

BEFORE THE
ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

IN THE MATTER OF THE APPEAL)
AND REVIEW OF THE ISSUANCE)
OF WYOMING POLLUTANT DISCHARGE)
ELIMINATION SYSTEM (WYPDES)) Docket No. _____
GENERAL PERMITS)
)
)
)
)

**NOTICE OF APPEAL AND REQUEST FOR HEARING
CONCERNING ISSUANCE OF WYPDES PUMPKIN CREEK
GENERAL PERMIT, PERMIT NUMBER WYG280000,
WILLOW CREEK WATERSHED GENERAL PERMIT,
PERMIT NUMBER 290000, AND
FOURMILE CREEK GENERAL PERMIT PLAN**

Pursuant to the Environmental Quality Council (EQC) Rules of Practice & Procedure, Chapter 1, Section 3, Yates Petroleum Corporation (Yates), Marathon Oil Company and Citation Oil & Gas Corporation (“Petitioners”) hereby file this Notice of Appeal and Request for Hearing concerning the Wyoming Department of Environmental Quality’s (WDEQ’s) issuance of the Wyoming Pollutant Discharge Elimination System (WYPDES) Pumpkin Creek General Permit, number WYG280000, the Willow Creek Watershed General Permit, number WY290000, and the Fourmile Creek Watershed Permit Plan (collectively referred to as “the Permits”). Petitioners object to the permits as issued because the WDEQ acted outside its statutory authority in imposing certain effluent limits and other conditions without justification. In support of this appeal, Petitioners advise the EQC as follows:

I. Information About the Petitioner

The Petitioners filing this appeal are:

Yates Petroleum Corporation
c/o Lisa Norton
105 South 4th Street
Artesia, NM 88210

Marathon Oil Company
c/o F. David Searle

1942 Sugarland Drive
Suite 192
Sheridan, WY 82801

Citation Oil & Gas Corporation
c/o Lee Ann Elsom
8223 Willow Place South
Houston, TX 77070

Petitioners in this matter are represented by Eric L. Hiser, of Jorden Bischoff & Hiser, P.L.C., 7272 East Indian School Road, Suite 360, Scottsdale, Arizona, 85251. Correspondence and information related to this appeal should be served on Petitioners' counsel and on the company contacts at the addresses above.

Petitioners own and operate coal bed natural gas facilities located in watersheds subject to the Permits. These facilities are currently permitted under individual permits authorizing discharge of produced water to several on-channel reservoirs located on various unnamed ephemeral tributaries of the watersheds in the Powder River Basin. Discharges of coal bed natural gas produced water in these watersheds are the subject of the Permits. While Petitioners are currently operating under individual permits, the individual permits will expire in the next several years and Petitioners' discharges could become subject to the terms and conditions set forth in the Permits.

II. Action Being Appealed

Petitioners appeal the issuance of the Permits on the grounds that requirements set forth in the Permits are not supported by scientific data available to the WQD and are inconsistent with the requirements of the Environmental Quality Act, Chapters 1 and 2 of the Wyoming Water Quality Rules & Regulations and the Wyoming Administrative Procedure Act.

The Wyoming Department of Environmental Quality, Water Quality Division (WQD), issued the Permits on September 11, 2006. (Due to the length of the Permits, only the relevant sections of the Permits have been attached as Exhibit "A.") WQD imposed the following conditions in all three of the Permits:

- 1) Effluent limitations for specific conductance and sodium adsorption ratio if discharge occurs above irrigation diversions which limitations are unfounded given natural water and soil chemistry;
- 2) An alternative requirement to the irrigation effluent limits that reservoirs containing Category II discharges be constructed with a capacity to contain produced water plus a 50-year, 24-hour storm event and the requirement that reservoirs for category II discharges can not impound runoff from more than 40 acres of upstream drainage area;

- 3) End-of-pipe limitations which do not consider mixing or take into account background water quality; and
- 4) Incorporation of the *Wyoming Powder River Assimilative Capacity Allocation and Control Process* which, at the time the permits were issued, is not a final program and cannot be implemented even though the general permits are effective immediately.

These conditions are arbitrary and capricious, contrary to law and are not based on any valid grounds. Under the Wyoming Environmental Quality Act, “in recommending any standards, rules, regulations, or permits the administrator shall consider all the facts and circumstances bearing upon the reasonableness of the pollution involved including . . . the *technical practicability and economic reasonableness* of reducing or eliminating the source of the pollution.” W.S. 35-11-302(a)(vi)(D) (italics added). WDEQ has failed to comply with the statutory requirement that it consider the “technical practicability” of establishing the effluent limits and containment requirements in the Permits at issue here. As shown below, the conditions imposed by the Permits are inconsistent with the natural water quality and are technically impracticable.

Furthermore, in issuing any permit, the WQD “may impose such conditions as may be necessary to accomplish the purpose of [the Environmental Quality Act] *which are not inconsistent with the existing rules, regulations and standards.*” W.S. 35-11-801(a) (italics added). This means that the WQD may not issue a permit that contains conditions which are inconsistent with existing regulations or standards. In the case of the three Permits, the above-mentioned conditions are inconsistent with existing standards as they are overly-stringent and are not reasonably related to the protection of water quality in the receiving streams.

III. Basis for the Appeal

A. The Category IC Effluent Limitations Are Not Justified Given Background Soil and Water Characteristics.

The challenged Permits impose effluent limitations for sodium adsorption ratio (SAR) and specific conductance (EC) applicable to Category IC discharges located above irrigation diversions. The Permits establish limits for SAR of 13 and EC of 2200 μ mhos, in Pumpkin Creek, 7 and 1330 μ mhos, respectively, in Willow Creek and 12.6 and 2130 μ mhos, respectively, in Fourmile Creek. These limits are imposed at end-of-pipe.

As stated earlier, permit conditions must be consistent with regulatory requirements and existing standards. The Wyoming Water Quality Rules & Regulations (WWQRR) require that effluent limitations must be either technology based or water quality-based. 2 WWQRR § 5(c)(iii). As there are no technology-based effluent limitations set forth for CBNG produced water discharges applicable to SAR and EC, any effluent limitations must be water quality-based. Water quality-based effluent limitations must be based on standards adopted pursuant to Chapter 1 of the WWQRR. 2 WWQRR

§5(c)(iii)(C). In addition, water quality-based effluent limitations must take into account applicable designated uses and water quality standards. 2 WWQRR §5(c)(iii)(C)(I)(5). This means that the WQD must consider effluent limitations protective of uses which are attainable given natural water quality as these are the only scientifically defensible effluent limits. Finally, where an effluent constituent has the reasonable potential to adversely impact a designated use of a receiving water and no numeric standard has been promulgated, the effluent limit must be based on values derived from appropriate scientific methods. 2 WWQRR §5(c)(iii)(C)(IV).

The WQD putatively has issued the effluent limits for the protection of agricultural use under 1 WWQRR §20. However, it is important to note that Section 20 provides that “surface waters which have the *natural water quality* for use as an agricultural water supply shall be maintained at a quality which allows for continued use of such waters for agricultural uses.” 1 WWQRR §20 (*italics added*). Furthermore, Section 20 provides that a water cannot be degraded to an extent to cause a measurable decrease in crop or livestock production. Essentially, Section 20 requires that natural water quality be *maintained* where a waterbody is used for agricultural use.

Petitioners and other industry representatives involved in the permit process objected to the effluent limitations for SAR and EC on the grounds that the effluent limitations were not scientifically justifiable based on background water quality and provided documentation in support of this position. *See*, Letter from Tim Barber to Leah Krafft, dated March 28, 2006, p. 7 (attached as Exhibit “B”). Petitioners were expressly instructed that data on agricultural use protection was being considered in the separate Section 20 policy proceedings. In those proceedings, Kevin Harvey, a soil scientist with 25 years of experience, summarized the current state of the science and Petitioners’ concerns when he provided the WQD and the Water & Waste Advisory Board with an extensive scientific literature review regarding EC and SAR limits proposed in the Chapter 20 rule-making process. Specifically, Mr. Harvey studied the default effluent limits (EC of 2000 and SAR cap of 10) proposed in the rule-making and compared them with soil salinity in Wyoming to determine whether the default limits were justifiable given natural conditions.¹ Mr. Harvey concluded that the default limits were not justified and were, in fact, too low given the natural soil conditions throughout Wyoming. Mr. Harvey’s conclusion echoes the comments made by the Petitioners and other industry members during the permit process. Copies of Mr. Harvey’s submissions to the Water and Waste Advisory Board are attached as Exhibit “C.”

The Water & Waste Advisory Board accepted Mr. Harvey’s conclusions. Importantly, the effluent limits promulgated in the Permits at issue here are more stringent than the limits found justified by Mr. Harvey and the Water & Waste Advisory Board (SAR of 2700 and EC of 16). Because the limits imposed in the Permits are more stringent than necessary to protect agricultural use, they violate the Environmental

¹ The proponents of the rule-making contended that the default limits were necessary in order to protect irrigation uses. The default limits were proposed as the most protective of alfalfa, a salt-intolerant species.

Quality Act, which requires permit conditions to be consistent with existing standards (including the water quality standards of the receiving stream), the Wyoming Administrative Procedure Act, which requires that administrative action be supported by evidence in the record, and the WWQRR, which requires both that water quality based effluent limits be based on existing water quality standards and Section 20, which refers to natural water quality.

Additionally, the limits do not take into account background water quality in the actual watersheds at issue in these Permits. Operators have consistently provided data that demonstrates natural water quality is above the effluent limits proposed in the Permits. This data was provided to WQD in the report entitled "Surface Water Monitoring Report Water Quality Monitoring Stations Including Upstream and Downstream Monitoring Locations – July 2005 to December 2005" and referenced during the permit process. The data in that report indicates that the effluent limits are more restrictive than background water quality.

The WQD's attempt to impose the overly-restrictive effluent limitations for SAR and EC as allegedly protective of agricultural use is impermissible. First, there is no categorical technology-based effluent limitation authorizing specific effluent limits applicable to SAR and EC regardless of water quality. The relevant surface water quality standard, WWQRR Section 20, only authorizes the protection of uses that the water naturally could attain. SAR and EC limits that are more stringent than background water quality exceed Section 20 requirements and are not necessary and appropriate to achieve water quality-based standards and, hence, cannot be justified as a water quality-based effluent limit.

B. The 50-Year Containment for Category II Discharges Is Arbitrary & Capricious and Fails to Provide Operators With a Viable Option.

The Permits provide that an operator has the option of permitting discharges as Category II discharges. Category II discharges have less stringent effluent limitations, but require capacity in each reservoir to contain the amount of produced water and enough capacity to contain a 50-year, 24-hour storm event. In addition, reservoirs must not contain runoff from drainage areas of more than 40 acres or, if they do, a by-pass must be constructed. Putatively, the Category II discharge regime provides the permittee who cannot meet the stringent effluent limits applicable to Category I discharges an option for coverage under the Permits. Effectively, however, this option is not practically available to operators as the 50-year containment requirement and the 40-acre drainage area limitation are unduly burdensome and technically infeasible in most places.

First, the 50-year containment and 40-acre drainage limit requirements will simply render many already-permitted on-channel reservoirs useless and will unnecessarily reduce the number of reservoirs that could be constructed in the future due to constraints on the amount of land available to build the reservoirs and landowner

requests. WQD has failed to consider this important fact in promulgating the permit.² WQD's failure to follow its own rules (here, considering the technical feasibility and economic reasonableness of the containment requirement) is arbitrary and capricious and requires remand. *See Bowen v. Wyoming Real Estate Comm'n*, 900 P.2d 1140, 1142 (Wyo. 1995).

Second, as stated above, the WQD must consider technical feasibility and economic reasonableness when promulgating conditions in a permit and WQD has failed to consider the technical feasibility of the proposed containment requirement. The 50-year containment requirement places operators in the position of having to construct overly-large reservoirs at the expense of otherwise open land. The large reservoirs would necessarily inundate otherwise ephemeral streams. Also, in many places on the watersheds, construction of reservoirs of this size simply is not possible due to characteristics of the stream in which the reservoirs are to be constructed. The WQD simply failed to weigh and properly consider the technical feasibility and economic reasonableness in contravention of its rules. This requires remand. *See Bowen*, 900 F.2d at 1142.

Third, the record does not provide adequate factual support to justify a 50-year containment requirement or show how the requirement is related to the protection of water quality. In determining whether an agency's actions are valid, the decision must be supported in the record. *See Id.* Petitioners objected to the 50-year containment requirement on the grounds that the amount of CBNG produced water is relatively small when compared with precipitation runoff. Operators have consistently documented that the contribution of CBNG water is minimal when compared with even a 2-year storm event and that the characteristics of CBNG water are lost when mixed with the much larger amount of precipitation runoff. The fact that the 50-year containment requirement is not related to water quality was affirmatively recognized by WQD's own statements. In response to a comment, WQD stated "Due to the overwhelming nature of such an event, it is the Division's opinion that reservoir discharges from Category II and III reservoirs will be indistinguishable from the extremely large volume of storm water runoff." *See, e.g.*, Response to Public Comments Related to Pumpkin Creek Watershed General Permit – WYG280000, response to Comment 9 (relevant portions have been attached as Exhibit "E."). Because WQD has not demonstrated (and, in fact, does not believe) that the 50-year containment requirement is necessary to protect water quality, its inclusion in the Permits is arbitrary and capricious.

Finally, landowners taking part in the stakeholder meeting process repeatedly stated that they were not in favor of containment of large storm events. The consensus of the landowners was that they would rather have those areas that would be converted to

² Although WQD allegedly considered Petitioners' objections to the 50-year containment requirement and stated that the "great majority" of the reservoirs falling under Category II were less than 20 acre-feet in size and required only an additional 5 acre feet of freeboard to contain a 50-year storm event, WQD's assertion fails to address the fact that, in most cases, reservoirs simply cannot be constructed with the additional 5 acre feet of capacity.

large reservoirs retain the ephemeral flow regime. *See* Response to Public Comments (Exhibit "E"), response to Comment 2. While those comments were made in relation to the 100-year containment requirement, the fact that the final permit requires enough containment for a 50-year event does not alleviate the landowners' concerns. Essentially, by allowing discharges from reservoirs during smaller flow events, such as a 2-year event, the ephemeral nature of the upland areas would be retained. (These ephemeral characteristics will likely not be maintained by use of the by-pass option given that by-passes are not feasible in most areas.)

The requirement that reservoirs built to contain Category II discharges be limited to capturing runoff from drainage areas of less than 40 acres or have a by-pass constructed is not reasonably related to protection of water quality and does not take into account the fact that it is technically infeasible in many cases to construct such a bypass. First, the record is completely devoid of support for the position that the 40-acre limitation is protective of water quality. Absent such a demonstration, the requirement is not supported by substantial evidence and must be set aside. Second, the 40-acre limitation is unduly burdensome in all but the farthest upstream reservoirs and the by-pass "option" is a practical impossibility in almost all cases. While the 40-acre limitation may be complied with for reservoirs in the farthest upstream reaches of the watersheds, it is not appropriate for reservoirs located further downstream. As with the large reservoir requirement, most of the stream channels are not suited to construction of both a reservoir and a by-pass. Effectively, then, the by-pass "option" is technically infeasible in most cases. Hence, WQD failed to consider the factors required under the Environmental Quality Act and, pursuant to *Bowen*, remand is required.

C. End-of-Pipe Limitations

The Permits provide establish end-of-pipe effluent limitations that do not consider any mixing that will occur in-channel or in the reservoir. This requirement is inconsistent with Chapter 1 of the Wyoming Water Quality Rules & Regulations (WWQRR), which states that, "compliance with water quality standards shall be determined after allowing reasonable time for mixing." 1 WWQRR § 9. Because the SAR and EC effluent limits are water quality-based, Section 9 requires that they be set after a reasonable time for mixing in the receiving water or reservoir and, after that time for mixing has occurred, the effluent limit set at a level that post-mixing, compliance with Section 20 will be assured. However, the Permits merely apply limits that are putatively protective (see objection to the effluent limitations in Part III.A., above) at the end of pipe. The Permits do not consider the effect of mixing within the watercourse and hence set the limits unduly stringently compared to when discharge of produced water to the stream channel would occur. In so doing, WQD violated 1 WWQRR § 9, which *requires* that mixing zones be considered when establishing end-of-pipe water quality based-effluent limitations to protect agricultural use under 1 WWQRR § 20. The WQD's failure to do so requires remand. Second, use of the end-of-pipe effluent limitations without the consideration of a mixing zone (as required 1 WWQRR § 9) is inappropriate as the effluent at the end of pipe is not representative of the water quality in the waterbody. An

excellent example is ammonia, which is present in the wellhead but which is almost instantly off-gassed when exposed to the air.

D. Incorporation of the Incomplete Assimilative Capacity Allocation Process Violates Due Process Considerations

The Permits incorporate the “Wyoming Powder River Assimilative Capacity Allocation and Control Process” (Assimilative Capacity Process). Essentially, the Permits require any permittee to comply with “additional requirements related to assimilative capacity” in the Powder River. Incorporating the still to be implemented Assimilative Capacity Process into the Permits is arbitrary and capricious and violates Petitioners’ rights to due process and fair notice. An agency must comply with the “fair notice” requirements in order to ensure a regulated entity’s due process rights are not impeded upon. *See, e.g., Excel Corporation v. United States Department of Agriculture*, 397 F.3d 1285, 1297 (10th Cir. 2005) (stating that “an agency ‘may fail to give sufficient fair notice to justify a penalty if the regulation [at issue] is so ambiguous that a regulated party cannot be expected to arrive at the correct interpretation using standard tools of legal interpretation’” [citing *United States v. Lachman*, 387 F.3d 42, 57 (1st Cir. 2004)]). In the case of these Permits, incorporation of the Assimilative Capacity Process is problematic because the Permits are effective immediately while the Assimilative Capacity Process has not been finalized. Because the Assimilative Capacity Process has not been completed, there is no way for a permittee to have notice of the requirements that will be imposed on it or, in fact, comply with those requirements. Effectively, this means that any permittee covered under the Permits will automatically be in violation of that condition requiring compliance with the Assimilative Capacity Process.

WHEREFORE, Yates respectfully requests the EQC grant the following relief:

1. Grant Yates a Contested Case Hearing on its appeal pursuant to the Environmental Quality Act, the Wyoming Administrative Procedure Act, and the EQC’s Rules of Practice and Procedure;
2. Disapprove the complained-of conditions in Wyoming Pollutant Discharge Elimination System (WYPDES) Pumpkin Creek General Permit, number WYG280000, the Willow Creek Watershed General Permit, no permit number, and the Four Mile Creek Watershed Permit Plan, specifically:
 - a. Remand the Permits to the WQD, with an instruction to impose effluent limitations in the Permits which are justified by available background water quality data;
 - b. Remand the Permits to the WQD, with an instruction to require containment for Category II discharges which is technologically feasible and which do not have a 40-acre drainage limitation;

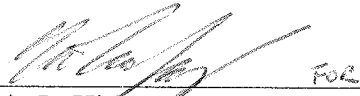
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- c. Remand the Permits to the WQD, with an instruction to remove the end-of-pipe monitoring requirement or, in the alternative, to develop end-of-pipe effluent limits which take into account water quality and mixing; and
 - d. Remand the Permits to the WQD, with an instruction to remove the condition that permittees are required to comply with the "Wyoming Powder River Assimilative Capacity and Control Process" until such time as that Process is finalized.
3. Provide such other relief as the EQC determines just and reasonable under the circumstances.

Respectfully submitted this 9th day of November, 2006.


Eric L. Hiser
Matthew Joy
Jordan Bischoff & Hiser, P.L.C.
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Attorneys for Petitioners

Certificate of Service

I certify that on this ___th day of November, 2006, service of a true and complete copy of Yates' Petroleum Corporation's Notice of Appeal and Request for hearing Reply to Response to Motion to Dismiss in File No. 06-3802 was made upon each party or attorney of record herein as indicated below.

The ORIGINAL and ten (10) copies were filed by private carrier on November 9th, 2006 with:

Terri Lorenzon, Director / Attorney
Wyoming Environmental Quality Council
122 W. 25th, Herschler Bldg., R. 1714
Cheyenne, Wyoming 82002

COPIES were served by private carrier on November 9th, 2006 with:

Office of the Attorney General
123 Capitol
200 W. 24th Street
Cheyenne, WY 82002

John Corra, Director
Department of Environmental Quality
122 W. 25th Street
Herschler Building, 4th Floor West
Cheyenne, WY 82002

(2 COPIES)

Sharon E. Baker

EXHIBIT A

**Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Program**

**General Permit
WYG280000**

Revision Date -08-25-06

**AUTHORIZATION TO DISCHARGE PRODUCED WATER FROM COAL BED METHANE WELLS
LOCATED WITHIN THE PUMPKIN CREEK SUB-BASIN OF THE POWDER RIVER DRAINAGE,
NORTHEASTERN WYOMING
WYG280000**

In accordance with the provisions of the Wyoming Environmental Quality Act, facilities that are located within the Pumpkin Creek sub-basin of the Powder River drainage located within northeastern Wyoming that have the potential to discharge groundwater produced as the result of coal bed methane production in accordance with the requirements of this general permit are hereby authorized to discharge to surface waters of the state of Wyoming.

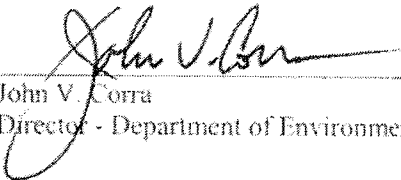
This general permit is issued under the provisions of Chapters 1 and 2 of the Wyoming Water Quality Rules and Regulations. Operators issued discharge authorizations under this general permit are required to comply with all applicable state and federal regulations and requirements.

This general permit shall become effective on the date of issuance, and shall expire at midnight, five years after permit issuance. All authorizations issued under this general permit also expire at midnight, five years after the general permit is issued.



John F. Wagner
Administrator - Water Quality

Date 9/11/06



John V. Corra
Director - Department of Environmental Quality

Date 9/11/06

PART I

I. Authorization to Discharge

1.1 Coverage Under This Permit

1.1.1. Permit Area

This permit covers all coal bed methane (CBM) operations within the Greater Pumpkin Creek watershed of the Powder River Basin in Northeastern Wyoming, as identified in the map contained in Appendix A, (area within heavy green outline) including all named and unnamed tributaries of the Pumpkin Creek watershed, and various unnamed, ephemeral tributaries of the Powder River. Any reference in this document to the "Pumpkin Creek watershed" will include all minor and major tributaries of Pumpkin Creek and the unnamed, ephemeral tributaries of the Powder River that lie within the boundaries of the Greater Pumpkin Creek watershed, unless specifically noted.

1.1.2. Activities Covered Under This Permit

Under this general permit, facilities may be granted authorization to discharge produced water related to coal bed methane gas development as defined in Part I, Section 1.1.2.1 through Part I, Section 1.1.2.2.

1.1.2.1. Category I Discharges -- Facilities discharging to on-channel reservoirs with no containment requirements, or directly to stream channels:

Sub-Category IA applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **within one stream mile of confluence with the Powder River.**

Sub-Category IB applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **more than one stream mile from confluence with the Powder River, but less than 10 stream miles from confluence with the Powder River.**

Sub-Category IC applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **more than 10 stream miles from confluence with the Powder River.**

1.1.2.1.1 All Category IC discharges located upstream of either the spreader dikes located in the SWNW, Section 7, Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or the spreader dikes located in Section 11, Township 45 North, Range 76 West, on the South Prong, Pumpkin Creek, must demonstrate that the discharge can meet limits for SAR and EC established to protect irrigation uses.

Sub-Category ID applies to all outfalls discharging water that is treated to reduce sodium adsorption ratio, total dissolved solids, and/or specific conductance concentrations prior to discharge.

1.1.2.2. Category II Discharges – 50-year Storm Containment: Facilities discharging to headwater reservoirs or playa lakes - formerly permitted under non-discharging Option 2 (headwater reservoirs) or Option 1B (playa lakes).

Category II discharges apply to all outfalls discharging to on-channel reservoirs or natural closed topographic depressions (playa lakes) capable of containing all CBM effluent in addition to storm water runoff equivalent to a 50 year, 24 hour precipitation event. Impoundments associated with Category II discharges may be located anywhere within the Pumpkin Creek watershed; reservoirs that are **not** natural, closed topographic depressions (playa lakes) must not impound runoff from more than 40 acres of upstream drainage area. Use of an SEO-approved by-pass structure to divert storm flows around the impoundment will serve as an acceptable substitute for meeting the 40-acre maximum on upstream drainage area. In order to qualify for Category II effluent limitations, the operator must demonstrate to the satisfaction of the WYPDES Program, that the discharges can meet the following criteria prior to issuance of discharge authorization:

- 1.1.2.2.1. Adequate demonstration must be made that the reservoir(s) or playa lake(s) proposed for utilization of containment of CBM discharge are able to contain, in addition to all proposed CBM discharges, runoff associated with a 50 year, 24 hour precipitation event.
- 1.1.2.2.2. For each reservoir **not** located within a naturally closed topographic depression, the permittee has identified flow monitoring locations, with the approval of the WYPDES Program, located within ¼ mile downstream of the reservoir outlets that will enable the permittee to monitor for flow and/or excess seepage from the reservoirs. The permittee must conduct daily monitoring for flow at these locations, and is required to reduce, eliminate, or otherwise manage discharges from the reservoirs in the event that flow containing effluent is reported at any one of the downstream flow monitoring locations under circumstances other than a 50 year, 24 hour precipitation event, such that discharges and/or seepage from the reservoirs no longer reaches the flow monitoring locations. The identified flow monitoring locations shall not be sited in locations that may be impacted by existing CBM discharges.
- 1.1.2.2.3. The permittee has identified containment unit monitoring locations, with the approval of the WYPDES Program, within each of the proposed containment units (headwater reservoirs or playa lakes), sited at least 100 feet outside of the mixing zone of the outfall and the containment unit.

1.1.3. Activities Not Covered Under This Permit

The following types of discharges are not authorized by this general permit.

- 1.1.3.1. **Discharge of any drilling fluids, acids, stimulation waters or other fluids** derived during the course of drilling, maintaining, and/or completing wells.
- 1.1.3.2. **Storm water runoff** from construction activities.
- 1.1.3.3. **Category III Discharges –** (formerly permitted as Option 1A discharges) to constructed off-channel pits capable of containing all CBM effluent in addition to storm water runoff equivalent to a 50 year, 24 hour precipitation event. Operators seeking permit coverage for discharges meeting the criteria described below will not be covered under this general permit, and must obtain permit coverage under an individual WYPDES permit. Although discharges of this type will not be considered for coverage under this general permit, the

- 1.2.2.1. Name, mailing address, location and telephone number of the individual, company, or other principals seeking coverage under this general permit.
- 1.2.2.2. Name of the facility being proposed for discharge authorization.
- 1.2.2.3. Requested location of the facility's discharge points (outfalls), and water quality and flow monitoring locations, in both legal (quarter/quarter, section, township and range) and geographical (latitude and longitude in decimal degree) formats, with an accuracy to the nearest 15 seconds.
- 1.2.2.4. Well names, producing coal seams, well locations, drilling permit numbers, SEO reservoir permit numbers and reservoir names.
- 1.2.2.5. A detailed, legible topographic map, with a legend, of the facility proposed for discharge authorization. Include well locations, outfall locations, water flow lines, treatment units, surface hydrology, location and directional information (sections, townships, and ranges; and a north arrow) and containment units. Indicate the number of separate discharge points being requested.
- 1.2.2.6. If proposing to utilize any type of containment as part of the water management plan for this facility, a water balance describing all inputs and outputs must be included.
- 1.2.2.7. Applicants must submit the results of a water analysis from each of the coal seams proposed for development. The analyses must contain all the parameters listed in the NOI Form, in the required units, in addition to the legal location and coal seam origin for each water analysis. The sample must be collected from within a 20 mile radius of the proposed facility, from the same coal seams being proposed for development at the proposed facility. The water analysis results must be submitted in the form of a legible, signed copy of a laboratory analysis sheet, and must have been conducted in accordance with approved EPA test procedures (40 CFR 136 or 40 CFR 136.5).
- 1.2.2.8. Names and addresses of all surface landowners of record on whose property the discharges will occur, and/or containment units will be built.
- 1.2.2.9. The NOI must be signed and dated according to Part II, Section 1.11 of the permit.
- 1.2.2.10. Applicant status as a federal, state, private, public, or other entity.
- 1.2.2.11. A description of the activity conducted by the applicant, including the identification of the specific Category(ies) of Discharge under this general permit.
- 1.2.2.12. Outfall numbers and names of all surface waters of the State of Wyoming that would or could potentially receive any portion of the discharge for each outfall, including, where applicable, a description of the tributary system from the outfall location to the mainstem.
- 1.2.2.13. Permittees are subject to additional requirements related to assimilative capacity in the Powder River, as determined by the "*Wyoming Powder River Assimilative Capacity Allocation and Control Process*".

3. **Effluent Limits, Category IB Discharges** (outfalls located more than one stream mile but less than ten stream miles from confluence with the Powder River)

3.1. Effective immediately, the quality of effluent for **Category IB** discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
Dissolved Cadmium, µg/l	4.0
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4.0
Dissolved Copper, µg/l	10.0
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800
Total Dissolved Solids, mg/l	5000
Total Radium 226, pCi/l	3
Dissolved Zinc, µg/l	90.0
Dissolved Fluoride, µg/l	4000
Specific Conductance, micromohs/cm	7500
Whole Effluent Toxicity Testing, acute**	NOEC @ 100% Effluent (See Part I, Section 10.1 and .3)

*Total flow volume will be calculated as the sum of all discharge from all authorized outfalls.

Note: 'Dissolved' value for metals refers to the amount that will pass through a 0.45 µm membrane filter prior to acidification to pH 1.5-2.0 with nitric acid.

** Whole Effluent Toxicity Testing applicable as described in the Wyoming Department of Environmental Quality, Water Quality Division memo dated September 27, 2004 entitled "Coal Bed Methane WET Testing Implementation Approach."

4. **Effluent Limits, Category IC Discharges** (outfalls located more than ten stream miles from the Powder River)

4.1. Effective immediately, the quality of effluent for **Category IC** discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
Dissolved Cadmium, µg/l	4.0
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4.0
Dissolved Copper, µg/l	10.0
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800
Total Dissolved Solids, mg/l, except for discharges located upstream of irrigation diversions located in either the SWNW, Section 7 Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or Section 11, Township 45 North, Range 76 West, on South Prong, Pumpkin Creek	5000
Total Dissolved Solids, mg/l, all discharges located upstream of irrigation diversions located in either the SWNW, Section 7 Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or Section 11, Township 45 North, Range 76 West, on South Prong, Pumpkin Creek	1470
Total Radium 226, pCi/l	No limit, unless representative water quality indicates that facility will exceed 12 pCi/l, in which case the limit is 60 pCi/l
Sodium Adsorption Ratio, calculated as unadjusted for bicarbonate ratio, all discharges located upstream of irrigation diversions located in either the SWNW, Section 7 Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or Section 11, Township 45 North, Range 76 West, on South Prong, Pumpkin Creek	13
Specific Conductance, micromohs/cm, except for discharges located upstream of irrigation diversions located in either the SWNW, Section 7 Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or Section 11, Township 45 North, Range 76 West, on South Prong, Pumpkin Creek	7500

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Specific Conductance, micromohs/cm, all discharges located upstream of irrigation diversions located in either the SWNW, Section 7 Township 46 North, Range 75 West, on North Prong, Pumpkin Creek, or Section 11, Township 45 North, Range 76 West, on South Prong, Pumpkin Creek	2200
Whole Effluent Toxicity Testing, acute**	NOEC @ 100% Effluent (See Part I, Section 9.1 and .3)
Dissolved Fluoride, µg/l	4000
Dissolved Zinc, µg/l	90.0

*Total flow volume will be calculated as the sum of all discharge from all authorized outfalls.
 Note: 'Dissolved' value for metals refers to the amount that will pass through a 0.45 µm membrane filter prior to acidification to pH 1.5-2.0 with nitric acid.

** Whole Effluent Toxicity Testing applicable as described in the Wyoming Department of Environmental Quality, Water Quality Division memo dated September 27, 2004 entitled "Coal Bed Methane WET Testing Implementation Approach."

5. Effluent Limits, Category ID Discharges (all outfalls discharging CBM produced water treated prior to discharge to reduce SAR and/or specific conductance concentrations).

5.1. Effective immediately, the quality of the effluent for **Category ID** discharges will be based upon the distance of the outfall from confluence with the Powder River (as described in Categories IA-IC, Parts I.2-I.4), effluent limits will be established identical to the appropriate discharge category with the exception of the following additional parameter:

<u>Effluent Characteristic</u>	<u>Daily Maximum</u>
Sulfate, mg/l	3000

6. Effluent Limits, Category II Discharges (outfalls discharging to headwater reservoirs capable of containing runoff from a 50 year, 24 hour precipitation event, or outfalls discharging to natural topographically closed basins, i.e. playa lakes)

6.1. Effective immediately, the quality of effluent for **Category II** discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
pH, standard units	6.5 – 9.0
Specific Conductance, micromohs/cm	7500
Total Dissolved Solids, mg/l	5000
Whole Effluent Toxicity Testing, acute**	NOEC @ 100% Effluent (See Part I, Section 10.1 and .3)
Dissolved Fluoride, µg/l	4000
Total Recoverable Arsenic, µg/l	150

*Total flow volume will be calculated as the sum of all discharge from all authorized outfalls.
 Note: 'Dissolved' value for metals refers to the amount that will pass through a 0.45 µm membrane filter prior to acidification to pH 1.5-2.0 with nitric acid.

** Whole Effluent Toxicity Testing applicable as described in the Wyoming Department of Environmental Quality, Water Quality Division memo dated September 27, 2004 entitled "*Coal Bed Methane WET Testing Implementation Approach.*"

Containment units utilized for the impoundment of Category II discharges may only discharge in response to a precipitation event equal to or greater than a 50 year, 24 hour storm event. Such discharges may only occur in response to storm water influxes that cause the reservoirs to fill and overtop. Permittees are required to install a staff gauge within the reservoir, and to clearly mark the level on the staff gauge at which the reserve capacity necessary to store runoff from a 50 year, 24 hour storm would be exceeded. In the event that the level of water within the reservoir exceeds this level due to any circumstances other than runoff from a 50 year, 24 hour precipitation event or greater, the permittee must cease discharge into the containment unit until such time that the level of water within the containment unit no longer exceeds the reserve capacity necessary to contain a 50 year, 24 hour storm. Intentional discharges from reservoirs being utilized to contain Category II discharges are not allowed, and will be considered a violation of this permit. Reservoir discharges related to 50 year, 24 hour storm events are limited to natural overtopping only. It is the permittee's responsibility to adequately demonstrate the circumstances in which reservoir discharges occurred, if requested by the WYPDES Program.

7. **Effluent Limits, Category III Discharges** (outfalls discharging to man-made, off-channel containment units)

7.1. The quality of effluent for Category III discharges shall, at a minimum, meet the limitations set forth below:

Chronic toxicity occurs when, during a chronic toxicity test, 25 percent or more inhibition (calculated on the basis of test organism survival and growth or survival and reproduction) is observed in either species at any effluent concentration at any outfall. If chronic toxicity occurs at any outfall during a sampling period, then WYPDES Program will assume that all unsampled (untested) outfalls exhibit similar chronic toxicity characteristics as well.

If a test acceptability criterion is not met for control survival, growth, or reproduction, the test shall be considered invalid. In such cases, the test shall be repeated until all test acceptability criteria are met and valid results are obtained.

If chronic toxicity occurs, an additional test of the failing outfall(s) shall be initiated within two (2) weeks of the date of when the permittee learned of the test failure. The permittee may elect to retest only one of the failing outfalls; however, the WYPDES Program will apply the results of the retest to all outfalls in question. Should chronic toxicity occur in the second test, the Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE) process described below shall be implemented on a schedule established by WYPDES Program.

Annual test results shall be reported on a Discharge Monitoring Report (DMR) that must be submitted by February 15th of each year. The format for the report shall be consistent with the October, 2002 version of the "*Region VIII Guidance for Chronic Whole Effluent Reporting*", and shall include all chemical and physical data as specified.

10.3. Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE)

Should toxicity be detected in an operator's discharge, a TIE-TRE shall be undertaken by the operator to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop controls and/or treatment for the toxicity. Failure to initiate or conduct an adequate TIE-TRE, or delays in the implementation of such test, shall not be considered a justification for noncompliance with the whole effluent toxicity limits contained in this permit. A TRE plan must be submitted to the permitting authority within 45 days of confirmation of effluent toxicity.

If acceptable to the WYPDES Program, and if in conformance with current regulations, this permit may be reopened and modified to incorporate TRE conclusions relating to additional numerical limitations, a modified compliance schedule, and/or modified whole effluent protocol.

11. Routine Monitoring And Reporting, End of Pipe Constituents

For the duration of this General Permit, all discharges authorized under the General Permit must perform routine monitoring of all constituents listed under the appropriate routine monitoring schedule and submit the results of such monitoring as indicated.

11.1. All outfalls authorized under Category IA (outfalls located within one stream mile of the Powder River)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on monthly time frames, from the beginning of each calendar month through the end of each calendar month.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (me/l)	Monthly	Grab
Total Dissolved Solids	Monthly	Grab
Sodium Adsorption Ratio (calculated as unadjusted for bicarbonate ratio)	Monthly	Calculated
Specific Conductance (micromohs/cm)	Monthly	Grab
Total Recoverable Arsenic (µg/l)	Annually	Grab
Total Recoverable Barium (µg/l)	Annually	Grab
Total Flow -- (MGD)	Monthly	Continuous
Temperature, degrees Celsius	Once Every Three Months	Grab
Dissolved Zinc (µg/l)*	Annually	Grab

* Sampling for all the constituents listed above is required to occur within 60 days of commencement of discharge from the outfall. Full results are to be reported to the WYPDES Program during the next quarterly reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category IB, prior to any dilution or admixture with any other waters.

11.3. All outfalls authorized under Category IC (outfalls located more than ten stream miles from the Powder River)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on semi-annual time frames, from January through June, and July through December.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Alkalinity (mg/l as CaCO ₃)	Once Every Six Months	Grab
Bicarbonate (mg/l)	Once Every Six Months	Grab
Dissolved Cadmium (µg/l)*	Annually	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Chloride (mg/l)	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Copper ($\mu\text{g/l}$)*	Annually	Grab
Dissolved Fluoride ($\mu\text{g/l}$)	Annually	Grab
Dissolved Iron ($\mu\text{g/l}$)	Annually	Grab
Dissolved Lead ($\mu\text{g/l}$)*	Annually	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
pH (standard units)	Once Every Six Months	Grab
Total Radium 226 (pCi/l)	Annually	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (me/l)	Monthly	Grab
Sodium Adsorption Ratio (calculated as unadjusted ratio)	Monthly	Calculated
Total Dissolved Solids (mg/l)	Monthly	Grab
Specific Conductance (micromohs/cm)	Monthly	Grab
Total Recoverable Arsenic ($\mu\text{g/l}$)	Annually	Grab
Total Recoverable Barium ($\mu\text{g/l}$)	Annually	Grab
Total Flow -- (MGD)	Monthly	Continuous
Temperature, degrees Celsius	Once Every Six Months	Grab
Dissolved Zinc, ($\mu\text{g/l}$)*	Annually	Grab

Sampling for all the constituents listed above is required to occur within 60 days of commencement of discharge from the outfall. Full results are to be reported to the WYPDES Program during the next semi-annual reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category IC, prior to any dilution or admixture with any other waters.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Recoverable Arsenic (µg/l)	Annually	Grab
Total Recoverable Barium (µg/l)	Annually	Grab
Total Flow – (MGD)	Monthly	Continuous
Temperature, degrees Celsius	Monthly	Grab
Dissolved Zinc, (µg/l)*	Annually	Grab

*Sampling and reporting for total radium 228 and ammonia is only required for outfalls located one stream mile or less from confluence with the Powder River.

Sampling for all the constituents listed above is required to occur within 60 days of commencement of discharge from the outfall. Full results are to be reported to the WYPDES Program during the next semi-annual reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category II, prior to any dilution or admixture with any other waters.

11.5. All outfalls authorized under Category II (outfalls discharging to on-channel headwater containment reservoirs or to natural, closed topographic basins (i. e. playa lakes)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on annual time frames, from January through December each calendar year.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Cadmium (µg/l)*	Annually	Grab
Dissolved Calcium (mg/l)	Annually	Grab
Dissolved Calcium (me/l)	Annually	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Total Flow (MGD)	Monthly	Continuous
Dissolved Fluoride (µg/l)	Annually	Grab
Dissolved Iron (µg/l)	Annually	Grab
Dissolved Lead (µg/l)*	Annually	Grab
Dissolved Magnesium (mg/l)	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Magnesium (me/l)	Annually	Grab
pH (standard units)	Annually	Grab
Total Radium 226 (pCi/l)	Annually	Grab
Total Dissolved Solids (mg/l)	Annually	Grab
Dissolved Sodium (mg/l)	Annually	Grab
Dissolved Sodium (me/l)	Annually	Grab
Sodium Adsorption Ratio (unadjusted)	Annually	Calculated
Specific Conductance (micromohs/cm)	Annually	Grab
Total Recoverable Arsenic (µg/l)	Annually	Grab
Dissolved Zinc (µg/l)*	Annually	Grab

Sampling for all the constituents listed above is required to occur within 60 days of commencement of discharge from the outfall. Full results are to be reported to the WYPDES Program during the next semi-annual reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category II, prior to any dilution or admixture with any other waters.

11.6. All outfalls meeting the criteria established for Category III (outfalls discharging to man-made, off channel containment units)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on annual time frames, from January through December each calendar year.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Cadmium (µg/l)*	Annually	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Total Flow (MGD)	Monthly	Continuous
Dissolved Lead (µg/l)*	Annually	Grab
pH (standard units)	Once Every Six Months	Grab

**Fourmile Creek Watershed Plan for Surface
Discharges Related to Coal Bed Methane
Production**

**Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Program**

Plan


Revised 08-25-06

**PERMITTING PLAN GOVERNING DISCHARGES OF PRODUCED WATER FROM COAL BED
METHANE WELLS LOCATED WITHIN THE FOURMILE CREEK SUB-BASIN OF THE POWDER
RIVER DRAINAGE, NORTHEASTERN WYOMING**

In accordance with the provisions of the Wyoming Environmental Quality Act, facilities that are located within the Fourmile Creek sub-basin of the Powder River drainage located within northeastern Wyoming that have the potential to discharge groundwater produced as the result of coal bed methane production to surface waters of the state of Wyoming must comply with this plan .

This permitting plan is approved under the provisions of Chapters 1 and 2 of the Wyoming Water Quality Rules and Regulations.

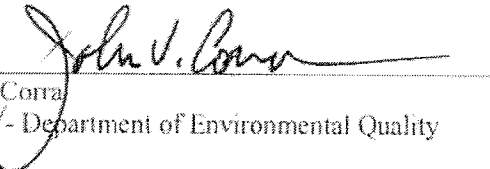
This permitting plan, governing individual WYPDES permits authorizing surface discharges of groundwater produced as the result of CBM operations, shall become effective on the date of issuance, and shall expire at midnight, five years after permitting plan issuance. All individual permits issued under this plan also expire at midnight, five years after the permitting plan is issued.



John F. Wagner
Administrator - Water Quality

Date

9/11/06



John V. Corra
Director - Department of Environmental Quality

Date

9/11/06

PART I

1. Authorization to Discharge

1.1 Coverage under This Plan

1.1.1. Plan Area

This permit covers all coal bed methane (CBM) operations within the Greater Fourmile Creek watershed of the Powder River Basin in Northeastern Wyoming, as identified in the map contained in Appendix A, including all named and unnamed tributaries of the Fourmile Creek watershed. The Greater Fourmile Creek watershed also includes several unnamed ephemeral tributaries to the Powder River, as well as Red Draw, Hupp Draw, and Hynes Draw. Any reference in this document to the "Fourmile Creek watershed" or "Fourmile Creek" will, unless specifically noted otherwise, include these additional minor tributaries.

1.1.2. Activities Covered Under This Plan

Under this plan, facilities may be granted authorization to discharge produced water related to coal bed methane gas development as defined in Part I, Section 1.1.2.1 through Part I, Section 1.1.2.6. This plan will be used as a template in developing individual WYPDES permits for coal bed methane discharges in the plan area as described in Part I, Section 1.1.1. All individual WYPDES permits for coal bed methane discharges must meet the criteria described in this plan, unless the type of discharge being requested is specifically excluded by this plan.

1.1.2.1 **Category I Discharges** – Facilities discharging to on-channel reservoirs with no containment requirements, or directly to stream channels:

Sub-Category IA applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **within one stream mile of confluence with the Powder River.**

Sub-Category IB applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **more than one stream mile from confluence with the Powder River, but less than 10 stream miles from confluence with the Powder River.**

Sub-Category IC applies to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **more than 10 stream miles from confluence with the Powder River.**

Sub-Category ID applies to **all outfalls discharging water treated** to reduce sodium adsorption ratio and/or specific conductance concentrations prior to discharge. Category ID outfalls may be located anywhere within the Greater Fourmile Creek drainage, with the exception of those locations specifically exempted in Part I, Section 1.1.3 of this plan.

1.1.2.2 **Category II Discharges** – 50-year Storm Containment: Facilities discharging to headwater reservoirs or playa lakes - formerly permitted under non-discharging Option 2 (headwater reservoirs) or Option 1B (playa lakes).

Category II applies to all outfalls discharging to on-channel reservoirs or natural closed topographic depressions (playa lakes) capable of containing all CBM effluent in addition to stormwater runoff equivalent to a 50 year, 24 hour precipitation event. Impoundments associated with Category II discharges may be located anywhere within the Fourmile Creek watershed, but must not impound runoff from more than 40 acres of upstream drainage area. Use of an SEO-approved by-pass structure to divert storm flows around the impoundment will serve as an acceptable substitute for meeting the 40-acre maximum on upstream drainage area. In order to qualify for Category II effluent limitations, the operator must demonstrate to the satisfaction of the WYPDES Program, that the discharges can meet the following criteria prior to issuance of discharge authorization:

- 1.1.2.2.1. Adequate demonstration must be made that the reservoir(s) or playa lake(s) proposed for utilization of containment of CBM discharge are able to contain, in addition to all proposed CBM discharges, runoff associated with a 50 year, 24 hour precipitation event.
 - 1.1.2.2.2. For each reservoir not located within a naturally closed topographic depression, the permittee has identified flow monitoring locations, with the approval of the WYPDES Program, located within ¼ mile downstream of the reservoir outlets that will enable the permittee to monitor for flow and/or excess seepage from the reservoirs. The permittee must conduct daily monitoring for flow at these locations, and is required to reduce, eliminate, or otherwise manage discharges from the reservoirs in the event that flow containing effluent is reported at any one of the downstream flow monitoring locations under circumstances other than a 50 year, 24 hour precipitation event or greater, such that discharges and/or seepage from the reservoirs no longer reaches the flow monitoring locations. The identified flow monitoring locations shall not be sited in locations that may be impacted by existing CBM discharges.
 - 1.1.2.2.3. The permittee has identified containment unit monitoring locations, with the approval of the WYPDES Program, within each of the proposed containment units (headwater reservoirs or playa lakes), sited at least 100 feet outside of the mixing zone of the outfall and the containment unit.
- 1.1.2.3. **Category III Discharges** – Constructed Off-Channel Pits: capable of containing all CBM effluent in addition to stormwater runoff equivalent to a 50 year, 24 hour precipitation event (formerly permitted as Option 1A facilities.) Category III discharges may be located anywhere within the Fourmile Creek drainage.

Category III (formerly permitted under Option 1A), applies to all outfalls discharging to off-channel reservoirs capable of containing all CBM effluent in addition to storm water runoff equivalent to a 50 year, 24 hour precipitation event.

- 1.1.2.3.1. Adequate demonstration must be made that the pits proposed for utilization of containment of CBM discharge are able to contain, in addition to all proposed CBM discharges, all runoff associated with a 50 year, 24 hour precipitation event.
- 1.1.2.3.2. Pits of this type require a demonstration that the pit complies with the "Off-Channel, Unlined CBM Produced Water Pit Siting Guidelines for the Powder River Basin, Wyoming", established August 6, 2002 and updated June 14, 2005.

- 1.2.1.12. Outfall numbers and names of all surface waters of the State of Wyoming that would or could potentially receive any portion of the discharge for each outfall, including, where applicable, a description of the tributary system from the outfall location to the mainstem.
- 1.2.1.13. Permittees are subject to additional requirements related to assimilative capacity in the Powder River, as determined by the "*Wyoming Powder River Assimilative Capacity Allocation and Control Process*".
- 1.2.1.14. Permittees are required to submit an individual or collective monitoring and reporting plan related to tributary water quality monitoring stations, mainstem water quality monitoring stations, and channel stability monitoring stations (see Table 1 and Map, Appendix A for station locations).
- 1.2.1.15. Information related to the impoundment reclamation bonding requirements established in Part I, Section 18.
- 1.2.1.16. Note that the WQD may request additional information in order to evaluate potential impacts to designated uses.
- 1.2.1.17. The Individual WYPDES CBM permit application and any supplemental information shall be submitted to:

Wyoming Department of Environmental Quality, Water Quality Division
WYPDES Permitting Program
122 West 25th Street, 4 West
Cheyenne, WY 82002
307-777-5973 (facsimile)

- 1.2.1.18. Applicants shall submit one paper copy of their permit application, including all supporting documentation, and one electronic copy, via compact disc or floppy diskette. All pages of the permit application, and all supporting information – maps, supplemental information, electronic formats, etc., must be clearly marked with facility name, company name, and submittal dates. Operators without the capability to submit applications electronically must submit two paper copies of the WYPDES permit application and all supporting information.
- 1.2.1.19. Operators may need to apply aquatic herbicides and/or pesticides. If so, any such planned use must meet the criteria specified in *Chapter 1 of the Wyoming Water Quality Rules and Regulations, Section 21.e.(i.-iii.)*. Should the operator need to apply any chemicals in the course of treatment, such as, but not limited to: scaling agents, algicides, water conditioners, or any other types of chemicals, the operator must notify the WYPDES Program of such plans prior to use of the chemicals, and must apply for and obtain a modification to any previously issued individual WYPDES permit prior to use of the chemicals, if deemed necessary by the WYPDES Program.

Section 1.11 of this permit. The new operator must comply with all conditions in this plan and the individual WYPDES CBM permit for surface discharge. Copies of the NOTA may be obtained from the WQD website, or via mail upon request.

1.2.5. Notice of Termination

A permittee may request, by submitting a Notice of Termination (NOT), that coverage under any individual WYPDES CBM surface discharge permit issued under this plan be terminated. Such a request shall describe why coverage is no longer necessary and be signed in accordance with Part II, Section 1.11. Following a review, the WYPDES Program will terminate coverage, deny termination or request additional information. The permittee will receive a written confirmation of the WQD's actions. Copies of the NOT may be obtained from the WQD website, or via mail upon request.

1.2.6. Discharge Authorization Fees

Once an operator has been issued a discharge permit, the permittee will be assessed a \$100 per-year-per-permit fee by the WYPDES program. The fee year runs from July 1st through June 30th. Fees are not pro-rated; holding a discharge permit during any portion of any fee year will result in a \$100 fee assessment. Permittees will be billed by the WYPDES program after June 30th of each fee year.

2. Effluent Limits, Category IA Discharges (outfalls located within one stream mile of the Powder River)

2.1. Effective immediately, the quality of effluent for Category IA discharges shall, at a minimum, meet the limitations set forth below

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	240
Dissolved Cadmium, µg/l	4.0
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4.0
Dissolved Copper, µg/l	10.0
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800
Total Dissolved Solids, mg/l ***	5000
Total Radium 226 + Total Radium 228, pCi/l	1
Dissolved Zinc, µg/l	90
Dissolved Fluoride, µg/l	4000

4. Effluent Limits, Category IC Discharges (outfalls located more than ten stream miles from the Powder River)

4.1. Effective immediately, the quality of effluent for **Category IC** discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
Dissolved Cadmium, µg/l	4.0
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4.0
Dissolved Copper, µg/l	10.0
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800
Total Dissolved Solids, mg/l (all outfalls located upstream of irrigation diversions identified on North Fork, Fourmile Creek in Section 34, Township 48 North, Range 79 West, or on Whiskey Draw, Fourmile Creek in Section 7, Township 47 North, Range 78 West)	1420
Total Dissolved Solids, mg/l (all outfalls located downstream of irrigation diversions identified on North Fork, Fourmile Creek in Section 34, Township 48 North, Range 79 West, or on Whiskey Draw, Fourmile Creek in Section 7, Township 47 North, or on tributaries that do not directly confluence Fourmile Creek proper)	5000
Total Radium 226	No limit, unless representative water quality indicates that facility will exceed 12 pCi/l, in which case the limit is 60 pCi/l
Sodium Adsorption Ratio, calculated as unadjusted for bicarbonate ratio*** (all outfalls located upstream of irrigation diversions identified on North Fork, Fourmile Creek in Section 34, Township 48 North, Range 79 West, or on Whiskey Draw, Fourmile Creek in Section 7, Township 47 North, Range 78 West)	12.6

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Specific Conductance, micromohs/cm (all outfalls located downstream of irrigation diversions identified on North Fork, Fourmile Creek in Section 34, Township 48 North, Range 79 West, or on Whiskey Draw, Fourmile Creek in Section 7, Township 47 North)	7500
Specific Conductance, micromohs/cm (all outfalls located upstream of irrigation diversions identified on North Fork, Fourmile Creek in Section 34, Township 48 North, Range 79 West, or on Whiskey Draw, Fourmile Creek in Section 7, Township 47 North)	2130
Dissolved Fluoride, µg/l	4000
Dissolved Zinc, µg/l	90
Whole Effluent Toxicity Testing, acute ** (All outfalls NOT located on tributaries of Fourmile Creek proper or tributaries of Fourmile Creek proper)	NOEC @ 100% (See Part I, Section 10.1 and .3)

*Total flow volume will be calculated as the sum of all discharge from all authorized outfalls.

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

** Whole Effluent Toxicity Testing applicable as described in the Wyoming Department of Environmental Quality, Water Quality Division September 27, 2004 memo entitled "Coal Bed Methane WET Testing Implementation Approach."

***No SAR limit established for Category IC discharges located downstream of irrigation diversions.

5. Effluent Limits, Category ID Discharges (all outfalls discharging CBM produced water treated prior to discharge to reduce SAR and/or specific conductance concentrations).

5.1. Effective immediately, the quality of the effluent for **Category ID** discharges will be based upon the distance of the outfall from confluence with the Powder River (as described in Categories IA-IC, Part I, Sections 2-4), effluent limits will be established identical to the appropriate discharge category with the exception of the following additional parameter:

<u>Effluent Characteristic</u>	<u>Daily Maximum</u>
Sulfate, mg/l	3000

6. **Effluent Limits, Category II Discharges** (outfalls discharging to headwater reservoirs capable of containing runoff from a 50 year, 24 hour precipitation event, and/or outfalls discharging to natural topographically closed basins, i.e. playa lakes)

6.1. Effective immediately, the quality of effluent for **Category II** discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
pH, standard units	6.5 – 9.0
Specific Conductance, micromohs/cm	7500
Total Dissolved Solids, mg/l	5000
Dissolved Fluoride, µg/l	4000
Total Recoverable Arsenic, µg/l	150
Whole Effluent Toxicity Testing, acute ** (all outfalls not located on Fourmile Creek proper and/or tributaries of Fourmile Creek proper)	NOEC @ 100% (See Part I, Section 10.1 and .3)

*Total flow volume will be calculated as the sum of all discharge from all authorized outfalls.

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

Containment units utilized for the impoundment of Category II discharges may only discharge in response to a precipitation event equal to or greater than a 50 year, 24 hour storm event. Such discharges may only occur in response to storm water influxes that cause the reservoirs to fill and overflow. Permittees are required to install a staff gauge within the reservoir, and to clearly mark the level on the staff gauge at which the reserve capacity necessary to store runoff from a 50 year, 24 hour storm would be exceeded. In the event that the level of water within the reservoir exceeds this level due to any circumstances other than runoff from a 50 year, 24 hour precipitation event or greater, the permittee must cease discharge into the containment unit until such time that the level of water within the containment unit no longer exceeds the reserve capacity necessary to contain a 50 year, 24 hour storm. Intentional discharges from reservoirs being utilized to contain Category II discharges are not allowed, and will be considered a violation of this permit. It is the permittee's responsibility to adequately demonstrate the circumstances under which reservoir discharges occurred.

effluent toxicity limits contained in this permit. A TRE plan must be submitted to the permitting authority within 45 days of confirmation of effluent toxicity.

If acceptable to the WYPDES Program, and if in conformance with current regulations, this plan may be reopened and modified to incorporate TRE conclusions relating to additional numerical limitations, a modified compliance schedule, and/or modified whole effluent protocol.

11. Routine Monitoring and Reporting, End of Pipe Constituents

For the duration of this Plan, all discharges authorized under the Plan must perform routine monitoring of all constituents listed under the appropriate routine monitoring schedule and submit the results of such monitoring as indicated.

11.1. All outfalls authorized under Category IA (outfalls located within one stream mile of the Powder River)

For the duration of each Individual WYPDES CBM Surface Discharge Permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on monthly time frames, from the beginning of each calendar month through the end of each calendar month.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Alkalinity (mg/l as CaCO ₃)	Monthly	Grab
Ammonia (total N as mg/l)	Monthly (June through October)	Grab
Bicarbonate (mg/l)	Monthly	Grab
Dissolved Cadmium (µg/l)*	Annually	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab
Dissolved Iron (µg/l)	Once Every Three Months	Grab
Dissolved Lead (µg/l)*	Annually	Grab
Dissolved Manganese (µg/l)*	Annually	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
pH (standard units)	Monthly	Grab
Total Radium 226 (pCi/l)	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
WET Testing, acute (pass-fail, 20% of outfalls located on Red Draw, Hynes Draw, Hupp Draw, or unnamed, ephemeral tributaries of the Powder River included in the Greater Fourmile Creek watershed).	Annually	Grab
WET Testing, chronic (pass-fail, 20% of outfalls located on Red Draw, Hynes Draw, Hupp Draw, or unnamed, ephemeral tributaries of the Powder River included in the Greater Fourmile Creek watershed).	Annually	Grab

* Sampling for these constituents is required to occur within 60 days of commencement of discharge from the outfall. Results are to be reported to the WDEQ during the next quarterly reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category IB prior to any dilution or admixture with any other waters.

11.3. All outfalls authorized under Category IC (outfalls located more than ten stream miles from the Powder River)

For the duration of each Individual WYPDES CBM Surface Discharge Permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on semi-annual time frames, from January through June, and from July through December each calendar year.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Alkalinity (mg/l as CaCO ₃)	Once Every Six Months	Grab
Bicarbonate (mg/l)	Once Every Six Months	Grab
Dissolved Cadmium (µg/l)*	Annually	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab
Dissolved Iron (µg/l)	Annually	Grab
Dissolved Lead (µg/l)*	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Manganese ($\mu\text{g/l}$)*	Annually	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
pH (standard units)	Once Every Six Months	Grab
Total Radium 226 (pCi/l)	Annually	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (me/l)	Monthly	Grab
Sodium Adsorption Ratio (calculated as unadjusted ratio)	Monthly	Calculated
Total Dissolved Solids	Monthly	Grab
Specific Conductance (micromohs/cm)	Monthly	Grab
Total Recoverable Arsenic ($\mu\text{g/l}$)	Annually	Grab
Total Recoverable Barium ($\mu\text{g/l}$)	Annually	Grab
Total Flow – (MGD)	Monthly	Continuous
Temperature, degrees Celsius	Once Every Six Months	Grab
Dissolved Zinc, ($\mu\text{g/l}$)*	Annually	Grab
WET Testing, acute (pass-fail, 20% of outfalls located on Red Draw, Hynes Draw, Hupp Draw, or unnamed, ephemeral tributaries of the Powder River included in the Greater Fourmile Creek watershed).	Annually	Grab

* Sampling for these constituents is required to occur within 60 days of commencement of discharge from the outfall. Results are to be reported to the WDEQ during the next semi-annual reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at the end of pipe of the treatment unit.

11.5. **All outfalls authorized under Category II** (outfalls discharging to on-channel headwater containment reservoirs or to natural, closed topographic basins (I. e. playa lakes)

For the duration of each Individual WYPDES CBM Surface Discharge Permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on semi-annual time frames, from January through June and July through December each calendar year.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Cadmium (µg/l)*	Annually	Grab
Dissolved Calcium (mg/l)	Annually	Grab
Dissolved Calcium (mc/l)	Annually	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab
Dissolved Lead (µg/l)*	Annually	Grab
Dissolved Iron (µg/l)*	Annually	Grab
Dissolved Manganese (µg/l)*	Annually	Grab
Dissolved Magnesium (mg/l)	Annually	Grab
Dissolved Magnesium (mc/l)	Annually	Grab
pH (standard units)	Once Every Six Months	Grab
Total Radium 226 (pCi/l)	Annually	Grab
Dissolved Sodium (mg/l)	Annually	Grab
Dissolved Sodium (mc/l)	Annually	Grab
Sodium Adsorption Ratio (unadjusted)	Annually	Calculated
Total Dissolved Solids (mg/l)	Once Every Six Months	Grab
Specific Conductance (micromohs/cm)	Once Every Six Months	Grab
Total Recoverable Arsenic (µg/l)	Annually	Grab
Dissolved Zinc (µg/l)*	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
WET Testing, acute (pass-fail, 20% of outfalls located on Red Draw, Hynes Draw, Hupp Draw, or unnamed, ephemeral tributaries of the Powder River included in the Greater Fourmile Creek watershed).	Annually	Grab

* Sampling for these constituents is required to occur within 60 days of commencement of discharge from the outfall. Results are to be reported to the WDEQ during the next semi-annual reporting period.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category II, prior to any dilution or admixture with any other waters.

11.5. All outfalls authorized under Category III (outfalls discharging to man-made, off-channel containment units)

For the duration of each Individual WYPDES CBM Surface Discharge Permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Reporting will be based on annual time frames, from January through December each calendar year.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Dissolved Cadmium (µg/l)*	Annually	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)*	Annually	Grab
Dissolved Lead (µg/l)*	Annually	Grab
Dissolved Manganese (µg/l)*	Annually	Grab
pH (standard units)	Once Every Six Months	Grab
Total Dissolved Solids, mg/l	Once Every Six Months	Grab
Total Radium 226 (pCi/l)	Annually	Grab
Specific Conductance (micromohs/cm)	Once Every Six Months	Grab
Total Recoverable Arsenic (µg/l)	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab

**Willow Creek Watershed General Permit for
Surface Discharges Related to Coal Bed
Methane Production**

**Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Program**

**AUTHORIZATION TO DISCHARGE PRODUCED WATER FROM COAL BED
METHANE WELLS LOCATED WITHIN THE WILLOW CREEK WATERSHED
OF THE POWDER RIVER BASIN**

In accordance with the provisions of the Wyoming Environmental Quality Act, facilities that are located within the Willow Creek watershed of the Powder River Basin that have the potential to discharge groundwater produced as the result of coal bed methane production in accordance with the requirements of this general permit are hereby authorized to discharge to surface waters of the state of Wyoming.

This general permit is issued under the provisions of Chapters 1 and 2 of the Wyoming Water Quality Rules and Regulations. Operators issued discharge authorizations under this general permit are required to comply with all applicable state and federal regulations and requirements.

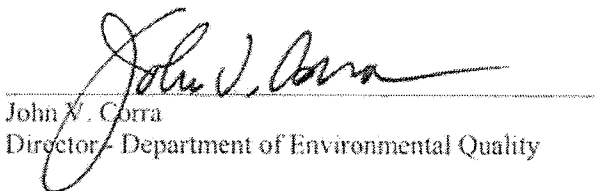
This general permit shall become effective on the date of issuance, and shall expire at midnight, five years after permit issuance. All authorizations issued under this general permit also expire at midnight, five years after the general permit is issued.



John F. Wagner
Administrator - Water Quality

9/11/06

Date



John V. Corra
Director - Department of Environmental Quality

9/11/06

Date

PART I

I. AUTHORIZATION TO DISCHARGE1.1 Coverage Under This Permit1.1.1 Permit Area

This permit covers all coal bed methane (CBM) operations within the greater Willow Creek watershed of the Powder River Basin in Northeastern Wyoming, as identified in the map contained in Appendix A, including all named and unnamed tributaries of Willow Creek. The greater Willow Creek watershed also includes several unnamed ephemeral tributaries to the Powder River, as well as Curtis Draw and School Section Draw, which are located West of the Powder River. Any reference in this document to the "Willow Creek watershed" will include these additional minor tributaries.

1.1.2 Activities Covered Under This Permit

Under this general permit, facilities may be granted authorization to discharge produced water related to coal bed methane gas development as defined in Part I, Section 1.2.1 and Part I, Section 1.2.3. Prior to issuance of discharge authorization, the permittee shall demonstrate that upon entering a water of the state of Wyoming, the discharge will not exceed the effluent limitations as described in Part I, Section 2 – Part I, Section 5, or cause a violation of Wyoming Water Quality Standards as established in *Chapter 1 of the Wyoming Water Quality Rules and Regulations*.

1.1.2.1 **Category I Discharges** (On-channel with no containment requirements); Formerly "Option 2" for individual discharge permits:

Sub-Category 1A discharges apply to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **within one stream mile of confluence with the Powder River**.

Sub-Category 1B discharges apply to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **greater than one stream mile from confluence with the Powder River, but downstream** of the existing irrigation use within the Willow Creek watershed. The downstream-most existing irrigation use within the Willow Creek watershed is located in **the NESE of Section 23, Township 45 North, Range 77 West**.

Sub-Category 1C discharges apply to all outfalls discharging to on-channel reservoirs and/or directly to stream channels located **upstream** of the existing irrigation use within the Willow Creek watershed. The downstream-most existing irrigation use within the Willow Creek watershed is located in **the NESE of Section 23, Township 45 North, Range 77 West**.

1.1.2.2 **Category II Discharges** (50-year Storm Containment : Headwater Reservoir or Playa Lake); Formerly "Option 1B" for individual discharge permits:

Category II discharges apply to all outfalls discharging to on-channel reservoirs or natural closed topographic depressions (playa lakes) capable of containing all CBM effluent in addition to stormwater runoff equivalent to a 50 year, 24 hour precipitation event.

Impoundments associated with Category II discharges may be located anywhere within the Willow Creek watershed, but must not impound runoff from more than 40 acres of upstream drainage area. Use of an SEO-approved by-pass structure to divert storm flows around the impoundment will serve as an acceptable substitute for meeting the 40-acre maximum on upstream drainage area. In order to qualify for Category II effluent limitations, the operator must demonstrate to the satisfaction of WQD, that the discharges can meet the following criteria prior to issuance of discharge authorization:

- 1.1.2.2.1 Adequate demonstration must be made that the reservoir(s) or playa lake(s) proposed for utilization of containment of CBM discharge are able to contain, in addition to all proposed CBM discharges, runoff associated with a 50 year, 24 hour precipitation event.
- 1.1.2.2.2 For each reservoir not located within a naturally closed topographic depression, the permittee has identified flow monitoring locations, with the approval of WQD, within $\frac{1}{4}$ mile downstream of the reservoir outlets that will enable the permittee to monitor for flow and/or excess seepage from the reservoirs. The permittee must conduct daily monitoring for flow at these locations, and is required to reduce, eliminate, or otherwise manage discharges from the reservoirs in the event that flow is reported at any one of the downstream flow monitoring locations during "dry" weather conditions such that discharges and/or seepage from the reservoirs no longer reaches the flow monitoring locations. The identified flow monitoring locations shall not be sited in locations that may be impacted by existing CBM discharges.
- 1.1.2.2.3 The permittee has identified containment unit monitoring locations, with the approval of WQD, within each of the proposed containment units (headwater reservoirs or playa lakes), outside of the mixing zone of the outfall and the containment unit.

1.1.3 Activities Not Covered Under This Permit

The following types of discharges are not authorized by this general permit.

- 1.1.3.1 **Discharge of any drilling fluids, acids, stimulation waters or other fluids** derived during the course of drilling, maintaining, and/or completing wells.
- 1.1.3.2 **Stormwater runoff** from construction activities.
- 1.1.3.3 **Category III Discharges** – to constructed off-channel pits capable of containing all CBM effluent in addition to stormwater runoff equivalent to a 50 year, 24 hour precipitation event (formerly "option 1A for individual discharge permits). Discharges meeting the criteria described below may not be covered under this general permit and must receive permit coverage under an individual WYPDES permit. Although discharges of this type will not be considered for coverage under this general permit, the effluent limitations and requirements associated with such discharges are described in this general permit, in order to serve as the template for individual permits.
 - 1.1.3.3.1 Adequate demonstration must be made that the pits proposed for utilization of containment of CBM discharge are able to contain, in addition to all proposed CBM discharges, all runoff associated with a 50 year, 24 hour precipitation event.

- 1.2.2.5 A detailed, legible topographic map, with a legend, of the facility proposed for discharge authorization. Include well locations, outfall locations, water flow lines, treatment units, surface hydrology, location and directional information (sections, townships, and ranges; and a north arrow) and containment units. Indicate the number of separate discharge points being requested.
- 1.2.2.6 If proposing to utilize any type of containment as part of the water management plan for this facility, a water balance describing all inputs and outputs must be included.
- 1.2.2.7 The results of a water analysis from each of the targeted coal seams, for all water quality parameters listed in the NOI form. The representative sample(s) must be collected from within a 20 mile radius of the proposed facility, from the same coal seams being proposed for development at the proposed facility. The water analysis results must be submitted in the form of a legible, signed copy of a laboratory analysis sheet. The submitted lab sheet(s) must: use the same parameter units listed in the NOI form; list the approved EPA test procedures used in the analyses (40 CFR 136 or 40 CFR 136.5); identify the legal location of the sampled discharge; identify the coal seam(s) represented in the sampled discharge; identify the sample date and analysis date of the discharge.
- 1.2.2.8 Names and addresses of all surface landowners of record on whose property the discharges will occur, and/or containment units will be built.
- 1.2.2.9 The NOI must be signed and dated according to Part LI Section 1.11 of the permit.
- 1.2.2.10 Applicant status as a federal, state, private, public, or other entity.
- 1.2.2.11 A description of the activity conducted by the applicant, including the identification of the specific Category(ies) of Discharge requested under this general permit.
- 1.2.2.12 Outfall numbers and names of all surface waters of the State of Wyoming that would or could potentially receive any portion of the discharge for each outfall, including, where applicable, a description of the tributary system from the outfall location to the mainstem.
- 1.2.2.13 Permittees are subject to additional requirements related to assimilative capacity in the Powder River, as determined by the "*Wyoming Powder River Assimilative Capacity Allocation and Control Process*".
- 1.2.2.14 Permittees are required to submit an individual or collective monitoring and reporting plan related to tributary water quality monitoring stations, mainstem water quality monitoring stations, and channel capacity monitoring stations (see Table 1 and Map, Appendix A for station locations).
- 1.2.2.15 Note that WQD may request additional information in addition to that requested above to identify potential impacts to designated uses.
- 1.2.2.16 The NOI and any supplemental information is to be submitted to:

Wyoming Department of Environmental Quality, Water Quality Division
WYPDES Permitting Program
122 West 25th Street, 4 West
Cheyenne, WY 82002

(NOTA). The NOTA must be signed by both parties in accordance with Part I,I Section 1.11 of this permit. The new operator must comply with all conditions in this permit and the authorization. Copies of the NOTA may be obtained from the WQD website, or via mail upon request.

1.2.6 Notice of Termination

A permittee may request, by submitting a Notice of Termination (NOT), that coverage under this permit be terminated. Such a request shall describe why coverage is no longer necessary and be signed in accordance with Part I,I Section 1.11 Following a review, WQD will terminate coverage, deny termination or request additional information. The permittee will receive a written confirmation of the WQD's actions. Copies of the NOT may be obtained from the WQD website, or via mail upon request.

1.2.7 Discharge Authorization Fees

Once an operator has been issued a discharge authorization letter, the permittee will be assessed a \$100.00 per-year-per-authorization permit fee by WQD. The fee year runs from July 1st through June 30th. Fees are not pro-rated, holding a discharge authorization during any portion of any fee year will result in a \$100.00 fee assessment.

2. EFFLUENT LIMITS, CATEGORY I DISCHARGES (On-channel reservoirs with no stormwater runoff containment requirements)

Effective immediately, the quality of effluent for Category I discharges shall, at a minimum, meet the limitations set forth below. Category I discharge authorizations may be additionally limited for total flow, total dissolved solids (TDS), and dissolved sodium at the outfall(s) pursuant to restrictions established in WQD/WYPDES Program Policy "Wyoming Powder River Assimilative Capacity Allocation and Control Process."

2.1 Subcategory IA: (within one stream mile of confluence with the Powder River)

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Total Flow, MGD	0.36
Chloride, mg/l	230
Dissolved Iron, µg/l	240
Dissolved Cadmium, µg/l	4
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4
Dissolved Copper, µg/l	10
Dissolved Fluoride, µg/l	2000
Sulfate, mg/l	3000
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Total Radium 226	3
Dissolved Zinc, µg/l	90
Specific Conductance, micromhos/cm	7500
Whole Effluent Toxicity Testing, acute*	NOEC @ 100% Effluent

Note: "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.

* Whole Effluent Toxicity Testing applicable as described in WDEQ guidance document, "Coal Bed Methane WET Testing Implementation Approach." (Updated September 27, 2004).

2.3 Subcategory 1C: (Upstream of the lowermost irrigated lands on Willow Creek in the NESE of Section 23, Township 45 North, Range 77 West)

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum, Outfall</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
Dissolved Cadmium, µg/l	4
pH, standard units	6.5 – 9.0
Dissolved Lead, µg/l	4
Dissolved Copper, µg/l	10
Dissolved Zinc, µg/l	90
Dissolved Fluoride, µg/l	2000
Sulfates, mg/l	3000
Total Recoverable Arsenic, µg/l	7
Total Recoverable Barium, µg/l	1800
Total Dissolved Solids, mg/l	887
Specific Conductance, micromhos/cm	1330
Sodium Adsorption Ratio, unitless	7
Whole Effluent Toxicity Testing, acute*	NOEC @ 100% Effluent

Note: "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.

* Note: Whole Effluent Toxicity Testing applicable as described in WDEQ guidance document, "Coal Bed Methane WET Testing Implementation Approach." (Updated September 27, 2004).

3. **EFFLUENT LIMITS, CATEGORY II DISCHARGES** (outfalls discharging to playa lakes or on-channel headwater reservoirs capable of containing runoff from up to a 50-year / 24-hour precipitation event)

Effective immediately, the quality of effluent for Category II discharges shall, at a minimum, meet the limitations set forth below.

Effluent Limits

<u>Effluent Characteristic</u>	<u>Daily Maximum</u>
Chlorides, mg/l	230
Dissolved Iron, µg/l	1000
Dissolved Fluoride, µg/l	2000
Sulfates, mg/l	3000
pH, standard units	6.5 – 9.0
Specific Conductance, micromhos/cm	7500
Total Dissolved Solids, mg/l	5000
Whole Effluent Toxicity Testing, acute*	NOEC @ 100% Effluent

Note: "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.

* Whole Effluent Toxicity Testing applicable as described in WDEQ guidance document, "Coal Bed Methane WET Testing Implementation Approach." (Updated September 27, 2004).

Containment units utilized for the impoundment of Category II discharges are only authorized to overtop in response to a precipitation event equal to or greater than a 50 year, 24 hour storm event. Such overtopping events must occur in response to stormwater influxes that cause the impoundments to fill and overtop. Intentional releases from impoundments being utilized to contain Category II discharges are not allowed, and will be considered a violation of this permit. Impoundment overtopping events related to 50 year, 24 hour storm events are limited to natural overtopping only. It is the permittee's responsibility to adequately demonstrate the circumstances in which impoundments overtop, if requested by WQD.

4. **EFFLUENT LIMITS, CATEGORY III DISCHARGES** (outfalls discharging to constructed off-channel pits: Requires individual permit coverage)

8. END-OF-PIPE SAMPLING AND REPORTING

For the duration of this General Permit, all discharges authorized under the General Permit must perform routine monitoring of all constituents listed under the appropriate routine monitoring schedule and submit the results of such monitoring as indicated.

8.1 All outfalls authorized under Category I (Outfalls discharging on-channel with no containment requirements)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies and reported in discharge monitoring reports semi-annually. Semi-annual monitoring periods run January through June, and July through December.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Alkalinity (mg/l as CaCO ₃)	Monthly	Grab
Ammonia (total N as mg/l)	Monthly July - September	Grab
Bicarbonate (mg/l)	Monthly	Grab
Dissolved Cadmium (µg/l)	Annually	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Calcium (me/l)	Monthly	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Copper (µg/l)	Annually	Grab
Dissolved Iron (µg/l)	Once Every Three Months	Grab
Dissolved Lead (µg/l)	Annually	Grab
Dissolved Manganese (µg/l)	Annually	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Magnesium (me/l)	Monthly	Grab
pH (standard units)	Monthly	Grab
Total Recoverable Radium 226 (pCi/l)	Annually	Grab
Total Radium 228 (pCi/l)	Annually	Grab
Total Recoverable Uranium, mg/l	Annually	Grab
Total Recoverable Selenium (µg/l)	Annually	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Dissolved Sodium (me/l)	Monthly	Grab
Dissolved Fluoride (mg/l)	Annually	Grab

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Sodium Adsorption Ratio (unitless)	Monthly	Calculated
Specific Conductance (micromhos/cm)	Monthly	Grab
Total Dissolved Solids (mg/l)	Monthly	Grab
Sulfates (mg/l)	Annually	Grab
Total Recoverable Arsenic ($\mu\text{g/l}$)	Annually	Grab
Total Recoverable Barium ($\mu\text{g/l}$)	Annually	Grab
Total Flow – (MGD)	Monthly	Continuous
Temperature, (degrees F)	Monthly	Grab
Dissolved Zinc ($\mu\text{g/l}$)	Annually	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category I, prior to any dilution or admixture with any other waters.

- 8.2. **All outfalls authorized under Category II** (outfalls discharging to playa lakes or on-channel headwater reservoirs capable of containing runoff from up to a 50-year / 24-hour precipitation event)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies and reported in discharge monitoring reports semi-annually. Semi-annual monitoring periods run January through June, and July through December.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Chloride (mg/l)	Annually	Grab
Dissolved Fluoride ($\mu\text{g/l}$)	Annually	Grab
pH (standard units)	Annually	Grab
Total Recoverable Uranium, mg/l	Annually	Grab
Total Recoverable Selenium ($\mu\text{g/l}$)	Annually	Grab
Specific Conductance (micromhos/cm)	Annually	Grab
Total Dissolved Solids (mg/l)	Annually	Grab
Sulfates (mg/l)	Annually	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category II, prior to any dilution or admixture with any other waters.

8.3 All outfalls authorized under Category III (outfalls discharging to constructed off-channel pits)

For the duration of each discharge authorization, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies and reported in discharge monitoring reports semi-annually. Semi-annual monitoring periods run January through June, and July through December.

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Chloride (mg/l)	Annually	Grab
pH (standard units)	Annually	Grab
Total Dissolved Solids, mg/l	Annually	Grab
Total Recoverable Selenium (µg/l)	Annually	Grab
Specific Conductance (micromhos/cm)	Annually	Grab
Sulfates (mg/l)	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab

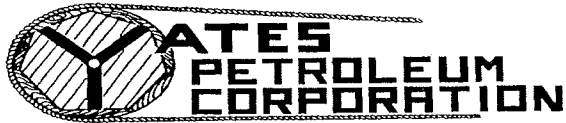
Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) – at all outfalls permitted under Category III, prior to any dilution or admixture with any other waters.

9. CONTAINMENT UNIT SAMPLING AND REPORTING

For all containment units impounding discharges from Category II or Category III outfalls:

<u>Parameter</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Chloride (mg/l)	Annually	Grab
Dissolved Fluoride (µg/l)	Annually	Grab
pH (standard units)	Annually	Grab
Total Recoverable Uranium, mg/l	Annually	Grab
Total Recoverable Selenium (µg/l)	Annually	Grab
Specific Conductance (micromhos/cm)	Annually	Grab

EXHIBIT B



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Leah Krafft, DEQ/WQD
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Also by Fax

March 28, 2006

Good Morning Leah,

Please accept the following as written comments to the Willow Creek Watershed General Permit, Pumpkin Creek Watershed General Permit and the Fourmile Watershed Plan as published in Public Notice on February 16, 2006. In the interest of efficiency, wherever possible comments have been combined for the three Permits / Plan where there were similar issues. Yates appreciates the opportunity to provide comments, and we would be happy to discuss our comments should there be need for clarification or to answer questions.

Issue - Category II discharges to reservoirs being required to contain the 100 year event.

Yates feels strongly that there should be a category with relaxed effluent limits that takes into account that water will be stored in reservoirs as opposed to the Category 1 where the reservoirs can overtop produced water under dry conditions, albeit with more conservative constituent limits. Where we differ with the proposed permit is the requirement for the containment of the 100 year event in addition to the produced water. We believe that the following points reinforce that view:

- Containment of the 100 year event will, at many reservoir sites, require that the permittee build redundant reservoir capacity to contain storm events up to the 100 year in addition to the produced water. Some headwater sites will naturally contain the 100 year event due to lack of drainage contribution, but they are not the rule.
- We believe that landowners have been very clear during the Watershed Based Permitting Process that they are not in favor of this redundant capacity, and Operators have echoed that concern. Many landowners have expressed concern that they would rather see those upland areas retain the ephemeral flow regime, which will be better served by use of reservoirs that can overtop during storm / snowmelt events of any size.
- We further believe that it has been very adequately demonstrated that mixing across a given drainage area of even very small events and the background landscape influences upon water coming out of a reservoir are such strong influences upon water chemistry that the produced water's chemical signature is essentially lost in mixing and from water contacting soils.
- A (likely unintended) consequence of providing such conservative containment requirements for this Category will be that many operators will not seek this permit option for operational or landowner concerns. Since there is little Regulatory benefit for building reservoirs in the Category I permit, there will be less storage and more direct discharge to the drainages.

Issue – Category 1A discharges – Ammonia, mg/L as total N

- During the course of development of these Watershed Based Permits there has been substantial discussion concerning Ammonia limits. Industry has cooperatively prepared studies that show how quickly Ammonia degrades in the natural landscape and has conducted sampling at CBNG outfalls for TAN. This natural attenuation of Ammonia at outfalls and in the stream channel seems to have been disregarded in the calculations for this discharge category. Please see the materials below concerning attenuation at outfalls, previously presented in Watershed Based Permitting meetings:

Ammonia at CBNG Outfalls

9/27/05 by Tim Barber, Yates Petroleum

In the course of discussions relating to watershed based permitting there has been some questions relating to the Ammonia levels in CBNG produced waters, and how that particular constituent should be looked at relative to permit monitoring and water quality standards. One question that had been raised was how quickly Ammonia (Total as N) falls out in the environment of a typical CBNG outfall and thus how it could be anticipated to impact discussions relating to permits.

In order to get a look at this Nine water samples were taken at three outfall locations in the Yates Burger Draw POD area, which was chosen as it is inside the box defined for Big George WET Testing, and all three outfalls discharge into fenced full containment reservoirs with very little opportunity contribution of runoff as well as Nitrogen from the drainages they are located in. Samples were taken in three locations at each:

- a. A “Raw Water” sample was taken prior to the water entering a rock outfall at the pipe that outlets water. This water has traveled in a poly pipeline from the wells discharging at the location and has not been exposed to air prior to being sampled. These outfalls are equipped with a location to take a free fall sample of this raw water.
- b. An “End of Pipe” sample was taken at the sampling point for each outfall at the end of the rock outfall path. These rock outfall paths are typically used to aerate water discharged, and to deal with iron and other constituent levels in discharges. These rock outfalls are used to some extent at most CBNG outfalls. This end of pipe location is approximately 50 feet down-gradient from where raw water enters the rock path, and the sample is a free fall sample.
- c. A “Reservoir sample” was taken at the reservoir inlet pool, which was typically 50 to 100 feet down-gradient from the location where the end of pipe sample was taken. This sample was dipped from the pool as a grab sample.

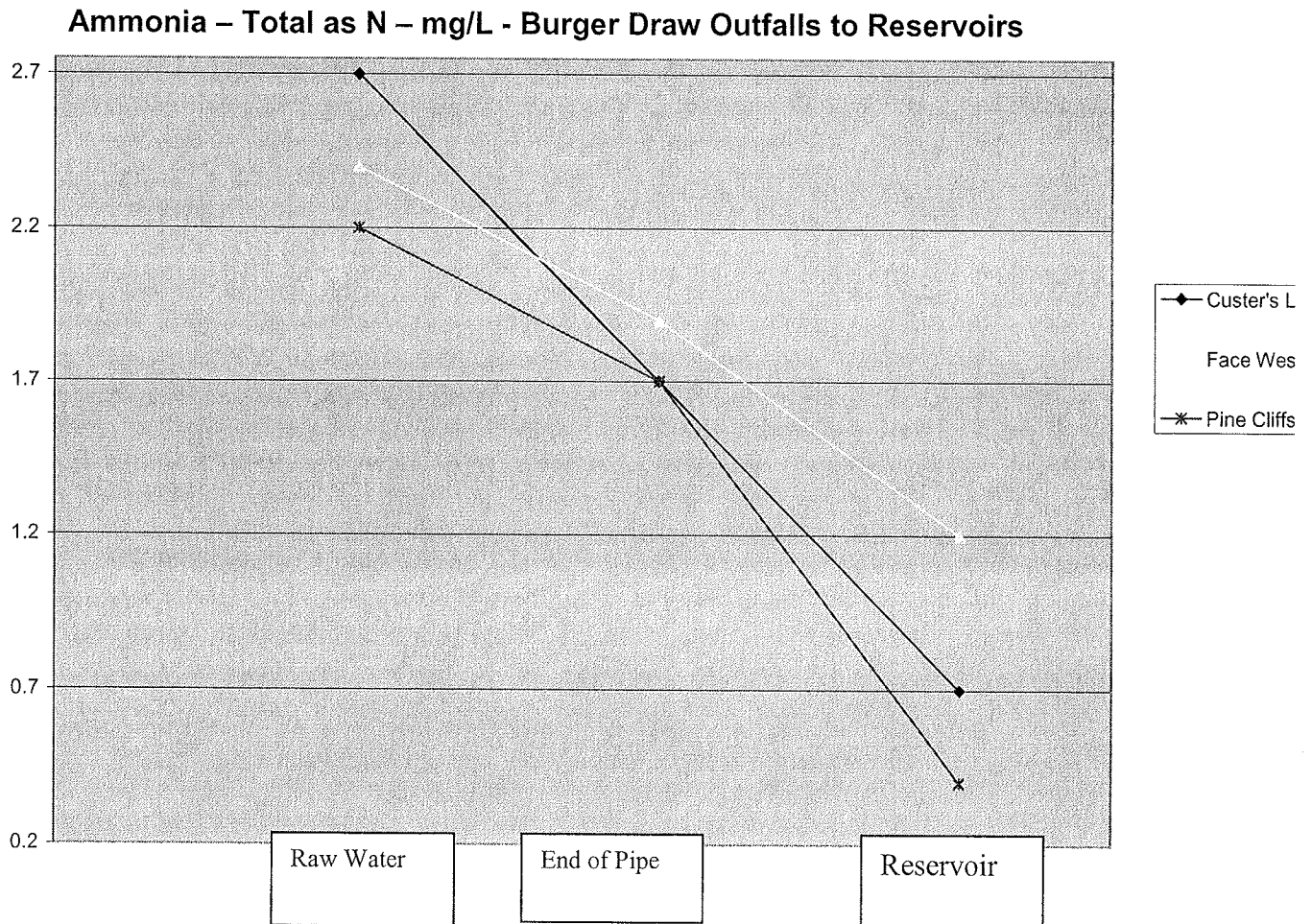
All samples' pH, Temperature and Conductivity were recorded in the field, and the samples analyzed for Total Ammonia Nitrogen as N as is specified in Chapter 1, (which would include both Ammonia and Ammonium).

Results of Analysis

At all three locations there was a substantial drop in Total Ammonia Nitrogen as N over the relatively short (both spatially and in time) paths this water is traveling. A recap of the Ammonia levels is provided below:

	Raw Ammonia <i>mg/L as N</i>	End of Pipe Ammonia <i>mg/L as N</i>	Reservoir Ammonia <i>mg/L as N</i>	% Reduction
Custer's Last	2.7	1.7	0.7	74.07%
Face West	2.4	1.9	1.2	50.00%
Pine Cliffs	2.2	1.7	0.4	81.82%
			Average Reduction	68.63%

As can be noted from the table, an average reduction in Total Ammonia Nitrogen as N of 68.63 % occurred in these waters as they traveled through the rock treatment path , through the compliance “end of pipe” and on to the inlet of the reservoir. As indicated in the chart below, the change is fairly linear.



While Chapter 1, Appendix C discusses Total Ammonia Nitrogen as N, it is important to recognize the relationship between the amounts of Free Ammonia and at the temperatures and pH's that we are looking at for these discharges. In order to get a read on this, Yates had Energy Lab determine the amount of Ammonia and Ammonium in these samples:

<u>Reservoir/Outfall</u> <u>(NH3)mg/L</u>	<u>Total mg/L Ammonia (NH3 and NH4+) as N</u>	<u>Total Free Ammonia</u>
Custers Last –Raw	2.7	<.1
Custers Last – EOP	1.7	<.1
Custers Last – Res	.7	.2
Face West – Raw	2.4	<.1
Face West – EOP	1.9	<.1
Face West – Res	1.2	.2
Pine Cliffs – Raw	2.2	<.1
Pine Cliffs – EOP	1.7	.2
Pine Cliffs – Res	.4	.2

As many folks are aware the Free Ammonia is the most toxic species, and it is valuable to examine that these waters at the pH and temperatures that CBM discharges produce has minimal Free Ammonia. This heavy weighting towards the Ionized form is important for consideration when looking at regulatory needs relating to Ammonia. Table from EPA below also illustrates (assuming a zero salinity solution) the general ratio that can be expected of the toxic, un-ionized form as a percentage of the Total Ammonia Nitrogen (TAN).

Table A. Percent total ammonia present in the toxic, un-ionized ammonia form in a zero salinity solution (USEPA, 1987).

Temp (C)	6.0	6.5	7.0	7.5	pH 8.0	8.5	9.0	9.5	10.0
5	0.013	0.040	0.12	0.39	1.2	3.8	11	28	56
10	0.019	0.059	0.19	0.59	1.8	5.6	16	37	65
15	0.027	0.087	0.27	0.86	2.7	8.0	21	46	73
20	0.040	0.13	0.40	1.2	3.8	11	28	56	80
25	0.057	0.18	0.57	1.8	5.4	15	36	64	85
30	0.080	0.25	0.80	2.5	7.5	20	45	72	89

Factors to Consider when discussing Ammonia Monitoring for CBNG outfalls and Watershed Based Permits

- A broad Big George coal area has been established for Whole Effluent Toxicity Testing – which depending upon the permit may include Acute and/or Chronic testing for D. Magna and Fathead Minnow. Further, failure of WET requires the discharger to enter into the TRE – TIE processes. This provides protection as Fathead Minnow are sensitive to Ammonia toxicity and will measure toxicity resulting from multiple factors – such as alkalinity plus Ammonia plus Barium – or other potential cumulative toxicity effects.

- Real-world sampling at outfalls has shown that Ammonia is reduced by an average of 68% between contacting the rock outfall path and pooling in a typical reservoir. This should be factored into considerations concerning Ammonia in CBNG discharges.
- As CBNG discharges have not been sampled (for the most part) for Ammonia / Ammonium, and so we don't have much of a track record to determine if levels are of concern. Data to date coming from USGS has not considered any sort of outfall action or exposure to atmosphere and simply should not be considered as it was collected in a manner that does not at all approximate the real world of water flowing in an outfall. Other data considered to date has resulted from WET testing, and WYDEQ is still in the process of how to deal with the impacts of artifactual, pH drift induced toxicity from lab practices. When that pH drift has been controlled to field conditions, LC 50s are not being seen.
- At the temperatures and pH that these discharges typically occur at the highly toxic unionized Free Ammonia is less than 15% of the Total Ammonia Nitrogen (TAN) based on EPA literature and in the real-world outfalls tested here tested below detection limits in all 3 of the End of Pipe samples that Energy Labs analyzed for this project.
- The receiving environment, which in this case is generally ephemeral drainages, are high Nitrogen / Ammonia environments. Loading from livestock and wildlife manure is high in most areas as the area is generally used for livestock grazing and supports substantial wildlife populations that use these areas such as Mule Deer and Pronghorn. While there is typically low or no moisture in these dry draws, when a rain event or spring snow melt occurs there is potential substantial loading of this manure derived Ammonia down the draws. This presence of moisture represents the opportunity for (albeit short lived) aquatic life to take advantage of this moisture. By definition this aquatic life would be adapted to a high Ammonia environment, and while CBNG discharge may have some Ammonia, it is a single source that reduces itself by approximately 2/3 in the first 100 feet. The natural storm event would mobilize Ammonia from multiple sources that would continue to contribute as long as flow would mobilize it. Considering the discharge environment is ephemeral, there seems to be little risk to aquatic life populations.
- Biotic uptake of Ammonia by things such as algae is a forgone conclusion, especially when considering the relatively stable temperature of CBNG discharge. Algal blooms at CBNG discharges are universal.
- CBNG discharge water is regularly used as supply water for Rainbow Trout (*Oncorhynchus mykiss*) and other game and non-game fish at a number of CBNG constructed reservoirs throughout the Powder River Basin. These populations have done very well, with nearly every CBNG operator having a success story where a landowner or operator have planted fish in these reservoirs. Rainbow and other trout species are very sensitive to Ammonia toxicity, much more so than the warm water species that would typically be protected for in these drainages.

Reccomendation regarding Ammonia monitoring / permit limits for Pumpkin Creek and Willow Creek Watershed Based Permits.

If one considers the factors discussed above, which include :

WET testing is in place in large spatial area in Basin and this process includes TIE, TRE as circumstances dictate.

Sampling indicates that TAN is reduced by 2/3 moving from discharge to reservoir

Low risk for degradation of receiving environment and history of trout and other game fish being raised in these discharges.

Overall lack of comprehensive data from actual CBNG discharges for decision making.

Temperature and pH of typical outfalls not condusive to having large percentages of the highly toxic un-ionized form.

It seems like a logical approach to this issue would be to require Total Ammonia Nitrogen, pH and Temperature monitoring at all outfalls and monitoring stations on the Pumpkin/ Fourmile and Willow Creek Watershed Based Permits that have the potential to flow into waters of the state. This would build a database of real world outfall data that could be used to further look at any perceived risks and data could be reported on a timeframe that WYDEQ felt would be appropriate to gather needed data. Further, re-opener provisions could be provided in these permits, that if this monitoring data indicated a problem with this constituent, that the WYDEQ could open those permits where problems were indicated. This seems like a logical response based on the very low potential risk, is defensible and provides WYDEQ an opportunity to gather a broad data set without causing industry to install 10s of millions of dollars worth of Ammonia treatment , only to find that there is very little risk to exceed standards or negatively impact aquatic life. In the case of a direct discharge to the Powder an individual permit must be pursued (according to the current plan) and thus would provide for addressing the Ammonia issue within the confines of that permit.

Issue – Fourmile Creek Watershed Based Plan

The “Plan” (as opposed to a General Permit) for the Fourmile portion of the Pumpkin Creek HUC seems misguided for the following reasons:

- The structure of the plan is pretty much exactly the same as the General Permits are structured, including issues such as category of discharge and discharge constituent limits. The Plan results in no different levels of environmental protection or regulatory compliance.
- The plan would require public notice of all (individual) permits, and as such would require that DEQ use resources to reply to public comments on permits. WYDEQ has made tremendous efforts to involve the public in these permits, including public outreach asking for participation in Watershed Based Permitting meetings held to develop these permits / plans. There has been lots of opportunity for comments to the Plan, including this public comment opportunity. Yates asks DEQ to reconsider the use

of a Plan in this situation, as it is simply not the best use of the time and resources of the Water Quality Division.

- As has been stated during Watershed Based Permitting Meetings, it appears that the Plan and a General Permit will result in exactly the same discharge authorizations for things like flow, category of discharge and constituent limits. This is the very application that General Permits are designed for. These are similar discharges, under similar circumstances, with similar regulations coming to bear on the proposed discharges. By considering a Plan and requiring individual permits to be applied for, WYDEQ is signing up for a larger administrative workload than is needed while at the same time admittedly providing no different environmental protection.

Issue – Constituent Limits in Permits relating to irrigation practice

In the Pumpkin Creek General Permit, Category I outfalls above an identified spreader dike are required to meet an SAR of 13, TDS of 1470 mg/L and conductivity of 2200 umhos/cm. These limits appear to disregard the natural water quality that this spreader dike system sees naturally. While it is important to consider irrigation rights, discharges should not be required to exceed water quality that has traditionally been available for irrigation. Please reference the Document entitled “Surface Water Monitoring Report Water Quality Monitoring Stations Including Upstream and Downstream Monitoring Locations – July 2005 to December 2005”. Results of water quality monitoring on Pumpkin Creek indicate that the ambient water quality flowing the creek exceed the limits proposed in the permit.