05	0	8.2
01/05/2021	0.05	0	8.6
01/11/2022	0.05	0	8.5
01/18/2023	0.05	0	8.2
01/04/2024	0.05	0	9
01/15/2025	0.05	0	8.6
Average	0.05	0.00	8.42
50th Percentile	0.05	0.00	8.40
80th Percentile	**0.05**	**0.00**	**8.60**

February			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
02/12/2015	0.05	0	8.2
02/04/2016	0.05	0	8.5
02/15/2017	0.05	2	8.8
02/22/2018	0.05	0	8.6
02/12/2019	0.05	0	8.2
02/11/2020	0.05	0	8.5
02/02/2021	0.05	0	8.7
02/07/2022	0.05	0	8.3
02/14/2023	0.05	0	8.9
02/12/2024	0.05	1	8.3
02/12/2025	0.05	0	8.3
Average	0.05	0.27	8.48

February			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
50th Percentile	0.05	0.00	8.50
80th Percentile	**0.05**	**0.00**	**8.70**

March			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
03/16/2015	0.05	7	8.4
03/03/2016	0.05	4	8.7
03/09/2017	0.05	1	8.4
03/27/2018	0.05	0	8.3
03/20/2019	0.05	0	8.2
03/24/2020	0.05	5	8.5
03/24/2021	0.05	5	8.5
03/02/2022	0.05	0	8.4
03/14/2023	0.05	3	8.6
03/19/2024	0.05	8	8.8
03/13/2025	0.05	7	8.6
Average	0.05	3.64	8.49
50th Percentile	0.05	4.00	8.50
80th Percentile	**0.05**	**7.00**	**8.60**

April			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
04/21/2015	0.05	4	8.3
04/21/2016	0.05	8	8.5
04/04/2017	0.05	5	8.4
04/23/2018	0.05	11	8.4
04/15/2019	0.05	3	7.8
04/21/2020	0.05	4	7.8
04/21/2021	0.05	6	8.4
04/04/2022	0.05	9	8.6
04/19/2023	0.05	7	8.6
04/18/2024	0.05	7	8.5
04/16/2025	0.05	13	8.8
Average	0.05	7.00	8.37
50th Percentile	0.05	7.00	8.40
80th Percentile	**0.05**	**9.00**	**8.60**

May			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
05/21/2015	0.05	8	8.1
05/05/2016	0.05	12	8.7
05/16/2017	0.05	14	8.3
05/17/2018	0.05	14	8.2
05/13/2019	0.05	12	8.3
05/19/2020	0.05	13	8.3
05/13/2021	0.05	7	8.5
05/04/2022	0.05	9	8.6
05/26/2022	0.05	14.7	8.46
05/16/2023	0.05	16	8.7
05/16/2023	0.05	16.4	8.5
05/21/2024	0.05	10	8.7
05/13/2025	0.05	20	8.9
Average	0.05	12.78	8.48
50th Percentile	0.05	13.00	8.50
80th Percentile	**0.05**	**15.48**	**8.70**

June			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
06/09/2015	0.05	10	8
06/06/2016	0.05	14	8.4
06/20/2017	0.05	15	8.4
06/21/2018	0.05	12	8.4
06/13/2019	0.05	10	8.3
06/22/2020	0.05	17	8.6
06/15/2021	0.05	20	8.7
06/08/2022	0.05	13.7	8.36
06/13/2022	0.05	21.9	8.55
06/06/2023	0.05	21	8.86
06/30/2023	0.05	15	8.2
06/18/2024	0.05	16	8.9
06/11/2025	0.08	21	9
Average	0.05	15.89	8.51
50th Percentile	0.05	15.00	8.40
80th Percentile	**0.05**	**20.60**	**8.80**

July			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
07/09/2015	0.05	13	8.1
07/12/2016	0.05	16	8.4

July			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
07/20/2017	0.05	26	8.8
07/26/2018	0.05	16	8.5
07/18/2019	0.05	14	8.3
07/22/2020	0.05	22	8.7
07/13/2021	0.05	20	8.8
07/06/2022	0.05	20.2	8.66
07/18/2022	0.05	25	8.71
07/18/2023	0.05	20	8.9
07/31/2023	0.05	19.2	8.56
07/12/2024	0.05	22	8.8
07/02/2025	0.05	24	8.9
Average	0.05	19.80	8.63
50th Percentile	0.05	20.00	8.70
80th Percentile	**0.05**	**23.20**	**8.80**

August			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
08/11/2015	0.05	15	8.2
08/08/2016	0.05	19	8.4
08/23/2017	0.05	17	8.3
08/13/2018	0.05	19	8.6
08/14/2019	0.05	16	8.3
08/26/2020	0.05	21	8.6
08/16/2021	0.05	19	8.7
08/01/2022	0.05	23.1	NS
08/08/2022	0.05	22.5	8.72
08/10/2023	0.05	16.1	8.58
08/22/2023	0.05	20	8.8
08/20/2024	0.05	25	8.7
08/20/2025	0.05	20	8.8
Average	0.05	19.44	8.56
50th Percentile	0.05	19.00	8.60
80th Percentile	**0.05**	**21.90**	**8.72**

September			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
09/16/2015	0.05	14	8.6
09/07/2016	0.05	14	8.5
09/14/2017	0.05	15	7.9
09/18/2018	0.05	13	8.5

September			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
09/05/2019	0.05	15	8.2
09/22/2020	0.05	12	8.4
09/22/2021	0.05	9	8.6
09/21/2022	0.05	15	8.8
09/29/2022	0.05	13	8.34
09/20/2023	0.05	12.1	8.16
09/28/2023	0.05	15	8.8
09/09/2024	0.05	20	8.6
09/11/2025	0.05	21	8.8
Average	0.05	14.47	8.48
50th Percentile	0.05	14.00	8.50
80th Percentile	**0.05**	**15.00**	**8.72**

October			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
10/21/2015	0.05	8	8.7
10/05/2016	0.05	7	8.4
10/24/2017	0.05	4	8
10/02/2018	0.05	9	8.5
10/08/2019	0.05	5.9	8.5
10/20/2020	0.05	4	8.1
10/18/2021	0.05	8	8.7
10/20/2022	0.05	10	8.5
10/18/2023	0.05	9	8.7
10/01/2024	0.05	14	8.8
10/22/2025	0.05	6	8.7
Average	0.05	7.72	8.51
50th Percentile	0.05	8.00	8.50
80th Percentile	**0.05**	**9.00**	**8.70**

November			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
11/16/2015	0.05	2	8.7
11/07/2016	0.05	4	9.2
11/29/2017	0.05	1	8.2
11/14/2018	0.05	0	8.3
11/19/2019	0.05	1	8.2
11/05/2020	0.05	4	8.6
11/09/2021	0.05	5	8.7
11/08/2022	0.05	3	8.4

November			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
11/15/2023	0.05	4	8.8
11/14/2024	0.05	5	8.8
11/21/2025	0.05	5	8.7
Average	0.05	3.09	8.60
50th Percentile	0.05	4.00	8.70
80th Percentile	**0.05**	**5.00**	**8.80**

December			
Sample Date	**Ammonia-Nitrogen (as N, mg/L)**	**Water Temperature (°C)**	**pH (s.u.)**
12/02/2015	0.05	0	8.5
12/06/2016	0.05	0	9
12/15/2017	0.05	0	8.4
12/10/2018	0.05	0	8.1
12/12/2019	0.05	0	8.3
12/07/2020	0.05	0	8.5
12/01/2021	0.05	5	8.6
12/07/2022	0.05	0	8.4
12/08/2023	0.05	1	9.3
12/12/2024	0.05	0	8.8
12/11/2025	0.05	2	8.7
Average	0.05	0.73	8.60
50th Percentile	0.05	0.00	8.50
80th Percentile	**0.05**	**1.00**	**8.80**

ATTACHMENT 6

Point Source Dischargers Flow Rate

EFFLUENT FLOW RATE
SD0020834, USFS – Box Elder JCCCC

	Flow Rate	
	30-Day Average	Daily Maximum
	MGD	MGD
Dec 2019	0.002	0.005
Jan 2020	0.007	0.014
Feb 2020	0.008	0.012
Mar 2020	0.007	0.01
Apr 2020	0.004	0.009
May 2020	0.003	0.005
Jun 2020	0.004	0.006
Jul 2020	0.004	0.006
Aug 2020	0.002	0.007
Sep 2020	0.003	0.004
Oct 2020	0.004	0.006
Nov 2020	0.005	0.008
Dec 2020	0.006	0.009
Jan 2021	0.006	0.009
Feb 2021	0.008	0.012
Mar 2021	0.006	0.012
Apr 2021	0.006	0.009
May 2021	0.005	0.008
Jun 2021	0.005	0.008
Jul 2021	0.006	0.01
Aug 2021	0.005	0.01
Sep 2021	0.005	0.008
Oct 2021	0.007	0.012
Nov 2021	0.006	0.017
Dec 2021	0.005	0.013
Jan 2022	0.006	0.01
Feb 2022	0.005	0.011
Mar 2022	0.004	0.14
Apr 2022	0.004	0.007
May 2022	0.18	0.016
Jun 2022	0.005	0.016
Jul 2022	0.005	0.016
Aug 2022	0.004977	0.011295
Sep 2022	0.0038	0.011424
Oct 2022	0.005278	0.009237
Nov 2022	0.003648	0.005868
Dec 2022	0.155157	0.01887
Jan 2023	0.004509	0.007638
Feb 2023	0.006552	0.014993
Mar 2023	0.005107	0.009933

	Flow Rate	
	30-Day Average	Daily Maximum
	MGD	MGD
Apr 2023	0.176387	0.011136
May 2023	0.00747	0.0126
Jun 2023	0.00743	0.0138
Jul 2023	0.00763	0.0152
Aug 2023	0.00459	9230
Sep 2023	0.00675	0.0093
Oct 2023	0.00612	0.0157
Nov 2023	0.00423	0.00828
Dec 2023	0.003573	0.00754
Jan 2024	0.00762	0.02106
Feb 2024	0.00572	0.0103
Mar 2024	0.00502	0.011845
Apr 2024	0.00747	0.0171
May 2024	0.00922	0.0168
Jun 2024	0.00719	0.0105
Jul 2024	0.00812	0.0123
Aug 2024	0.00788	0.0126
Sep 2024	0.0082	0.0118
Oct 2024	0.00748	0.0119
Nov 2024	0.00627	0.011632
Dec 2024	0.00576	0.0149
Jan 2025	0.00723	0.113
Feb 2025	0.00643	0.0126
Mar 2025	0.00541	0.00877
Apr 2025	0.005687	0.009108
May 2025	0.006093	0.010583
Jun 2025	0.005	0.011699
Jul 2025	0.00985	0.0113
Aug 2025	0.00612	0.19
Sep 2025	0.004175	0.008543
Oct 2025	0.004642	0.010052
Nov 2025	0.004166	0.012884
Dec 2025	0.003553	0.010144
Average	0.012404	0.016656
50th Percentile	0.00572	0.006
80th Percentile	0.007454	0.01472
Average (cfs)	0.0192	0.0258
50th Percentile (cfs)	0.0089	0.0093
80th Percentile (cfs)	0.0115	**0.0228**

The highlighted value was reported incorrectly and was excluded from the calculations.

ATTACHMENT 7

Receiving Stream Flow Data

RECEIVING STREAMFLOW DATA
USGS 06422500 Gauging Station

The data to develop the seasonal 7Q25 low flows was obtained from the USGS gauging station USGS 06422500. The period of the data is from January 1, 1946 through November 30, 2024. This data can be obtained at http://waterdata.usgs.gov/sd/nwis/sw.

Month	7Q25 (cfs)	Mean (logs)	Variance (logs)	Standard Deviation (logs)	Skewness (logs)
January	**1.12**	0.602	0.102	0.319	0.064
February	**1.23**	0.632	0.093	0.304	-0.084
March	**1.97**	0.784	0.069	0.262	-0.360
April	**4.31**	1.114	0.095	0.309	0.538
May	**3.76**	1.263	0.153	0.391	-0.028
June	**2.87**	1.252	0.215	0.463	0.106
July	**1.55**	1.060	0.229	0.478	-0.200
August	**0.81**	0.852	0.227	0.477	-0.749
September	**1.10**	0.782	0.153	0.391	-0.450
October	**1.64**	0.812	0.113	0.336	-0.091
November	**1.86**	0.775	0.107	0.327	0.558
December	**1.42**	0.661	0.088	0.296	0.091

Month	Standard Error of Skewness (logs)	Serial Correlation Coefficient (logs)	Coefficient of Variation (logs)	Non-Exceedance Probability
January	0.311	0.55	0.531	0.04
February	0.311	0.416	0.481	0.04
March	0.309	0.251	0.335	0.04
April	0.309	0.4	0.277	0.04
May	0.311	0.263	0.309	0.04
June	0.306	0.233	0.37	0.04
July	0.306	0.358	0.452	0.04
August	0.309	0.474	0.56	0.04
September	0.309	0.471	0.5	0.04
October	0.309	0.511	0.414	0.04
November	0.309	0.444	0.423	0.04
December	0.311	0.545	0.448	0.04

Month	Recurrence Interval	Variance of Estimate	Lower 95-Pct Confidence Interval	Upper 95-Pct Confidence Interval
January	25	0.000634	0.723	1.456
February	25	0.000368	0.773	1.608
March	25	0.000108	1.207	2.545
April	25	0.00182	3.187	5.311
May	25	0.00069	2.082	5.288
June	25	0.00142	1.566	4.138
July	25	0.000645	0.709	2.393
August	25	0.0002	0.251	1.385
September	25	0.000169	0.507	1.632
October	25	0.000426	0.98	2.192
November	25	0.00213	1.355	2.317
December	25	0.000587	0.953	1.804