

STATEMENT OF BASIS

PERMITTEE: City of Eagle Butte

FACILITY: City of Eagle Butte Wastewater Treatment Facility (Lagoon)

PERMIT NO: SD-0020192

RESPONSIBLE OFFICIAL: B. Jon Ganje, Wastewater Superintendent
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PERMIT TYPE: Minor Municipal Wastewater Treatment Plant – Lagoon (Renewal)

Background Information

This Statement of Basis is for the renewal of the National Pollutant Discharge Elimination System (NPDES) permit for the wastewater treatment lagoon facility serving the City of Eagle Butte. The facility is located within the city limits approximately 1/2 mile west of the city center in the Northwest ¼ of Section 18, Township 12 North, Range 24 East in Dewey County, South Dakota. The facility discharge point is located at latitude 45°00'27" N., longitude 101°15'30" W. This facility is located within the exterior boundaries of the Cheyenne River Sioux Indian Reservation.

The current permit became effective on July 1, 2006 and expired June 30, 2011. The permit has been administratively extended pending issuance of the renewal permit.

The City of Eagle Butte's facility consists of three waste stabilization ponds or cells (32.9 acres, 19.5 acres and 15.0 acres). Ponds 1, 2 and 3 are operated in series with any offsite discharge occurring from the outfall located at the NW corner of pond 3. The discharge is released to Green Grass Creek. Refer to Figures 2-1 and 2-2 for site layout.

This facility receives only domestic wastewater from the City of Eagle Butte and North Eagle Butte. Based on information provided by the Permittee, there are no known industrial users to the system. The facility currently serves approximately 2,820 people as of the 2000 census with an estimated average daily wastewater loading of 211,500 gpd.

The proposed NPDES Permit Number SD-0020192 (Renewal) authorizes this discharge, only at outfall 001 and is a "permission to discharge required" permit. This permit requires the responsible official/operator of the facility to provide to the EPA, a written request to discharge. This permit also requires the facility to sample prior to discharge, submit results to the EPA for approval, and discharge only upon written approval. In addition to sampling prior to discharge, sampling during discharge is also required. Effluent limitations, detailed monitoring requirements and other conditions are set forth in this permit.

City of Eagle Butte WWTP



Figure 2-1 Wastewater Flow Schematic

City of Eagle Butte WWTP Site Layout

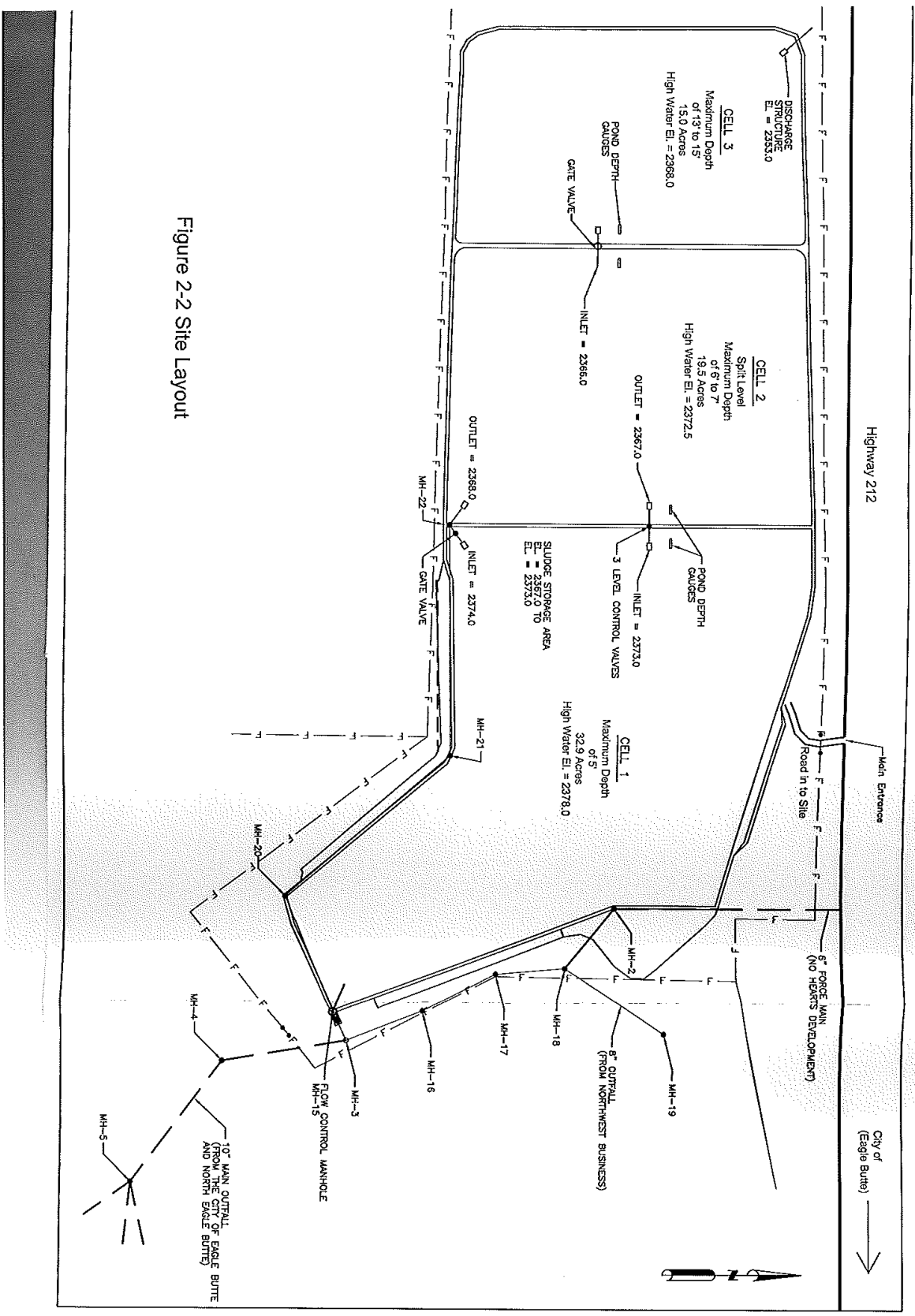


Figure 2-2 Site Layout

Receiving Waters

The treated effluent from this facility will be discharged into Green Grass Creek, immediately south of State Highway 63 (US Highway 212), then flows north approximately 15 miles to the Moreau River.

Monitoring Data

The facility does not continuously discharge; its discharge is controlled. Refer to the following table describing reported data during the last permit cycle.

DMR data for permit term from September 2006 to March 2011

	BOD (mg/L)		pH		TSS (mg/L)		O&G	<i>E. coli</i>	Flow (mgd)	
	30 Day Avg	7 Day Avg	min	max	30 Day Avg	7 Day Avg	(mg/L)	Max (#/100ml)	30 Day Avg	Daily Max
9/30/06	-	-	-	-	-	-	-	-	ND	ND
12/31/06	-	-	-	-	-	-	-	-	ND	ND
3/31/07	-	-	-	-	-	-	-	-	ND	ND
6/30/07	-	-	-	-	-	-	-	-	ND	ND
9/30/07	5.5	-	8.5	8.78	22	-	0.02	133	2	-
12/31/07	-	-	-	-	-	-	-	-	ND	ND
3/31/08	-	-	-	-	-	-	-	-	ND	ND
6/30/08	-	-	-	-	-	-	-	-	ND	ND
9/30/08	15	15	8.72	8.79	66	66	-	32	-	-
12/31/08	-	-	-	-	-	-	-	-	ND	ND
3/31/09	-	-	-	-	-	-	-	-	ND	ND
6/30/09	16	18.5	8.53	9.12	30	34	2	135	-	2.9
9/30/09	-	-	-	-	-	-	-	-	ND	ND
12/31/09	-	-	-	-	-	-	-	-	ND	ND
3/31/10	-	-	-	-	-	-	-	-	ND	ND
6/30/10	13	13	7.65	8.82	22.75	22.75	2	3.1	2.9	2.9
9/30/10	-	-	-	-	-	-	-	-	ND	ND
12/31/10	10.8	12	7	8.51	29.6	34.6	2	7.4	2.9	2.9
3/31/11	-	-	-	-	-	-	-	-	ND	ND

Note: ND = No Discharge

The facility reported discharges for the 3rd quarter 2007, 3rd quarter 2008, 2nd quarter 2009, 2nd quarter 2010 and 4th quarter 2010; “no discharge” has been reported through 1st quarter 2011. A review of the self-monitoring data as follows for the facility, indicate that there was only one violation (pH=9.12 in 2nd quarter 2009) during the previous permit cycle.

Inspections

The last inspection of the City of Eagle Butte's wastewater treatment facility was performed by personnel from the EPA on April 11, 2006.

The inspection report noted that system inspection logs were not being kept, sampling and calibration records were not available, discharge monitoring reports were not being submitted, sample collection records were incomplete, no treatment control procedures for emergencies were established, and standby power was not available. The City of Eagle Butte prepared a Summary of Corrective Actions on 5/10/06 addressing these deficiencies.

In the month of March 2010, an unauthorized discharge occurred. On September 10, 2010, Findings of Violation and Order for Compliance and Administrative Complaint and Notice of Opportunity for Hearing documents were filed. These documents outlined various violations of the existing permit. A Summary of Corrective Actions was completed on 12/14/2010 to discuss and address deficiencies outlined in the "Findings of Violation and Order for Compliance and Administrative Complaint".

Water Quality Considerations

The Cheyenne River Sioux Tribe does not have program authorization (treatment as state (TAS)) for water quality standards (WQS) that can be approved by the EPA. In the absence of water quality standards on the reservation, the EPA needs to consider protecting beneficial uses of the receiving waters. The Cheyenne River Sioux Tribe has provided designated uses for the upper portion of the Green Grass Creek as recreational, cultural and spiritual activities. Tribal uses for the Moreau River are permanent warm water fish and aquatic life propagation, full immersion recreation, wildlife, stock watering, and irrigation, agricultural, cultural and spiritual activities water.

Section 101(a)(2) of the Clean Water Act states "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983". The EPA regulations on water quality standards specify at 40 CFR Part 131.10(j) "A State must conduct a use attainability analysis as described in §131.3(g) whenever : (1) The State designates or has designated uses that do not include the uses specified in section 101(a)(2) of the Act, or (2) The State wishes to remove a designated use that is specified in section 101(a)(2) of the Act or to adopt subcategories of uses specified in section 101(a)(2) of the Act which require less stringent criteria." To this writer's knowledge, a use attainability analysis has not been done on the Green Grass Creek segment. Therefore, the beneficial uses of the receiving waters will be considered to include aquatic life and recreation.

Monitoring for DO, ammonia and temperature was eliminated in the previous permit, because monitored effluent data from the three documented discharges over the period of the permit, indicated concentrations (ammonia - min 0.75 mg/L; max 17.4 mg/L) within potential limits. With the updated designated uses provided by the Cheyenne River Sioux Tribe for the upper portion of Green Grass Creek, monitoring for ammonia and temperature has been reinstated into this permit.

There exists a potential for primary recreational contact with the effluent as it is conveyed to and within Green Grass Creek. The EPA has adopted numeric human health criteria for bacteria for the protection of primary contact recreational uses. These contact values for *Escherichia coli* are 235 colonies/100 mL (one time grab) and 126 colonies/100 mL (5 day geometric mean).

Effluent Limitations

Effective immediately and lasting through the life of this permit, no discharge shall occur until permission has been granted by the permit issuing authority. Permission to discharge does not release the facility from liability should effluent violations occur.

The final effluent limitations for this permit are based on National Secondary Treatment Standards and the EPA Water Quality Criteria. Those effluent limitations are given below.

Parameter	30-Day Average <u>a/</u>	7-Day Average <u>a/</u>	Rational
BOD ₅ , mg/L <u>b/</u>	30	45	40 CFR 133
Total Suspended Solids, mg/L <u>b/</u>	110	165	40 CFR 133.105(d)
<i>Escherichia coli</i> , a one time grab sample shall not exceed 235 colonies/100 ml. The 5-day geometric mean shall not exceed 126 colonies/100 ml. <u>c/</u>			EPA Water Quality Criteria
The pH of the effluent shall not be less than 6.5 nor greater than 9.0 in any single sample or analysis.			EPA Water Quality Criteria
The concentration of oil and grease in any single sample shall not exceed 10 mg/L. <u>d/</u>			EPA BPJ

a/ See Permit Definitions, Part 1.1., for definition of terms.

b/ The limits for BOD₅ and total suspended solids are based on National Secondary treatment standards (40 CFR §133.102).

c/ The limits for *Escherichia coli* apply between May 1 and September 30 only. The limits for *Escherichia coli* of 126 colonies/100mL based on the geometric mean, require a minimum of 5 samples be obtained during separate 24-hour periods for any 30-day period. In addition, any single sample result may not exceed 235 colonies/100 mL, nor shall more than 20 percent of the samples examined in this same 30-day period exceed 126 colonies/100 mL.

d/ The limit for oil and grease is based on a combination of the EPA Region 8 BPJ and protecting the receiving waters from a visible sheen or floating oil.

Effluent Self-Monitoring Requirements:

This permit is a “permission to discharge required” permit, therefore, the responsible official/operator of the facility is required to provide to the EPA, a written request to discharge. As part of this permission process, the facility shall collect samples (BOD₅, TSS, *E. coli* and pH) prior to discharge, submit results to the EPA for approval, and discharge only upon approval.

Effluent monitoring data shall be reported in the Discharge Monitoring Report Form (EPA No. 3320-1). The frequency of submittal of the DMR forms has been changed from quarterly to monthly.

The following self-monitoring requirements are included in this permit:

Parameter	Frequency	Sample Type <u>a/</u>
Flow, MGD <u>c/</u>	<u>b/</u>	Instantaneous
BOD ₅ , mg/L	<u>b/</u>	Grab
Total Suspended Solids, mg/L	<u>b/</u>	Grab
<i>Escherichia coli</i> , no./100 ml <u>e/</u>	<u>d/</u>	Grab
pH, standard units <u>f/</u>	<u>b/</u>	Grab
Oil and Grease Sheen, Visual	<u>b/</u>	Observation <u>g/</u>
Oil and Grease, mg/L	<u>g/</u>	Grab
Floating Solids and Foam	<u>h/</u>	Observation
Ammonia, as N, mg/L	<u>b/</u>	Grab
Temperature, °C	<u>b/</u>	Instantaneous

a/ See Permit Definitions, Part I.A. for definition of terms.

b/ A minimum of three (3) samples shall be taken during any discharge of wastewater. It is required that a sample be taken at the beginning, middle, and end of the discharge if the discharge is less than one week in duration. If a single, continuous discharge is greater than one week in duration, three (3) samples shall be taken during the first week and one (1) during each following week. All of the samples collected during the 7-day or 30-day period are to be used in determining the averages. The permittee always has the option of collecting additional samples if appropriate.

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. The average flow rate (in million gallons per day) during the period of discharge and the daily maximum flow (maximum volume discharged during a 24-hour period) shall be reported. **The date and time of the start and termination of each discharge shall be reported.**

d/ For each discharge, one (1) *Escherichia coli* sample shall be collected at the discharge point prior to release as part of the “permission to discharge” process, and each day for the first five (5) days of discharge and then weekly thereafter until the discharge is terminated. Should the discharge be less than 4 days in duration, a minimum of 5 samples (including “permission” stage sample) shall be taken in order to correctly calculate the geometric mean value. Weekly samples shall be collected simultaneously with the weekly for BOD₅, etc. This monitoring is only applicable if the discharge occurs between May 1 and September 30.

e/ Acceptable analytical methods for *Escherichia coli* testing are referenced in 40 CFR Part 136.

f/ Measurement must be taken within fifteen (15) minutes of sampling.

- g/ If a visible oil sheen or floating oil is detected in the discharge, a grab sample shall be immediately taken, 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.
- h/ A weekly visual observation for floating solids and foam is required, recorded in the daily log notebook and reported.

Receiving Stream Self-Monitoring Requirements

Pollutants of concern from this wastewater discharge that may affect water quality include pH and ammonia-N. Total ammonia is present in the aqueous environment in both ionized and un-ionized forms. It is the un-ionized form which is toxic. The proportion of total ammonia present in un-ionized form in the receiving stream is a function of the combined upstream and effluent ammonia concentrations, as well as pH and temperature characteristics in the receiving water. Ammonia is non-conservative (i.e., concentrations are affected by biological processes) and its toxicity is affected by environmental conditions (pH and temperature) in the receiving stream.

Presently, no stream data is available for Green Grass Creek in the vicinity of the effluent discharge point. The intent of gathering stream data within this permit period is to be able to evaluate potential ammonia impacts on the beneficial uses downstream of the facility discharge.

Monitored data (pH, temperature and flow characteristics) collection frequency for the receiving stream shall be monthly (minimum) for the effective period of this permit. The permittee can provide additional data if the opportunity arises. The monitoring location shall be identified and located far enough downstream of the discharge point to allow for complete stream mixing of the effluent and receiving stream waters or when no discharge is occurring. Stream monitoring shall be conducted when practical and accessible.

All receiving stream monthly monitored data collected, including detailed location (latitude, longitude), dates and times of the sample collections, shall be reported on the DMR forms.

Inspection Requirements

The permittee is required to inspect its wastewater treatment facility on at least a **weekly** basis. The inspection shall be conducted to determine if a discharge is occurring, has occurred since the previous inspection, and/or if a discharge is likely to occur before the next inspection. If no discharge is observed, it shall be so recorded in the daily logbook. The physical condition of the facility, as outlined in Part 1.3.3. of this permit, shall also be inspected with results recorded in the daily logbook.

Endangered Species Act (ESA) Requirements

Section 7(a) of the Endangered Species Act requires federal agencies to insure that any actions authorized, funded, or carried out by an agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species. Federally listed threatened, endangered and candidate species found in Dewey County, South Dakota include:

<u>Group</u>	<u>Species</u>	<u>Status</u>
Birds	Whooping Crane (<i>Grus americana</i>)	E
Birds	Piping Plover (<i>Charadrius melodus</i>)	T
Birds	Least tern (<i>Sterna antillarum</i>)	E
Birds	Sprague's pipit (<i>Anthus spragueii</i>)	C
Fish	Pallid sturgeon (<i>Scaphirhynchus albus</i>)	E
Mammals	Black-footed ferret (<i>Mustela nigripes</i>)	E

T = Threatened, E = Endangered, C = Candidate

The EPA finds that this permit is Not Likely to Adversely Affect any of the species listed by the U. S. Fish and Wildlife Service under the Endangered Species Act. This facility discharges into Green Grass Creek, which flows into the Moreau River. The permit limitations are protective of water quality and flows are expected to not be excessive.

National Historic Preservation Act (NHPA) Requirements

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The EPA has evaluated its planned reissuance of the NPDES permit for the City of Eagle Butte WWTP facility to assess this action's potential effects on any listed or eligible historic properties or cultural resources. The EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this permit is a renewal and will not be associated with any new ground disturbance or significant changes to the volume or point of discharge.

Miscellaneous

The permit will be issued for approximately five years, but not to exceed five years. The effective date and expiration date of the permit will be determined at the time of permit issuance.

On December 11, 2008, the EPA published in the *Federal Register* (73FR75340-75346) new civil penalties for violation of the Clean Water Act (including permit conditions), etc., in accordance with the requirements of the Civil Monetary Penalty Inflation Adjustment Rule. The new values were effective January 12, 2009. Accordingly, the appropriate values have been changed in the permit, Part 3.2, Penalties for Violations of Permit Conditions.

Permit drafted by Craig Jorgenson, SEE, 8P-W-WW, March 30, 2011

Permit reviewed by Robert Shankland, SEE, 8P-W-WW, July 11, 2011

Permit reviewed by Bruce Kent, Senior Environmental Scientist, 8P-W-WW, July 8, 2011

Addendum

The 30-day public notice period began August 4, 2011.

Written comments were received from the City of Eagle Butte on September 14, 2011. Response to these comments is as follows:

1. Facility location: **Noted. The Statement of Basis will be modified to reflect that the wastewater facility is within the City of Eagle Butte city limits.**
2. 2006 Inspection Report: **The inspection report listed various deficiencies at the time of the inspection. The City of Eagle Butte prepared a Summary of Corrective Actions on 5/10/06 addressing these deficiencies. The Statement of Basis has been modified to reference the City's summary of corrective actions.**
3. March 2010 upset: **The permittee has stated that this upset was a result of vandalism and that preventative measures have been installed to reduce the chance of a recurrence. A Summary of Corrective Actions was completed on 12/14/2010 to discuss and address deficiencies outlined in the September 10, 2010 "Findings of Violation and Order for Compliance and Administrative Compliant". The Statement of Basis has been modified to reference the City's summary of corrective actions.**
4. Effluent monitoring: **In addition to the updated beneficial uses of the creek, the potential impact to aquatic life by ammonia concentration was reviewed. Although the last effluent ammonia data obtained from 2000 - 2005 were at concentrations as to allow this monitoring to be removed from the permit at that time, the data does reflect a reasonable potential to exceed the ammonia limit for the creek and thus potentially impact aquatic life. Effluent monitoring of ammonia and temperature is required only at the time of any discharge from Outfall 001. As will be further discussed in response No. 6 below, this data will be incorporated into the EPA's AMMTOX ammonia modeling program utilized to evaluate a stream's ability to assimilate ammonia with respect to the existing stream and effluent ammonia characteristics.**
5. Effluent monitoring reporting frequency: **This permit will require reporting of any discharges from Outfall 001 on a monthly basis. If no discharge has occurred during the monthly reporting period, no effluent data is required other than "no discharge" shall be noted on the DMR form. The permit does require that receiving stream monitoring data, as discussed below, be included on the DMR form. The completed DMR form shall then be forwarded to the EPA and CRST as outlined in Part 2.4 of the permit no later than the 28th day of the month following the completed reporting period.**
6. Monitoring data collection frequency of receiving stream: **As outlined in the Statement of Basis, the toxicity of ammonia (N) within the receiving stream is a pollutant of concern.**

The level of toxicity is significantly affected by the environmental conditions of temperature and pH. Currently, there is no available stream data for this segment of the Green Grass Creek. In the absence of actual Green Grass Creek stream data, data from an assumed similar stream would be utilized in the EPA's AMMTOX ammonia modeling program. Stream pH levels within South Dakota vary significantly, hence the need for actual stream measurements. These measurements which must be done within 15 minutes of sampling, can be accomplished during any of the weekly facility inspections for the month. At the time of this permit's renewal in 5 years, the new stream data will be incorporated into the EPA's AMMTOX ammonia modeling program which takes into account receiving stream conditions and effluent characteristics in determining the stream's capacity to assimilate any effluent ammonia concentrations. This permit requires the monthly monitoring for these two stream characteristics in addition to flow conditions (visual observation). Stream monitoring shall be conducted when practical and accessible.

No other comments were received.

The effective date will be November 1, 2011 and the expiration date will be September 30, 2016 for a five year permit.

Craig Jorgenson, SEE, 8P-W-WW, September 27, 2011.