Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Program

STATEMENT OF BASIS

RENEWAL

APPLICANT NAME: Medallion Exploration

MAILING ADDRESS: 3165 East Millrock Dr, Suite 550
Holladay, UT 84121

FACILITY LOCATION: CI Wings Field, which is located in the NENE of Section 32 and the SESE of Section 29 all in Township 51 North, Range 72 West in Campbell County. The produced water will be discharged to Little Rawhide Creek (class 3B) which is tributary to Rawhide Creek (class 3B) which is tributary to Little Powder River (class 2ABww). The established irrigation compliance point(s) are located in the NENE of Section 32 and SENE of Section 4 all in Township 51 North, Range 72 West, prior to the first downstream points of irrigation diversion/use on Rawhide Creek. In the permittee's originally submitted application for coal bed methane water discharge, a total flow rate of 0.32 MGD has been estimated from this facility. This permit requires that the produced water being discharged from this facility originate from the Fort Union, Canyon and Anderson coal seams.

NUMBER: WY0048607

Upon approval of this renewal, the terms of permit WY0048607 are hereby modified as follows:

1. ***Correct outfalls 001 and 002 to their "as-built" locations.***
2. ***Remove manganese and sulfate from routine end-of-pipe monitoring.***
3. ***Reduce bicarbonate, total alkalinity and chloride from monthly to annually sampling.***

This facility is a typical coal bed methane production facility in which groundwater is pumped from a coal bearing formation resulting in the release of methane from the coal bed. The permit authorizes the discharge to the surface of groundwater produced in this way provided the effluent quality is in compliance with effluent limits that are established by this permit. In developing effluent limits, all federal and state regulations and standards have been considered and the most stringent requirements incorporated into the permit. The EPA Effluent Guidelines and Standards for Oil and Gas Extraction Point Source Category (Part 435, Subpart E) predate the development of coal bed methane extraction technology; however the technology is similar enough to conventional gas extraction that, in the professional judgment of the WDEQ, this effluent limit guideline is appropriately applied to coal bed methane gas production. This permit does not cover activities associated with discharges of drilling fluids, acids, stimulation waters or other fluids derived from the drilling or completion of the wells.

The permittee has chosen option 2 of the coal bed methane permitting options. Under this permitting option, the produced water is immediately discharged to a class 2 or 3 receiving stream which is eventually tributary to a class 2AB perennial water of the state. The permit establishes effluent limits for the end of pipe, which are protective of all the designated uses defined in Chapter 1 of Wyoming Water Quality Rules and Regulations. This may include drinking water, game and non-game fish, fish consumption, aquatic life other than fish, recreation, agriculture, wildlife, industry and scenic value. In addition, the permit establishes two irrigation compliance points. The irrigation compliance points are designated monitoring locations prior to the first downstream point of irrigation

diversion/use in Rawhide Creek from the permitted facility. Effluent limits associated with the irrigation compliance points (SAR = 6 and EC = 2200 micromhos/cm) were determined from a combination of one or more of the following: technical information submitted by the applicant, published scientific literature, credible water quality data that has been through formally adopted quality control/quality assurance review, and best professional judgment. These limits satisfy provisions under Chapter 1, Section 20 (protection of agricultural water supply) of the Wyoming Water Quality Rules and Regulations.

The Wyoming DEQ has determined through review of the permit application and available scientific information that effluent discharged from this facility will be put to beneficial use and is unlikely to reach the Little Powder River. The permittee has submitted certified statements that demonstrate discharged effluent will be put to beneficial use for livestock, wildlife watering, and dust suppression. Although most of the discharge will be used by wildlife, livestock, and dust suppression, a portion of the flow may also be lost due to stream channel infiltration. Information gathered from Western Land Services, Sheridan Wyoming (April 19, 2001) and Hydrologic Consultants, Inc. (2001) indicate a mean channel infiltration loss rate for ephemeral drainages in the Powder River at 0.1 cfs per mile of stream channel. Review of the permit application reveals that if all produced effluent were discharged to Little Rawhide Creek, the estimated 0.5 cfs of maximum produced effluent would be lost to channel infiltration/evaporation prior to the confluence of Little Rawhide Creek and Rawhide Creek. Furthermore, the permittee indicates that all produced effluent will be contained in an off-channel pit and utilized for dust suppression by a nearby coal mine. Based on this information, it appears unlikely that produced effluent from this facility will reach Rawhide Creek or the Little Powder River. The permittee has committed that effluent shall not reach the Little Powder River. However, in the event that such a situation occurs, this permit establishes a monitoring station on the receiving stream prior to the confluence with the Little Powder River. This station will function to monitor any effluent flows to the Little Powder River.

Permit effluent limits are based on federal and state regulations and are effective as of the date of issuance. The permit establishes that the pH limit must remain between 6.5 and 9.0 standard units. Effluent limits for total dissolved solids (5,000 mg/l) and specific conductance (7500 micromhos/cm) are included to protect for stock and wildlife watering. These limits are based upon Wyoming Water Quality Rules and Regulations, Chapter 2 and apply to discharge from any permitted outfall. In addition, the permit establishes a total barium limit of 1800 µg/l, a total arsenic limit of 3.6 µg/l, and a chlorides limit of 46 mg/l. These limits are based on standards for class 2AB waters which are intended to protect for the above listed designated uses and reflect the application of the antidegradation provisions required under Chapter 1 of the Wyoming Water Quality Rules and Regulations.

This permit originally established a total radium 226 limit of 1 pCi/l and total petroleum hydrocarbons (TPH) limit of 10 mg/l at the end of pipe. Based upon water quality data collected by WDEQ since the time this permit was originally issued, a permitting approach for establishing total radium limits in coal bed methane permits has been developed. This approach is based upon the distance of the outfall from a class 2 water. The removal of the originally established total radium 226 limit is based on this permitting approach. In addition, a review of discharge monitoring report data for this facility and other CBM facilities in Northeast Wyoming indicates that the maximum reported concentrations for total petroleum hydrocarbons (TPH) in the discharge were well below the water quality standard of 10 mg/l established in Chapter 1 of the Wyoming Water Quality Rules and Regulations. Therefore, WDEQ has removed the effluent limit and monitoring requirements for TPH in this permit. Based on evaluation of the available data, it is WDEQ's determination that modifying the total radium 226 and removing total petroleum hydrocarbons limits from this permit conforms to the anti-backsliding requirements established in Section 402(o).2.B.4 of the Clean Water Act.

The dissolved iron limit is modified to 1000 µg/l for those outfalls greater than 1 mile from the confluence with a class 2 water. The dissolved iron limit of 1000 µg/l is based upon chronic aquatic life standards for class 3B waters greater than one mile from the confluence of a class 2 water, and reflects the application of standards required under Chapter 1 of the Wyoming Water Quality Rules and Regulations.

Results are to be reported twice-yearly and if no discharge occurs at the outfall then "no discharge" is to be reported. The permit also requires that an initial monitoring of the effluent be conducted within the first 60 days of discharge and the results submitted to WDEQ and the U.S. Environmental Protection Agency within 120 days of the commencement of discharge.

The permittee has submitted information to demonstrate that all produced effluent will likely be lost to channel evaporation/infiltration or utilized for dust suppression from a nearby coal mine prior to intercepting Rawhide Creek. If in the event produced effluent reaches the established irrigation compliance points, in this case on Little Rawhide Creek which are located at the NENE of Section 32 and SENE of Section 4 all in Township 51 North, Range 72 West, the permit establishes a specific conductance limit of 2200 micromhos/cm and a sodium absorption ratio (SAR) limit of 6 at the irrigation point of compliance. Effluent limits at each irrigation compliance point which are protective of irrigation uses are effective from April 1 thru September 30 of each calendar year.

In order to monitor and regulate coal bed methane discharge for compliance with Chapter 1, Section 20 (protection of agricultural water supply), effluent limits for sodium adsorption ratio (SAR) and specific conductance are included in this permit. The Wyoming DEQ has determined that a SAR of 6 and specific conductance of 2200 micromhos/cm is intended to be protective of agriculture use in the Rawhide Creek drainage.
Information used to establish the specific conductance limit of 2200 micromhos/cm was obtained from permit WY0048011 and is summarized below:

> Data collected from several locations on Rawhide Creek, near Triton Coal Mine and at the US Highway 14/16 bridge, were utilized in the development of a specific conductance limit that is protective of existing irrigation in Rawhide Creek (data was obtained from the Wyoming Water Resources Data System). This water quality data was collected prior to coal-bed methane development in the Rawhide Creek drainage. The locations of the stream monitoring sites are located downstream of the Russell Draw/Rawhide Creek confluence but upstream of the first irrigation point of diversion/use on Rawhide Creek.
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> Linear relationships between specific conductance-discharge and discharge-sulfate were derived from the aforementioned water quality data. The linear relationships were significant in the prediction of flow-dependent specific conductance and sulfate values for Rawhide Creek. According to Applied Hydrology's technical report "*Certification of Compliance with Chapter 1, Section 20 of the Wyoming Water Quality Rules and Regulations for Devon Energy Production Company, LP CBM Discharge Permits within the Rawhide Creek Watershed - January 31, 2002*", active irrigation exists in the Rawhide Creek drainage near the confluence of Rawhide Creek and Little Powder River roughly 30 stream miles downstream of Devon's proposed facility. According to Applied Hydrology Associates, the downstream irrigator diverts at his authorized diversion rate of no more than 0.10 cfs via a diversion ditch from Rawhide Creek. Furthermore, based on Applied Hydrology Associates' interviews with the irrigator, diversion of irrigation water from Rawhide Creek is initiated when the sulfate concentration of Rawhide Creek is roughly 1500 mg/l.
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> To establish a specific conductance limit protective of irrigation in Rawhide Creek, three assumptions were considered: 1) The available pre-coal bed methane water quality data of Rawhide Creek is representative of pre-coal bed methane ambient Rawhide Creek water quality and 2) Rawhide Creek water can be effectively diverted (via a diversion ditch) for irrigation at any discharge within Rawhide Creek but only at a rate not to exceed 0.10 cfs and 3) the y-intercept of the composite linear relationship was set at 0 to ensure conservatism in the sulfate-dependent predictions of specific conductance The linear relationship derived from the composite of pre-coal bed methane water quality data collected on Rawhide Creek predict that at a sulfate concentration of 1500 mg/l, the predicted specific conductance level is roughly 2200 micromhos/cm. However, data on ephemeral drainages of northeast Wyoming is limited and the natural water quality of Rawhide Creek may exhibit high temporal variability with respect to sulfate and specific conductance at any given flow. That high variability may not be accounted for in the current water quality data record for Rawhide Creek. However, the predicted specific conductance of 2200 micromhos/cm at a sulfate concentration of 1500 mg/l is more conservative than utilizing the 25th percentile derived from the

aforementioned specific conductance data set, which equates to a specific conductance of 2800 micromhos/cm. Furthermore, it is unknown at this time as to what the potential long-term effects of coal-bed methane discharges into Rawhide Creek will have on the frequency distribution of specific conductance and sulfate concentrations in the drainage and any resultant impacts to irrigated agricultural uses. For example, by increasing the frequency of flows in Rawhide Creek from coal-bed methane discharges, it is unknown whether the sulfate/specific conductance relationship of Rawhide Creek will be altered.

The SAR limit of 6 was determined to not reduce the rate of infiltration of irrigated soils in the Rawhide Creek drainage, given the specific conductance threshold referenced above as ascertained from Figure 3 (page 44) of Agricultural Salinity and Drainage, Hanson et al., 1999 revision. In addition, information obtained from Applied Hydrology's technical report "*Certification of Compliance with Chapter 1, Section 20 of the Wyoming Water Quality Rules and Regulations for Devon Energy Production Company, LP CBM Discharge Permits within the Rawhide Creek Watershed - January 31, 2002*" indicated that water with an SAR of 6 may be deemed usable for irrigation in the Rawhide Creek drainage. An SAR limit of 6 and specific conductance limit of 2200 micromhos/cm will also maintain the baseline C4-S2 irrigation suitability category for the Little Powder River drainage (see Figure 25, of Diagnosis and Improvement of Saline and Alkali Soils, US Dept. of Agricultural Handbook No. 60, 1954). Monitoring will be required for flow volume, calcium, magnesium, sodium, bicarbonate, sodium adsorption ratio and specific conductance when flow is present at the irrigation compliance point(s) during the irrigation season April 1 thru September 30.

The permit requires daily monitoring on Little Rawhide Creek to determine whether water discharged from the outfalls reaches the established irrigation compliance points from April 1 thru September 30. Daily monitoring is necessary during this period because the permit establishes different sampling and analysis requirements based on whether the effluent reaches the irrigation compliance points. Once flow at the irrigation compliance points has been documented within a sampling month, then weekly monitoring of flow is required for the month. At the beginning of each calendar month from April 1 thru September 30, the frequency will revert to daily until such time as flow occurs at the irrigation compliance point and a sample is collected to represent effluent quality for irrigation compliance point constituents for that month. Effluent samples must be collected for a weekly sampling period if flow persists at the irrigation compliance point for 24 hours or more. Results are to be reported twice-yearly and if no flow occurs then "no discharge" is to be reported. The permit also requires that an initial monitoring of the effluent be conducted within the first 60 days of discharge and the results submitted to WDEQ and the U.S. Environmental Protection Agency within 120 days of the commencement of discharge.

The permit also requires sampling at designated water quality monitoring stations located on the receiving stream Rawhide Creek and at locations on the Little Powder River (class 2ABww water) that Rawhide Creek confluences. Water quality monitoring stations on the Little Powder River will be located upstream and downstream of the confluence of Rawhide Creek with the Little Powder River. Effluent samples at the designated water quality monitoring stations must be collected on a monthly sampling period and are to be reported semiannually. If no flow occurs at the tributary monitoring station on Rawhide Creek then "no discharge" is to be reported and samples need not be collected at the three water quality monitoring stations for that monthly sampling period. At the designated water quality monitoring stations, monitoring will be required for calcium, chlorides, magnesium, sodium, sodium absorption ratio and specific conductance. Information gathered from the water quality monitoring stations may result in modification of the permit to protect existing uses on the tributary and mainstem.

The designated water quality monitoring stations are located on the tributary in the NENE of Section 26, Township 52 North, Range 72 West and on the mainstem in the NENE of Section 26, Township 52 North, Range 72 West. Established water quality monitoring stations on the mainstem are to be located outside the mixing zone of the tributary with the mainstem.

There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of visible deposits of iron, hydrocarbons or any other constituent on the bottom or shoreline of the receiving water. In addition, erosion control measures will be implemented to prevent significant damage to or erosion of the receiving water channel at the point of discharge.

The discharge of wastewater and the effluent limits that are established in this permit have been reviewed to ensure that the levels of water quality necessary to protect the designated uses of the receiving waters are maintained and protected. An antidegradation review has been conducted and verifies that the permit conditions, including the effluent limitations established, provide a level of protection to the receiving water consistent with the antidegradation provisions of Wyoming surface water quality standards.

Self monitoring of effluent quality and quantity is required on a regular basis with reporting of results semiannually. The permit is scheduled to expire on December 31, 2011.

Eric Hargett
Water Quality Division
Department of Environmental Quality
May 24, 2002
Major Modification – Bob Alexander – January 24, 2006
Renewal – Bob Alexander – May 8, 2007

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, (hereinafter referred to as "the Act"), and the Wyoming Environmental Quality Act,

Medallion Exploration

is authorized to discharge from the wastewater treatment facilities serving the

CI Wings Field

located in

NENE of Section 32 and the SESE of Section 29 all in Township 51 North, Range 72 West in Campbell County

to receiving waters named

Little Rawhide Creek (class 3B) which is tributary to Rawhide Creek (class 3B) which is tributary to Little Powder River (class 2ABww)

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

The original permit became effective on July 12, 2002 and expires on June 30, 2007. This permit renewal shall become effective on the signature of the Director of the Department of Environmental Quality. This permit is being renewed before expiration due to a requested increase in the daily flow limit.

This permit and the authorization to discharge shall expire at midnight December 31, 2011.

John Wagner
Administrator - Water Quality Division

6/29/07
Date

John V. Corra
Director - Department of Environmental Quality

6/29/07
Date

a. Monitoring of the initial discharge

Within 60 days of commencement of discharge, a sample shall be collected from each outfall and analyzed for the constituents specified below, at the required detection limits. Within 120 days of commencement of discharge, a summary report on the produced water must be submitted to the Wyoming Department of Environmental Quality and the U.S. EPA Region 8 at the addresses listed below. ***If Initial Monitoring Reports have already been submitted for an outfall, resubmission is not required unless a new coal seam has been added to that outfall.*** This summary report must include the results and detection limits for each of the constituents. In addition, the report must include written notification of the established location of the discharge point (refer to Part I.B.11). This notification must include a confirmation that the location of the established discharge point(s) is within 1,510 feet of the location of the identified discharge point(s), is within the same drainage, and discharges to the same landowner's property as identified on the original application form. The legal description and location in decimal degrees of the established discharge point(s) must also be provided. After receiving the monitoring results for the initial discharge, the routine monitoring requirements described in Part I.A.2.b. may be modified to require more stringent monitoring.

Parameter* (See notes following the table on chemical states)	**Required Detection Limits and Required Units**
Alkalinity, Total	1 mg/l as $CaCO_3$
Aluminum, Dissolved	50 µg/l
Arsenic, Total	1 µg/l
Barium, Total	100 µg/l
Bicarbonate	10 mg/l
Cadmium, Dissolved	5 µg/l
Calcium, Dissolved	50 µg/l, report as mg/l
Chlorides	5 mg/l
Copper, Dissolved	10 µg/l
Dissolved Solids, Total	5 mg/l
Dissolved Fluoride	0.1 µg/l
Hardness, Total	10 mg/l as $CaCO_3$
Iron, Dissolved	50 µg/l
Lead, Dissolved	2 µg/l
Magnesium, Dissolved	100 µg/l, report as mg/l
Manganese, Dissolved	50 µg/l
Mercury, Dissolved	1 µg/l
pH	to 0.1 pH unit
Radium 226, Total	0.2 pCi/l
Selenium, Total Recoverable	5 µg/l
Sodium Adsorption Ratio	Calculated as unadjusted ratio
Sodium, Dissolved	100 µg/l, report as mg/l
Specific Conductance	5 micromhos/cm
Sulfates	10 mg/l
Zinc, Dissolved	50 µg/l

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Effective immediately and lasting through December 31, 2011, the quality of effluent discharged by the permittee shall, at a minimum, meet the limitations set forth below. The permittee is authorized to discharge from outfall(s) serial numbers 001-002.

1. Such discharges shall be limited as specified below:

Effluent Limits

Effluent Characteristic	Daily Maximum Outfall	Daily Maximum Irrigation Compliance Point
Chlorides, mg/l	46	
Dissolved Iron, µg/l	1000	
pH, standard units	6.5 – 9.0	
Specific Conductance,	7500	2200
Total Arsenic, µg/l	3.6	
Total Barium, µ/l	1800	
Total Dissolved Solids, mg/l	5000	
Sodium Absorption Ratio, calculated		6

Note: 1) 'Dissolved' value for metals refers to the amount that will pass through a 0.45 µm membrane filter prior to acidification to 1.5-2.0 with Nitric Acid.

2) 'Total' value for metals refers to the total recoverable amount of that metal in the water column.

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units in any single grab sample.

The permittee's original submitted application for coal bed methane water discharge estimates a total flow rate of 0.32 MGD from 18 wells for this facility. This permit requires that the produced water being discharged from this facility originate from the Fort Union, Canyon and Anderson coal seams.

Information gathered from the water quality monitoring stations may result in modification of the permit to protect existing uses on the tributary and the mainstem.

Effluent limits at the irrigation compliance point(s) are only effective from April 1 thru September 30 of each calendar year.

There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of a visible sheen or visible hydrocarbon deposits on the bottom or shoreline of the receiving water.

All waters shall be discharged in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, ditches, or other waters of the state at the point of discharge. In addition, there shall be no deposition of substances in quantities which could result in significant aesthetic degradation, or degradation of habitat for aquatic life, plant life or wildlife; or which could adversely affect public water supplies or those intended for agricultural or industrial use.

2. Discharges shall be monitored by the permittee as specified below:

*Dissolved is the value based on the dissolved amount which is the amount that will pass through a 0.45 um membrane filter prior to acidification to pH 1.5 - 2.0 with nitric acid. Total is the value expressed in terms of total recoverable metal in the water column.

Initial monitoring reports are to be sent to the following addresses:

Planning and Targeting Program, 8ENF-PT
Office of Enforcement, Compliance, and Environmental Justice
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

and

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002

b. Routine monitoring End of Pipe (001-002)

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies: The first routine monitoring for the time frame during which the monitoring of initial discharge occurs will, at a minimum, consist of flow measurements for the duration of the six-month monitoring time frame. Monitoring will be based on semi-annual time frames, from January through June, and from July through December.

Parameter	Measurement Frequency	Sample Type
Bicarbonate	Annually	Grab
Dissolved Calcium	Monthly for April, May, June, July	Grab
Chloride	Annually	Grab
Dissolved Iron	Annually	Grab
Dissolved Manganese	Annually	Grab
Dissolved Fluoride	Monthly for April, May, June, July	Grab
Dissolved Magnesium	Monthly for April, May, June, July	Grab
pH	Once Every Six Months	Grab
Dissolved Sodium	Monthly for April, May, June, July	Grab
Sodium Adsorption Ratio	Monthly for April, May, June, July	Calculated
Specific Conductance	Monthly for April, May, June, July	Grab
Sulfate	Monthly for April, May, June, July	Grab
Total Alkalinity	Annually	Grab
Total Arsenic	Annually	Grab
Total Barium	Annually	Grab
Total Flow - (MGD)	Monthly	Continuous

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the outfall of the final treatment unit which is located out of the natural drainage and prior to admixture with diluent waters.

c. Irrigation Compliance Points (ICP1-ICP2)

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies when water discharged from the outfalls reaches the irrigation compliance point. Monitoring will be based on monthly time frames, from April 1 thru September 30 and reported semi-annually.

Parameter	Measurement Frequency	Sample Type
Bicarbonate	Annually	Grab
Dissolved Calcium	Monthly for April thru September	Grab
Dissolved Magnesium	Monthly for April thru September	Grab
Dissolved Sodium	Monthly for April thru September	Grab
Sodium Adsorption Ratio	Monthly for April thru September	Calculated
Specific Conductance	Monthly for April thru September	Grab
Total Flow - (MGD)	Monthly for April thru September	Instantaneous

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at the irrigation compliance point(s) which are located in the NENE of Section 32 and SENE of Section 4 all in Township 51 North, Range 72 West, on Little Rawhide Creek.

The permit requires daily monitoring on Little Rawhide Creek to determine whether water discharged from the outfalls reaches the established irrigation compliance points from April 1 thru September 30. Daily monitoring is necessary during this period because the permit establishes different sampling and analysis requirements based on whether the effluent reaches the irrigation compliance points. Once flow at the irrigation compliance points has been documented within a sampling month, then weekly monitoring of flow is required for the month. At the beginning of each calendar month from April 1 thru September 30, the frequency will revert to daily until such time as flow occurs at the irrigation compliance point and a sample is collected to represent effluent quality for irrigation compliance point constituents for that month. Effluent samples must be collected for a weekly sampling period if flow persists at the irrigation compliance point for 24 hours or more. Results are to be reported twice-yearly and if no discharge occurs then "no discharge" is to be reported.

d. Water Quality Monitoring Stations (TRIB1, ULPR, DLPR)

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Monitoring will be based on monthly time frames, and reported semiannually.

Parameter	Measurement Frequency	Sample Type
Dissolved Calcium	Monthly	Grab
Chloride	Monthly	Grab
Dissolved Magnesium	Monthly	Grab
Dissolved Sodium	Monthly	Grab
Sodium Adsorption Ratio	Monthly	Calculated
Specific Conductance	Monthly	Grab
Flow	Monthly	Instantaneous

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): designated water quality monitoring stations located on Rawhide Creek and in the main channel of the Little Powder River, upstream and downstream of the confluence with the Rawhide Creek. The designated water quality monitoring stations are located on the tributary in the SWNE of Section 26, Township 52

North, Range 72 West and on the mainstem in the NENE of Section 26, Township 52 North, Range 72 West. Established water quality monitoring stations on the mainstem are located outside the mixing zone with the tributary and the mainstem. Results are to be reported semiannually and if no flow occurs at the designated tributary monitoring station on Rawhide Creek, then "no flow" is to be reported and samples need not be collected at the water quality monitoring stations for that monthly sampling period.

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and approval by, the permit issuing authority.

2. Reporting

Results of initial monitoring, including the date the discharge began, shall be summarized on a Monitoring Report Form for Monitoring of Initial Discharge and submitted to the state water pollution control agency at the address below postmarked no later than 90 days after the commencement of discharge.

Results of routine end of pipe, irrigation compliance point, and water quality station monitoring during the previous six (6) months shall be summarized and reported semiannually on a Discharge Monitoring Report Form (DMR). If the discharge is intermittent, the date the discharge began and ended must be included. The information submitted on the first semiannual DMR shall contain a summary of flow measurements and any additional monitoring conducted subsequent to the submittal of the initial monitoring report. Whole effluent toxicity (biomonitoring) results must be reported on the most recent version of EPA Region VIII's Guidance for Whole Effluent Reporting. Monitoring reports must be submitted to the state water pollution control agency at the following address postmarked no later than the 15th day of the second month following the completed reporting period. The first report is due on February 15, 2008.

Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the Signatory Requirements contained in Part II.A.11.

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002
Telephone: (307) 777-7781

If no discharge occurs during the reporting period, "no discharge" shall be reported. If discharge is intermittent during the reporting period, sampling shall be done while the facility is discharging.

3. Definitions

a. The "monthly average" shall be determined by calculating the arithmetic mean (geometric mean in the case of fecal coliform) of all composite and/or grab samples collected during a calendar month.