

Wyoming Department of Environmental Quality
Water Quality Division
NPDES Program

Statement of Basis

Renewal

APPLICANT NAME: Pennaco Energy, Inc.

MAILING ADDRESS: 3601 Southern Drive
Gillette, WY 82718

FACILITY LOCATION: Barker Draw, which is located in the NESW, Section 3, the SESE, Section 6, the NENW Section 7, the NESE and NWNE, Section 8, the NWNE and SWNW, Section 9, the NENE, SESE, NWSW, and NESW, Section 10, Township 51 North, Range 74 West, Campbell County. The produced water will be discharged into various named, on-channel reservoirs (3B), which are located on Twentymile Creek (3B) and Barker Draw (3B). Twentymile Creek (3B) and Barker Draw (3B) are both tributary to the Powder River (2ABWW), via Wild Horse Creek (3B). The permit establishes two irrigation compliance points, located as described in Table 1, Part I.B.12 of the following permit. The permit establishes a maximum daily facility flow limit of 0.59 million gallons per day (MGD), and requires that the produced water discharged from this facility originate in on or more of the following formations: the Anderson, Smith, and/or Canyon coal seams.

NUMBER: WY0042102

General Description

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 judgement of the WDEQ, this effluent limit guideline is appropriately applied to coal bed methane gas production. The guideline limits oil and grease effluent concentrations to less than 35 mg/l and requires that discharges of produced water be used for agricultural production and/or wildlife propagation. 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, 3 or 4 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. Based on a review of this permit application and previous applications in this area, it has been determined that active irrigation uses of surface water occur downstream from the facility on Wild Horse Creek.

Facility Description

This permit anticipates discharge of up to 0.59 million gallons per day (MGD) of CBM effluent from outfalls 001-011. The outfalls discharge to on-channel reservoirs located on Twentymile Creek and Barker Draw, which are both tributaries of the Wild Horse Creek drainage, which flows into the Powder River, and are located approximately 44.5 stream miles from the Powder River confluence. The permittee has demonstrated that sufficient reservoir capacity exists in the proposed reservoirs to contain all CBM effluent. This permit also establishes two irrigation compliance points. In the event that discharge from this facility reaches an irrigation compliance point, this permit establishes limits protective of the irrigation use on Wild Horse Creek. Effluent limits associated with the irrigation compliance point (SAR=6, EC=2,000 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 judgement. These limits satisfy provisions under Chapter 1, Section 20 (protection of agricultural water supply) of the Wyoming Water Quality Rules and Regulations. The permit also establishes water quality monitoring stations located on Wild Horse Creek near the Powder River confluence, and on the Powder River proper, upstream and downstream of the Powder River – Wild Horse Creek confluence. These stations will function to monitor any effluent flows to the Powder River, and are located as described in Table 1, Part I.B.12 of the following permit. The reservoirs may only discharge in response to storm events or upstream reservoir overflow that causes the reservoirs to fill and overtop. Because the permittee's application indicated that dilution from a precipitation event was necessary to enable discharges from the reservoirs to meet irrigation compliance point limits, reservoir discharges during "dry" weather conditions will be considered to be a violation of this permit. Should an instance of reservoir discharge occur, it will be the permittee's responsibility to adequately demonstrate the circumstances under which reservoir discharges occurred if requested by the WDEQ.

Effluent Limits

Permit effluent limits are based on federal and state regulations and are effective as of the date of issuance. The daily maximum effluent flow limit for this facility is 0.59 MGD. The pH must remain within 6.5 and 9.0 standard units. Effluent limits for total dissolved solids (5,000 mg/l), specific conductance (7,500 micromhos/cm) and sulfates (3,000 mg/l) 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.

The permit also establishes a dissolved manganese limit of 630 µg/l, and a chlorides limit of 46 mg/l. These limits are based on chronic aquatic life standards for class 2AB waters as established in *the Wyoming Water Quality Rules and Regulations, Chapter 1*. The permit also establishes a total barium limit of 1800 µg/l and a total arsenic limit of 7 µg/l, these limits are based on Water Quality Criteria as established in *the Wyoming Water Quality Rules and Regulations, Chapter 1*, for Human Health values. The limits established in this permit for metals and chlorides reflect the application of the antidegradation provisions required under *the Wyoming Water Quality Rules and Regulations, Chapter 1*. Establishment of limits protective of the class 2 mainstem are considered appropriate in this instance due to the potential for discharges from this facility to impact the class 2 mainstem.

In addition, the permit establishes a dissolved iron limit of 1000 µg/l, which 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 and antidegradation policies as required under *Chapter 1 of the Wyoming Water Quality Rules and Regulations*. All limits described in this section are intended to protect for the above listed designated uses, on both the immediate receiving water and the perennial mainstem, and apply at the end of pipe.

A limit for total recoverable aluminum – 750 µg/l – is also being established in this permit. This limit is based upon the acute aquatic life standard established in *Chapter 1 of the Wyoming Water Quality Rules and Regulations*. In the case of total recoverable aluminum, the chronic aquatic life value does not apply, based upon the hardness and pH of the receiving stream. This limit applies at the end of pipe.

This permit originally established a total radium²²⁶ limit of 60 pCi/l at the end of pipe, and a 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 radium²²⁶ limit is based on this permitting approach. In addition, 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 requirement for TPH in this permit. Based on evaluation of the available data, it is WDEQ's determination that removing the total radium²²⁶ and total petroleum hydrocarbons limits from this permit conforms to the anti-backsliding requirements established in *Section 402(o).2.B.i of the Clean Water Act*.

Irrigation Protection

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 (EC) are included in this permit. The Wyoming DEQ has determined that an SAR of 6 and specific conductance of 2,000 micromhos/cm is intended to be protective of agriculture use in the Wild Horse Creek drainage. The specific conductance limit of 2,000 micromhos/cm is based on the threshold value for alfalfa, which is considered to be the most salt sensitive plant irrigated in the Wild Horse Creek drainage downstream from this facility. (*USDA George E. Brown Jr. Salinity Laboratory, Salt Tolerance Database, Grasses and Forage Crops*). Data to characterize the salt tolerance of alfalfa specific to the Wild Horse Creek drainage is currently unavailable. The SAR limit of 6 was determined to not reduce the rate of infiltration of irrigated soils in the Wild Horse 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*.

The application for WYPDES permit WY0048097, which was utilized by the WDEQ in establishing effluent limits protective of irrigation on Wild Horse Creek, describes the downstream irrigation use on Wild Horse Creek as a passive system which automatically diverts water from Wild Horse Creek on to the irrigated fields whenever there is flow in Wild Horse Creek. As the reservoirs being proposed for containment under this WYPDES permit can contain, except during periods of significant precipitation, all of the CBM discharges produced at this facility, discharges from this facility should not reach the downstream irrigation diversion on a frequent or persistent basis. During sufficient precipitation events, the effluent may be conveyed on to the fields via run-off in Wild Horse Creek, and should be sufficiently diluted with stormwater runoff such that the SAR and EC limitations described above can be met, according to the mixing analyses submitted in support of the permit application. As the downstream irrigator(s) are not able to divert streamflows in Wild Horse Creek away from the fields undergoing irrigation, effluent limits protective of irrigation are in effect year-round.

The effluent limits at the ICP are intended to demonstrate compliance with *Chapter 2, Section 20 (protection of agricultural water supply) of the Wyoming Water Quality Rules and Regulations*. If produced water from this facility reaches the ICP and results in a violation of the ICP effluent limits, this action will constitute a violation of this permit, regardless of the cause of the violation (i.e., natural conditions of the stream channel or other operators in the drainage.) If this facility's effluent does not reach an irrigation compliance point, then monitoring and compliance with the ICP effluent limits is not required.

Violation of the ICP effluent limits may result in enforcement action from the Water Quality Division, termination of the discharge until an acceptable plan to mitigate the violation has been developed and/or other appropriate enforcement action.

Monitoring and Reporting

Outfall Monitoring and Reporting

Results are to be reported twice-yearly and if no discharge occurs at a given outfall for an entire sampling period, then "no discharge" is to be reported for that outfall during that period. The permit also requires that an initial monitoring of the effluent be conducted within the first 60 days of discharge following issuance of this renewal, and the results submitted to WDEQ and the U.S. Environmental Protection Agency within 120 days of the commencement of discharge.

Irrigation Compliance Point Monitoring and Reporting

The Wyoming DEQ has determined through review of the permit application and available scientific information that effluent discharged from this facility is unlikely to reach the Powder River or the downstream irrigated lands along Wild Horse Creek.

Sampling will be required at the established irrigation compliance points for flow volume, calcium, magnesium, sodium, bicarbonate, sodium adsorption ratio and specific conductance if effluent from this facility is present at the irrigation compliance point at any time of the year. This permit does not require sampling of discharge at the ICP if flow at the ICP is not hydrologically connected to the outfalls or reservoirs at this CBM facility.

The permit requires daily monitoring on Wild Horse Creek to determine whether effluent discharged from the outfalls is reaching an irrigation compliance point. Daily monitoring is necessary because the permit establishes different sampling and analysis requirements based on whether the effluent from this facility is reaching an ICP. Once a sample is taken at the irrigation compliance point as required above, then weekly monitoring of flow is required for the remainder of that month at that ICP. At the beginning of each calendar month, the monitoring frequency will revert to daily until such time as a sample is collected to represent effluent quality for irrigation compliance point constituents for that month. Results are to be reported twice-yearly and if no effluent from this facility reaches an irrigation compliance point on Wild Horse Creek for an entire sampling month, then "no discharge" is to be reported for that ICP for that sampling month.

Water Quality Station Monitoring and Reporting

The permit also requires sampling at designated water quality monitoring stations located on the receiving stream (Wild Horse Creek) and on the mainstem (Powder River, class 2ABWW water) to which Wild Horse Creek is tributary. Water quality monitoring stations are to be located as described in Table 1, Part

I.B.12 of the following permit. Established water quality monitoring stations on the mainstem are to be located outside the mixing zone with the tributary and the mainstem. Monthly water quality samples are to be collected at all three water quality monitoring stations when effluent from this CBM facility reaches the TRIB1 station on Wild Horse Creek. If flow occurs at the TRIB1 station during a given monthly monitoring period, but this CBM facility did not contribute to that flow, the permittee will report "did not contribute" in the discharge monitoring reports for that monthly monitoring period. Under such circumstances, sampling is not required at the three water quality monitoring stations, and it will be the responsibility of the permittee to demonstrate that the effluent from this facility did not contribute to the flow occurring at the TRIB1 station. If no flow at all occurs at the TRIB1 station for an entire monthly monitoring period, then "no flow" is to be reported and samples need not be collected at the three water quality monitoring stations for that monthly monitoring period.

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

General Permit Limitations and Requirements

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 June 30, 2007. This expiration date was determined through review of the watershed permitting schedule which the WDEQ is implementing in order to synchronize the permitting and expiration of facilities within the same watershed. This holistic approach will provide for more efficient permitting of point-source discharges.

Kathy Shreve
Environmental Senior Analyst
Water Quality Division
Department of Environmental Quality
Renewal Drafted: June 24, 2005

AUTHORIZATION TO DISCHARGE UNDER THE
WYOMING 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,

Pennaco Energy Inc.,

is authorized to discharge from the wastewater treatment facilities serving the

Barker Draw,

located in the

NESW, Section 3, the SESE, Section 6, the NENW Section 7, the NESE and NENE, Section 8, the NENE and SWNW, Section 9, the NENE, SESE, NWSW, and NESW, Section 10, Township 51 North, Range 74 West, Campbell County,


to receiving waters named

various named, on-channel reservoirs (3B), which are located on Twentymile Creek (3B) and Barker Draw (3B). Twentymile Creek (3B) and Barker Draw (3B) are both tributary to the Powder River (2ABWW), via Wild Horse Creek (3B),

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

This permit renewal shall become effective on the date of signature by the Director of the Department of Environmental Quality.

This permit and the authorization to discharge shall expire at midnight, December 31, 2008.


John F. Wagner
Administrator - Water Quality Division

9/28/05
Date


John V. Corra
Director - Department of Environmental Quality

9/30/05
Date

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Effective immediately and lasting through December 31, 2008, 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 outfalls serial numbers 001-011.

1.a. Discharges from all outfalls are limited as specified below:

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>	<u>Daily Maximum, Irrigation Compliance Points</u>
Chlorides, mg/l	46	
Dissolved Iron, µg/l	1000	
Dissolved Manganese, µg/l	630	
pH, standard units	6.5 – 9.0	
Specific Conductance, micromhos/cm	7500	2000
Sulfates, mg/l	3000	
Total Arsenic, µg/l	7	
Total Barium, µg/l	1800	
Total Dissolved Solids, mg/l	5000	
Total Flow, MGD*	0.59	
Total Recoverable Aluminum, µg/l	750	
Sodium Adsorption Ratio, calculated as unadjusted ratio		6

*Total flow volume will be calculated as the sum of all discharge from all permitted outfalls. The produced water discharged at this facility must originate in one or more of the following formations: the Anderson, Smith, and/or Canyon coal seams.

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 may, if so desired, discharge produced water originating in any well authorized for discharge at this facility at any permitted outfall, as long as all permit limits and requirements can be met. This facility, upon renewal, consists of 11 outfalls and 44 wells.

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. Discharge from the reservoirs is only expected to occur in response to major precipitation events or upstream reservoir overflow. Intentional discharges from the reservoirs will not be allowed under this permit. Discharges from the reservoirs may occur in response to storm events that causes the reservoirs to fill and overtop, or in response to upstream reservoir overflow only. Under such circumstances, discharges from the reservoirs is limited to natural overtopping only. It is the permittee's responsibility to adequately demonstrate the circumstances under which reservoir discharges occurred, should the WDEQ request such information.

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.

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.

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.

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

a. **Monitoring of the initial discharge**

Within 60 days of commencement of discharge following issuance of this permit renewal, a sample shall be collected from each outfall and analyzed for all the constituents specified below, at the required detection limits. Within 120 days of commencement of discharge following issuance of this permit, a summary report on the produced water, including copies of the laboratory analysis reports, must be submitted to the Wyoming Department of Environmental Quality and the U.S. EPA Region 8 at the addresses listed below. This summary report must include the results and detection limits for each of the constituents specified below. 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.6.b. may be modified to require more stringent monitoring.

Parameter	Required Detection Limit	Sample Type
Total Recoverable Aluminum, µg/l	50 µg/l	Grab
Dissolved Cadmium, µg/l	0.1 µg/l	Grab
Dissolved Calcium, mg/l	as mg/l	Grab
Dissolved Calcium, me/l	as me/l	Grab
Chlorides, mg/l	5 mg/l	Grab
Dissolved Copper, µg/l	1 µg/l	Grab

<u>Parameter</u>	<u>Required Detection Limit</u>	<u>Sample Type</u>
Dissolved Iron, µg/l	30 µg/l	Grab
Dissolved Manganese, µg/l	10 µg/l	Grab
Total Hardness, mg/l	10 mg/l as CaCO ₃	Grab
Dissolved Lead, µg/l	2 µg/l	Grab
Dissolved Magnesium, mg/l	as mg/l	Grab
Dissolved Magnesium, me/l	as me/l	Grab
Dissolved Mercury, µg/l	0.06 µg/l	Grab
pH, standard units	to 0.1 pH unit	Grab
Total Radium 226, pCi/l	0.2 pCi/l	Grab
Total Selenium, µg/l	5 µg/l	Grab
Dissolved Sodium, mg/l	as mg/l	Grab
Dissolved Sodium, me/l	as me/l	Grab
Sodium Adsorption Ratio, calculated as unadjusted ratio	not applicable	Calculated
Specific Conductance, micromhos/cm	5 micromhos/cm	Grab
Sulfates, mg/l	10 mg/l	Grab
Total Alkalinity, mg/l	1 mg/l as CaCO ₃	Grab
Total Arsenic, µg/l	1 µg/l	Grab
Total Barium, µg/l	100 µg/l	Grab
Dissolved Zinc, µg/l	10 µg/l	Grab
Bicarbonate, mg/l	1 mg/l	Grab
Total Dissolved Solids, mg/l	5 mg/l	Grab

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
999 18th St., Suite 300
Denver, CO 80202-2466

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 (001-011)

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.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Bicarbonate (mg/l)	Once Every Three Months	Grab
Dissolved Calcium (mg/l)	Once Every Three Months	Grab
Dissolved Calcium (me/l)	Once Every Three Months	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Iron (µg/l)	Annually	Grab
Dissolved Manganese (µg/l)	Annually	Grab
Dissolved Magnesium (mg/l)	Once Every Three Months	Grab
Dissolved Magnesium (me/l)	Once Every Three Months	Grab
pH (standard units)	Once Every Three Months	Grab
Dissolved Sodium (mg/l)	Once Every Three Months	Grab
Dissolved Sodium (me/l)	Once Every Three Months	Grab
Sodium Adsorption Ratio (unadjusted)	Once Every Three Months	Calculated
Specific Conductance (micromohs/cm)	Once Every Three Months	Grab
Sulfate (mgl)	Annually	Grab
Total Alkalinity (mgl)	Once Every Three Months	Grab
Total Arsenic (µg/l)	Annually	Grab
Total Barium (µg/l)	Once Every Three Months	Grab
Total Flow – (MGD)	Monthly	Continuous
Total Radium 226 (pCi/l)	Annually	Grab
Total Aluminum (µg/l)	Annually	Grab

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.

Once the permittee has achieved compliance with the total barium effluent limit established in this permit for four consecutive monitoring periods (one year), the permittee may petition the WDEQ to reduce

monitoring frequency for total barium to annual. However, the permittee may not reduce monitoring for total barium without express permission from the WDEQ.

c. Irrigation Compliance Point (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 effluent discharged from the outfalls reaches an irrigation compliance point at any time. Sampling will be based on monthly time frames and reported semi-annually.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Bicarbonate (mg/l)	Monthly	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Sodium Adsorption Ratio (calculate as unadjusted ratio)	Monthly	Calculated
Specific Conductance (micromohs/cm)	Monthly	Grab
Total Flow – (MGD)	Monthly	Instantaneous

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: at the irrigation compliance point, located as described in Table 1, Part I.B.12 of the permit.

The permit requires daily monitoring on Wild Horse Creek to determine whether effluent discharged from the outfalls is reaching the irrigation compliance point. Daily monitoring is necessary because the permit establishes different sampling and analysis requirements based on whether the effluent from this facility is reaching the ICP. Once a sample is taken at the irrigation compliance point as required above, then weekly monitoring of flow is required for the remainder of that month at the ICP. At the beginning of each calendar month, the monitoring frequency will revert to daily until such time as a sample is collected to represent effluent quality for irrigation compliance point constituents for that month. Results are to be reported twice-yearly and if no effluent from this facility reaches the irrigation compliance point for an entire sampling month, then "no discharge" is to be reported for the ICP for that sampling month.

The effluent limits at the ICP are intended to demonstrate compliance with *Chapter 2, Section 20 (protection of agricultural water supply) of the Wyoming Water Quality Rules and Regulations*. If produced water from this facility reaches the ICP and results in a violation of the ICP effluent limits, this action will constitute a violation of this permit, regardless of the cause of the violation (i.e., natural conditions of the stream channel or other operators in the drainage.) If this facility's effluent does not

reach the irrigation compliance point, then monitoring and compliance with the ICP effluent limits is not required.

Violation of the ICP effluent limits may result in enforcement action from the Water Quality Division, termination of the discharge until an acceptable plan to mitigate the violation has been developed and/or other appropriate enforcement action.

d. Water Quality Monitoring Stations (TRIB1, UPR, and DPR)

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.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (me/l)	Monthly	Grab
Sodium Adsorption Ratio (calculated)	Monthly	Calculated
Specific Conductance (micromhos/cm)	Monthly	Grab
Flow (MGD)*	Monthly	Instantaneous

*Flow measurement is not required for the two monitoring stations located on the Powder River (UPR, DPR). The permittee is only required to monitor and report flow at the tributary monitoring station located on Wild Horse Creek (TRIB1).

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: designated water quality monitoring stations identified as TRIB1, UPR, and DPR in Table 1, Part I.B.12 of the permit below. Established water quality monitoring stations on the mainstem are to be located outside the mixing zone with the tributary and the mainstem. Monthly water quality samples are to be collected at all three water quality monitoring stations when effluent from this CBM facility reaches the TRIB1 station on Wild Horse Creek. If flow occurs at the TRIB1 station during a given monthly monitoring period, but this CBM facility did not contribute to that flow, the permittee will report "did not contribute" in the discharge monitoring reports for that monthly monitoring period. Under such circumstances, sampling is not required at the three water quality monitoring stations, and it will be the responsibility of the permittee to demonstrate that the effluent from this facility did not contribute to the flow occurring at the TRIB1 station. If no flow at all occurs at the TRIB1 station for an entire monthly monitoring period, then "no flow" is to be reported and samples need not be collected at the three water quality monitoring stations for that monthly monitoring 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 and submitted with a copy of the laboratory analysis report for each outfall, clearly marked with permit and outfall numbers, to the state water pollution control agency at the address below postmarked no later than 120 days after the commencement of discharge.

Results of routine end of pipe 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. If required, whole effluent toxicity testing (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 following issuance of this permit renewal will be due on February 15th, 2006.

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.

- b. The "weekly 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 any week.
- c. The "daily maximum" shall be determined by the analysis of a single grab or composite sample.
- d. "MGD", for monitoring requirements, is defined as million gallons per day.
- e. "Net" value, if noted under Effluent Characteristics, is calculated on the basis of the net increase of the individual parameter over the quantity of that same parameter present in the intake water measured prior to any contamination or use in the process of this facility. Any contaminants contained in any intake water obtained from underground wells shall not be adjusted for as described above and, therefore, shall be considered as process input to the final effluent. Limitations in which "net" is not noted are calculated on the basis of gross measurements of each parameter in the discharge, irrespective of the quantity of those parameters in the intake waters.
- f. A "composite" sample, for monitoring requirements, is defined as a minimum of four grab samples collected at equally spaced two hour intervals and proportioned according to flow.
- g. An "instantaneous" measurement for monitoring requirements is defined as a single reading, measurement, or observation.
- h. A "pollutant" is any substance or substances which, if allowed to enter surface waters of the state, causes or threatens to cause pollution as defined in the Wyoming Environmental Quality Act, Section 35-11-103.
- i. "Total Flow" is the total volume of water discharged, measured on a continuous basis and reported as a total volume for each month during a reporting period. The accuracy of flow measurement must comply with Part III.A.1.

4. Test Procedures

Test procedures for the analysis of pollutants, collection of samples, sample containers, sample preservation, and holding times, shall conform to regulations published pursuant to 40 CFR, Part 136, unless other test procedures have been specified in this permit.

5. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date and time of sampling;
- b. The dates and times the analyses were performed;
- c. The person(s) who performed the analyses and collected the samples;

- d. The analytical techniques or methods used; and
- e. The results of all required analyses including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine the results.

6. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

7. Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the administrator at any time. Data collected on site, copies of Discharge Monitoring Reports and a copy of this NPDES permit must be maintained on site during the duration of activity at the permitted location.

8. Penalties for Tampering

The Act provides that any person who falsifies, tampers with or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or both.

9. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

10. Facility Identification

All facilities discharging produced water shall be clearly identified with an all-weather sign posted at each outfall and flow monitoring locations (points of compliance). This sign shall, as a minimum, convey the following information:

- a. The name of the company, corporation, person(s) who holds the discharge permit, and the NPDES permit number;
- b. The contact name and phone number of the person responsible for the records associated with the permit;
- c. The name of the facility (lease, well number, etc.) and the outfall number as identified by the discharge permit.

