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THE ORDERLY DEVELOPMENT OF COALBED METHANE RESOURCES FROM PUBLIC LANDS

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND MINERAL RESOURCES

OF THE

COMMITTEE ON RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

September 6, 2001

Serial No. 107-58

Printed for the use of the Committee on Resources

Available via the World Wide Web: http://www.access.gpo.gov/congress/house
or
Committee address: http://resourcescommittee.house.gov

U.S. GOVERNMENT PRINTING OFFICE

75-015 PS WASHINGTON : 2002

For sale by the Superintendent of Documents, U.S. Government Printing Office
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OVERSIGHT HEARING ON THE ORDERLY DEVELOPMENT OF COALBED METHANE RESOURCES FROM PUBLIC LANDS

Thursday, September 6, 2001
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Resources
Washington, DC

The Subcommittee met, pursuant to call, at 10:10 a.m., in Room 1334, Longworth House Office Building, Hon. Barbara Cubin [Chairman of the Subcommittee] presiding.

STATEMENT OF THE HONORABLE DENNIS R. REHBERG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MONTANA

Mr. REHBERG. Good morning. We wanted to get started. Chairman Cubin is at the White House.

I thank the witnesses for taking the time to be with us today.

And at this time, I would like to turn the mike over to the ranking member, Mr. Kind, for a brief statement.

[The prepared statement of Mrs. Cubin follows:]

Statement of The Honorable Barbara Cubin, Chairman, Subcommittee on Energy and Mineral Resources

Today's oversight hearing continues the Subcommittee's inquiry on issues relevant to energy supply for our Nation from public lands and the outer continental shelf. Of course the full House has already passed an energy bill with several provisions respecting public lands, but the job isn't finished. Energy prices have declined in the last few months as the economy has slowed, but does anyone believe that our long-term energy needs can be met without a combination of supply increases and demand constraints?

As for natural gas, wellhead prices which my constituents are receiving in Wyoming, have plummeted from last winter's highs. There is a feeling I detect in the oilpatch that demand factors will rebound and with it the spot and futures market prices. Gas-fired electric generation is still planned for the vast majority of new plants. When the Gulfstream pipeline reaches planned capacity in the next couple of years Floridians will be receiving 1.1 billion cubic feet of natural gas per day. That's Billion with a B.

Where will the gas come from? The natural gas currently being produced in the Gulf of Mexico is already being shipped to midwest and northeast markets. New supplies from the Gulf are necessary just to offset the decline curve on the existing wells.

My point? The search for natural gas must continue despite the short-term return to historic price trends. And that search will more and more mean developing natural gas deposits heretofore deemed to be "unconventional plays." Among these is

coalbed methane, or CBM, the natural gas molecules which adhere to micro-cracks in coal seams and are released when the groundwater in the coal is pumped out.

As recently as 1995, when the U.S. Geological Survey updated a nationwide assessment of oil and gas resources, coalbed methane wasn't even factored in except for a few producing areas. Now, CBM production constitutes 7.5% of our domestic supply of gas. CBM has come a long way from the days when it was called "gob gas" and considered a hazard to be vented from underground coal mines.

CBM development isn't brand-new - its progress from hazard to energy fuel can be traced from the Sec. 29 tax credits legislation of twenty plus years ago intended to stimulate drilling for unconventional gas resources. In the West, first in the San Juan Basin of New Mexico and Colorado and followed by the Powder River Basin of Wyoming and Montana, CBM has boomed in the last decade.

As with any resource, such an explosion of activity comes with "growing pains" while individuals, communities, local and state government and public land managers attempt to plan for the costs and benefits associated with the extraordinary interest in CBM.

As we will hear from our group of witnesses today, CBM development from western public lands has upsides and downsides atypical from many oil and gas operations. Perhaps the largest factor at work in my State is that the mineral ownership and the surface ownership in the Powder River Basin is often severed from one another, meaning that private land owners may or may not control access to CBM beneath their property.

Split-estate mineral development is often contentious - and when conflicts arise they grab the headlines. Steady royalty income to a fee mineral owner happy with his check is a "dog bites man" story. When a rancher gets cross-wise with a driller seeking to access his federal lease, or other fee mineral ownership from which the rancher does not financially benefit, then that becomes a "man bites dog" story. When a lot of ranchers without minerals get upset, that's a Coverstory in Time Magazine.

From the U.S. News to the Boston Globe, eastern media reporters have written tales of ranchers with new pick-ups paid for by CBM royalties, followed by tales of grazing lands ruined by the unregulated discharge of produced waters. On top of this are stories that Montana and Wyoming governments are "at war" with one another over surface water quality impacts in the Powder and Tongue Rivers from CBM wells.

Well, I live out there, and if there is a war going on, it's about the federal government getting sufficient funding for the Bureau of Land Management to complete a cumulative impacts analysis of anticipated CBM development so that land-use plans can be updated, and mitigating measures drawn up, to allow federal lessees to drill and bring their gas to market. It is also about states exercising delegated authority from EPA under the Clean Water Act to regulate water discharges - a primary bone of contention between supporters and detractors of CBM development.

We titled this hearing "the orderly development of CBM from public lands" in recognition that CBM will be produced from western basins underlain by federal mineral rights. No one disputes that. But the real question is "how can we best mitigate these conflicts?" Do ranchers need a "surface owners" Bill of Rights", and if so, which level of government ought to be considering it? On the other hand, when surface owners acquired the title to their property did they not understand what it meant to have mineral rights reserved to the government or another individual?

Among our witnesses are a scientist, a federal land manager, a coordinator of a coalition of state and local governments trying to harmonize CBM development, a state environmental regulator, a state oil and gas conservationist, several ranchers, and CBM industry representatives. I want to thank each and every one of you for taking the opportunity to enlighten us with your views. Most of you have come a long way to be here because you feel so passionately about this issue.

Before I turn to our Ranking Democratic Member, Mr. Kind, for any opening statement he may wish to give, let me mention a procedural detail. Sometime before 11 am I must recess the hearing because the President of Mexico will address a joint session of Congress. House rules do not permit committees to sit during such sessions. I apologize for this delay but our hearing was scheduled before the joint session was announced. When President Fox is finished we will resume this hearing.

STATEMENT OF THE HONORABLE RON KIND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN

Mr. KIND. Thank you, Mr. Chairman.

I want to just briefly welcome the witnesses and the testimony you are about to give today. We certainly appreciate your attendance.

I know Madam Chairman will be here shortly. She is a little bit delayed at the White House at a very important meeting, so we thought we would just at least get started with the hearing. We have the president of Mexico's address to the joint session starting at 11:00, so I think we are going to have a brief recess during that time as well.

But rather than delaying you any further, I thought we would get started.

And I do have a brief statement I would like to read into the record at this time.

The Subcommittee meets today to take testimony on the development of coalbed methane resources from public lands.

Currently, the State of Wyoming, represented by our Chair, Representative Cubin, is experiencing a veritable boom in coalbed methane development, which has brought its share of triumphs and heartaches to Wyoming. As we will hear from individuals who have been good enough to travel here to testify this morning, the Powder River Basin is an area rich in wildlife, containing, for example, one of the last herds of plains elk. Most of the Powder River Basin is contained in Wyoming, although about 10 percent lies in Montana. The entire basin covers an area about one-fifth the size of Wisconsin, my home state. The basin also contains substantial coal, oil, and gas reserves, which is why it has been nicknamed the Saudi Arabia of coal.

Coalbed methane is, not surprisingly, a byproduct of natural processes which create coal. The methane is maintained in the coal by water pressure. When that pressure is reduced, the methane escapes.

The dangers associated with unintended release of this gas during coal mining have long been recognized by coal miners, who devise ways to safely vent the gas out of the mines rather than allow it to build up and result in explosions or fires in the tunnels.

More recently, we have recognized the dangers associated with venting the gas into the atmosphere.

From a global standpoint, then, the production of coalbed methane, as opposed to venting it, is a preferable alternative. However, the production of coalbed methane cannot be allowed to create other equally or more serious environmental consequences.

As we will hear from our witnesses this morning, a number of coal field residents and local officials are deeply concerned and upset about the manner in which some coalbed methane operators are bringing their product to market. Others are concerned about the quality of their drinking water being adversely affected. Still others raise concerns about the long-term impacts of this development on their way of life.

Among the problems identified are some which I believe Congress can hopefully help resolve. For starters, I would suggest that the Subcommittee ask the General Accounting Office to investigate the questions arising from coalbed methane development.

For example, are surface owners being adequately protected and compensated when Federal and state agencies authorize production

of coalbed methane located beneath the surface estate? Is the Federal Government taking adequate steps to ensure that the health, safety and general welfare of coal field residences is not being diminished by coal, coalbed methane production? And if not, is this a failure of administration or legal authority? And finally, do adequate land restoration standards exist to ensure that surface owners will be able to return to ranching or whatever use the land was put to before coalbed methane production occurred?

In closing, I want to thank the Chair for holding the hearing. While it is clearly a contentious issue among many of her constituents, I am confident that she will find a fair and equitable way of meeting these concerns.

And I will yield back and look forward to the testimony. Thank you again.

[The prepared statement of Mr. Kind follows:]

Statement of The Honorable Ron Kind, Ranking Democrat, Subcommittee on Energy and Mineral Resources

The Subcommittee meets today to take testimony on the development of coal bed methane resources from public lands. Currently, the state of Wyoming, represented by our Chair, Representative Cubin, is experiencing a veritable "boom" in coalbed methane development which has brought its share of triumphs and heartaches to Wyoming residents.

As we will hear from the individuals who have been good enough to travel here to testify this morning, the Powder River Basin is an area rich in wildlife, containing, for example, one of last herds of plains elk. Most of the Powder River Basin is contained in Wyoming, although about 10 percent lies in Montana.

The entire basin covers an area about one fifth the size of Wisconsin, my home State. The Basin also contains substantial coal, oil and gas reserves, which is why it has been nicknamed the "Saudi Arabia of coal."

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From a global standpoint then, the production of coal bed methane, as opposed to venting it, is a preferable alternative. However, the production of coalbed methane cannot be allowed to create other equally or greater serious environmental consequences.

As we will hear from our witnesses this morning, a number of coal field residents and local officials are deeply concerned and upset about the manner in which some coal bed methane operators are bringing their product to market. Others are concerned about the quality of their drinking water being adversely affected. Still others raise concerns about the long-term impacts of this development on their way of life. Among the problems identified are some which I believe Congress can help resolve.

For starters, I would suggest that the Subcommittee ask the General Accounting Office to investigate the questions arising from coalbed methane development. For example,

- Are surface owners being adequately protected and compensated when federal and state agencies authorize production of coalbed methane located beneath the surface estate?
- Is the federal government taking adequate steps to ensure that the health, safety and general welfare of coal field residents is not being diminished by coalbed methane production?
- And if not, is this a failure of administration or legal authority?
- Do adequate land restoration standards exist to ensure that surface owners will be able to return to ranching or whatever use the land was put to before coalbed methane production occurred?

In closing, I thank the Chair for holding this hearing. While it is clearly a contentious issue for her constituents, I am confident she will find a fair and equitable way of meeting their concerns.

Mr. REHBERG. Thank you, Mr. Kind.

At this time I would like to introduce and recognize the first of the panels. The first speaker is Dr. Gene Whitney, Supervisor Geologist, U.S. Geological Survey; Mr. Tom Fulton, a resident of the great State of Montana, Deputy Assistant Secretary for Land and Minerals—welcome, Tom—Department of the Interior; and Dr. D.G. Mickey Steward, Coordinator, Coalbed Methane Coordination Coalition.

If we could begin with you, Dr. Whitney?

STATEMENT OF GENE WHITNEY, SUPERVISOR GEOLOGIST, U.S. GEOLOGICAL SURVEY

Mr. WHITNEY. Thank you. Mr. Chairman, distinguished members of the Subcommittee, thank you for the opportunity to participate in this hearing to discuss the results of the U.S. Geological Survey's assessment of coalbed methane resources of the U.S. This assessment of undiscovered coalbed methane resources is a fundamental part of the USGS national oil and gas assessment last completed in 1995, which has now been updated with recent reassessments of two important western basins.

Traditionally, natural gas that forms and accumulates in coalbeds is referred to as coalbed methane. Although coal is a solid, it is quite porous. And the pores and fractures in coal may hold enormous volumes of methane.

The methane in coal is generally held in the pore spaces by water pressure. As long as water is present, the methane remains in the coal. When the water pressure is reduced, the methane is released and may flow through the fractures in the coal to the surface or to a well bore. Therefore, production of coalbed methane generally requires the removal of water from the coal.

Although coalbed methane forms in coal, not all coal is suitable for producing coalbed methane. Coal must be buried deeply enough for heat to generate the methane or it must be saturated with surface waters that contain bacteria that generate methane.

In addition, certain coal compositions favor methane generation. And the coal must contain abundant fractures in order for the water and gas to migrate to a well bore for production to be successful.

Not surprisingly, the major coalbed methane regions of the U.S. are within the major coal regions of the U.S., as shown on the map that I have displayed here.

The U.S. Geological Survey has the responsibility to estimate the amounts of undiscovered oil and natural gas remaining in all onshore areas of the U.S. and in state-owned waters. USGS assessments are updated periodically as new data or technology becomes available.

As of 1995, the USGS estimated that the U.S. had undiscovered resources of coalbed methane totaling approximately 52 TCF, or trillion cubic feet, and that is a mean value.

The USGS has recently reassessed two important coalbed methane-bearing basins in the Rocky Mountain region, the Uinta-Piceance Basin in Utah and Colorado, and the Powder River Basin in Wyoming and Montana.

We estimate that the Unita-Piceance Basin contains, at the mean, 2.3 trillion cubic feet of undiscovered technically recoverable coalbed methane. This new estimate is a substantial reduction from our 1995 estimate of 10.7 TCF. In contrast, our estimate of undiscovered coalbed methane in the Powder River Basin has increased substantially. The USGS now estimates the Powder River Basin contains 14.3 trillion cubic feet of undiscovered technically recoverable coalbed methane, compared with 1.1 TCF reported in the 1995 national oil and gas assessment.

Historically, the San Juan Basin has accounted for approximately 80 percent of U.S. coalbed methane production, but his picture is changing with the emergence of other Western U.S. coalbed methane basins, such as the Powder River Basin in Wyoming and Montana.

In 7 years, between 1994 and 2001, there has been a hundred-fold increase in the gas production and a sixty-fold increase in associated water production in the Powder River Basin. The quantity and quality of water produced with the coalbed methane are both important. The water within the coals in the southeastern quarter of the Powder River Basin, for example, in east central Wyoming, is high-quality water, suitable for drinking and for agriculture. But the water in coals elsewhere in the basin and in other basins may not be of such high quality.

In these cases, large volumes of co-produced water must undergo treatment if it is to be disposed of on the surface. Or it must be re-injected into a deep formation so that it does not contaminate the surface or groundwater.

Because coalbed methane wells generally produce at lower rates than conventional natural gas wells, the expense of disposing of the co-produced waters becomes a serious economic issue for producers. The Bureau of Land Management and the USGS have recently initiated a cooperative project to collect technical data for analysis and evaluation of coalbed methane resources in reservoirs in the Powder River Basin, based primarily on coal cores provided by cooperating coalbed methane operators.

Our intent is to provide BLM and other Federal land management agencies with best possible scientific information about the coalbed methane and the associated waters for their resource and land management decisions.

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions that members of the Committee may have.

[The prepared statement of Mr. Whitney follows:]

Statement of Dr. Gene Whitney, Supervisory Geologist, U.S. Geological Survey

Madam Chairman and distinguished Members of the Subcommittee, thank you for the opportunity to participate in this hearing and to present the results of the U.S. Geological Survey's (USGS) assessment of coalbed methane resources of the U.S. This assessment of undiscovered coalbed methane resources is a fundamental part of the USGS National Oil and Gas Assessment, completed in 1995, which has now

been updated with recent assessments of the Uinta–Piceance Basin, Colorado and Utah and the Powder River Basin, Wyoming and Montana.

The Nature of Coalbed Methane

Coal is the most abundant fossil fuel, with global reserves estimated to be several trillion tons. In addition to minable reserves, coal is considered to be a source of fluid hydrocarbons, in particular the lightest hydrocarbon gas, methane. Methane is the dominant component in natural gas. The methane that forms in coal is produced by chemical reactions that proceed as a consequence of increasing temperature during the burial of the coal in a sedimentary basin, or may be produced by the action of bacteria that derive their nutrition from the coal and generate methane as a by-product.

Although coal is a solid, it is quite porous, and the pores and fractures in coal may hold enormous volumes of methane. The methane in coal is generally held in the pore spaces by water pressure. As long as water is present, the methane remains in the coal. When the water pressure is reduced, the methane is released and may flow through the fractures in the coal to the surface or to a well bore.

The buildup of methane gas in coal mines during the mining process was recognized very early in coal mining history. The fires or explosions that tragically proved the presence of the methane gas have historically posed chronic coal production problems and danger to human life. Only within the last few decades has methane in coal beds been recognized as a significant untapped energy resource that might be produced.

Not all types of coal may be suitable for producing coalbed methane, however. If coal is too deep in a basin, it becomes effectively sealed and the gas cannot be released from the coal. In addition, deep coal would require deep drilling and the low productivity of coalbed methane wells (small volumes of gas per well per day compared to conventional natural gas wells) generally requires shallower, less expensive, development. Also, coal is highly variable in its chemical composition and physical structure. Certain types of organic matter are more prone to form methane, and the porosity of the coal must permit movement of the gas once it is released. Therefore, only certain coal beds, and perhaps in certain zones, are highly prospective for coalbed methane production.

DISTRIBUTION, ASSESSMENT, AND DEVELOPMENT OF COALBED METHANE RESOURCES

The USGS has, as a major part of its mission, the responsibility to estimate, or assess, the amounts of undiscovered oil and natural gas remaining in all onshore areas of the U.S. and in state-owned waters. These assessments are estimates of the quantities of oil and natural gas that have not yet been discovered, but which might be added to the reserves of the United States in the future. These assessments are based on the identification of favorable geologic conditions for the formation and accumulation of oil and gas. Assessments are conducted by teams of geoscientists who possess a thorough understanding of the geologic processes and environments that produce oil and natural gas. The USGS periodically releases updated estimates of oil and gas based on the latest available data and the most refined assessment methodologies. An important component of the ongoing USGS National Oil and Gas Assessment is an estimate of the technically recoverable coalbed methane resources in the United States.

The goal of the USGS National Oil and Gas Assessment is to anticipate the occurrence of undiscovered volumes of natural gas, including coalbed methane, and to estimate the volume of gas left to be discovered and recovered. By conducting geologic studies of the basins within the U.S., these assessments provide some indication of the future supplies of natural gas that may be produced within the next generation or so. The results of the coalbed methane assessment conducted in 1995 are shown in the Table 1, and key basins are being updated on an ongoing basis.

The USGS has reassessed two important coalbed-methane bearing basins in the Rocky Mountains: the Uinta–Piceance Basin in Utah and Colorado and the Powder River Basin in Wyoming and Montana. We estimate that the Uinta and Piceance Basins contain, at the mean, 2.32 trillion cubic feet (tcf) of undiscovered, technically-recoverable coalbed methane (Table 2). This new estimate is a substantial reduction from our 1995 estimate of 10.70 tcf (Table 1).

In contrast, our estimate of undiscovered coalbed methane in the Powder River Basin has increased substantially. The USGS now estimates the Powder River Basin contains 14.26 tcf of undiscovered, technically-recoverable coalbed methane (Table 2), compared with 1.11 tcf reported in the 1995 National Oil and Gas Assessment (Table 1).

New estimates of undiscovered, technically-recoverable coalbed methane resources reflect new information about the geology of the basin and the extent of the resources made available from recent exploration and drilling activity in these basins, combined with advances in gas recovery technology in the shallow deposits of the Powder River Basin.

Nationally, the major coalbed methane provinces coincide with the major coal provinces. The geology of coalbed methane is based upon the geology of the coal in which it forms and accumulates. The USGS has also conducted regional assessments of coal resources, including detailed research on the accumulation, burial, and subsequent uplift of coal that occurs across the U.S. Although coalbed methane is a form of natural gas, its accurate assessment rests upon the assessment of coal in U.S. basins; coal assessment provides an ideal basis for the subsequent assessment of coalbed methane. Although the presence of abundant coal does not guarantee that coalbed methane will be economically recoverable, the presence of coal is an obvious prerequisite for coalbed methane formation and accumulation in economic deposits. Therefore, the major coal provinces, such as the Appalachian Basin, the Texas Gulf Coast, the Colorado Plateau, and the Tertiary basins of the Northern Rockies and Great Plains, provide the most prospective areas for coalbed methane production (see map).

In addition to the undiscovered, technically recoverable coalbed methane volumes reported in Table 1, coalbed methane also comprises part of current U.S. natural gas reserves and production. Nationally, coalbed methane accounts for approximately 8% of total natural gas reserves and 7% of total natural gas production. Historically, the San Juan Basin has been the most productive coalbed methane basin in the U.S., accounting for approximately two-thirds of the known reserves and approximately 80% of the coalbed methane production (source, Energy Information Administration, (EIA), 2000). The second most productive area of the country, Warrior Basin in Alabama, accounts for approximately 8% of total coalbed methane reserves and 9% of U.S. coalbed methane production. (Table 3, EIA, 2000)

This picture is changing, however, with the emergence of other western U.S. coalbed methane basins. In the Rocky Mountain region, the Powder River Basin in Wyoming is experiencing a coalbed methane production boom. The thick coals of the Powder River Basin in Wyoming and Montana are proving to be fertile areas for coalbed methane exploration and production. Coal beds with producible methane are often shallow in this basin, so wells are inexpensive to drill and operate. Although highly variable in thickness, the Tertiary coals in the Powder River Basin are commonly quite thick, reaching 300 feet thick in parts of the basin.

Exploration and production activity in the Powder River Basin began to increase geometrically once coalbed methane developers understood the production techniques necessary to successfully produce the gas. In May of 1994, there were 110 coalbed methane wells in the basin, producing 6.5 million cubic feet of gas per day, as well as 949,637 gallons of water per day. In May of 2001, seven years later, there were 5,446 wells producing 642 million cubic feet of coalbed methane per day and 61,141,720 gallons of water per day. The large volumes of water are produced because it is the water that holds the methane in the pores of the coal, and water must be removed in order for the gas to be released. Therefore, the first stage of production in a coalbed methane well in the Powder River Basin is the removal of sufficient water to release the gas so that it can be produced.

Impacts and Issues of Coalbed Methane Development

As a result of this water production, one of the major concerns associated with coalbed methane production in the Powder River Basin has been disposal of the co-produced water (water produced as a byproduct of the gas production). The coal beds in this basin are significant aquifers because of their high porosity and highly fractured character. Many local residents have historically taken their water supply from coal beds. However, the ground water table must be drawn down during coalbed methane production for the methane to be released from the coal. This drawdown requires many closely-spaced wells, sometimes pumping at high rates.

The water within the coals in the southeastern quadrant of the Powder River Basin in east central Wyoming is high quality water, suitable for drinking and agriculture, but the water in coals elsewhere in the basin may not be of such high quality. In these cases, the water must undergo treatment if it is to be disposed of on the surface, or it must be re-injected into a deep formation so that it does not contaminate the surface or ground water. Even some highly dilute waters may be undesirable because of salts that may be concentrated during evaporation if surface disposal is used. Therefore, it is essential to understand the chemistry of waters co-produced with coalbed methane and to dispose of those waters appropriately.

In the San Juan Basin, the water is rarely of sufficiently high quality that it can be disposed of on the surface. This is the situation in most other basins in the U.S. In addition, many states require that all co-produced fluids be re-injected into subsurface formations, regardless of the quality of the fluid. The production of large volumes of water and the need to develop appropriate methods for its disposal strongly affect the economic viability of coalbed methane wells. Because coalbed methane wells generally produce at lower rates than conventional natural gas wells, the expense of disposing of the co-produced waters may be economically prohibitive and could render the well uneconomic.

In areas where the co-produced water is high quality, such as in portions of the Powder River Basin, the main issue may be the effect of surface disposal of large volumes of water. Even though the water is clean, it affects the environment in this semi-arid climate. Co-produced water from coalbed methane development is presently discharged either directly into existing surface waters or to drainages. It is expected that surface disposal of co-produced water may result in erosion or drowning of drainages and associated vegetation within the area. Several companies have been experimenting with reinjecting the co-produced water into sandstones and coal beds in the Wasatch and Fort Union Formations. One company is reinjecting water into an aquifer used by the city of Gillette, Wyoming.

Ground water withdrawal from aquifers is a particularly sensitive issue to landowners who "beneficially use" ground water for their livestock and for irrigation (in addition to drinking water). Generally, methane operators have cooperated with landowners by diverting co-produced water from coalbed methane wells into stock tanks or other holding areas for their livestock.

Additionally, according to EPA, some citizens in areas with coalbed methane development have reported ground water well contamination they believe is due to hydrolic fracturing resulting from coalbed methane production. While no incidents of contamination allegedly due to hydraulic fracturing have ever been substantiated, EPA is currently conducting a study on possible impacts to ground water from hydraulic fracturing in coalbed methane reservoirs. USGS has agreed to provide assistance to EPA with that study.

Another impact of coalbed methane development is the affect on local coal mining operations of ground water withdrawal from the coal. Although this does not affect the amount of coal that is produced, it reduces the available water for coal mining operations and accelerates oxidation of the coal, which may reduce its heat content and energy potential. In addition, because surface mining activities involve the drawing down of the water table, reservoir pressures can be reduced, resulting in the liberation of the methane from the coal, which may escape along the active face of the mine. For example, there are 18 large surface coal mines along the eastern part of the Campbell County and the northernmost part of Converse County, Wyoming. Last year, these coal mines produced about 300 million short tons from the Wyodak–Anderson coal zone. The Wyodak–Anderson coal zone is also being explored and developed for coalbed methane by about 80 methane operators basin wide. The coal produced from these mines made up about 30 percent of the total U.S. coal production in 2000 and was shipped to more than 140 electric-power generating plants in the western, mid-western, southern, and southeastern U.S.

More than half of the lands in the Powder River Basin contain mineral rights owned by the Federal government, yet the majority of the surface in the basin is privately owned. As a result, the majority of coalbed methane wells are on state and private surface lands; only 14 percent of the wells are on Federally-owned surface lands. Coalbed methane development on Federal lands creates impacts in the basin resulting from associated drilling, facilities, methane gathering systems (e.g., pipeline networks), access roads, and withdrawal and disposal of co-produced water from coalbed methane wells. The Bureau of Land Management (BLM) assesses the land-use management and impacts of drilling coalbed methane wells on lands where mineral rights are controlled by the Federal government.

The BLM and the USGS initiated a cooperative project to collect technical data for analysis and evaluation of coalbed methane resources and reservoirs in the Powder River Basin, primarily from coal cores provided by cooperating coalbed methane operators. BLM and USGS use this opportunity for additional information and analyses of the coalbed methane resources to accomplish their agencies" respective resource evaluation and management missions. The agencies have different, but complementary, goals and information needs. Their joint study also addresses public need for data regarding Powder River Basin coalbed methane resources.

SUMMARY

Coalbed methane is different from other types of natural gas deposits in its distribution, in its production methods, and in its environmental impact. Coalbed

methane occurs in coal, is economically producible where it is shallow, and requires dewatering of the coal prior to production. Water co-produced prior to and during gas production must be re-injected into a deep formation or, if the water is sufficiently good quality, disposed of on the surface. Consequences of surface disposal of fresh water include some potential chemical effects after evaporation, the introduction of water into a semi-arid environment, and potential ground water depletion.

Madam Chairman, this concludes my remarks. I would be happy to respond to questions Members of the Committee may have.

[Tables and maps attached to Mr. Whitney's statement follow:]

Table1. Technically recoverable (not constrained by cost of production) undiscovered resources of gas estimated for continuous-type plays in coal beds, onshore United States. All data from the USGS National Oil and Gas Assessment, 1995. [Mean value totals may not be equal to the sums of the component means given elsewhere because numbers have been independently rounded. Fractile values (F_{95}, F_5) are not additive. F_{95} represents a 19 in 20 chance and F_5 represents a 1 in 20 chance of the occurrence of at least the amount tabulated.]

Province name	(trillion cubic feet)		
	F_{95}	F_5	Mean
Region 2--Pacific Coast			
Bellingham (WA, OR)	0	0.09	0.04
West Cascade (WA, OR)	0	1.20	0.66
Total, Region 2	**0.26**	**1.30**	**0.70**
Region 3--Colorado Plateau and Basin and Range			
Uinta Basin (UT, CO)	1.86	4.82	3.21
Piceance Basin (CO, UT)	5.47	10.09	7.49
San Juan Basin (NM, CO)	5.76	9.67	7.53
Total, Region 3	**15.00**	**21.88**	**18.24**
Region 4--Rocky Mountains and Northern Great Plains			
Powder River Basin (WY, MT)	0.32	2.90	1.11
Wind River Basin (WY)	0.22	0.72	0.43
S.W. Wyoming (WY, UT, CO)	0.83	7.66	3.89
Raton Basin (CO, NM)	1.39	2.23	1.78
Total, Region 4	**3.97**	**11.71**	**7.20**
Region 7--Mid-continent			
Forest City Basin (KS, MO, IA, NE)	0	1.44	0.45
Cherokee Platform (KS, OK)	1.07	3.08	1.91
Arkoma Basin (OK, AR)	1.87	3.58	2.64
Total, Region 7	**3.57**	**6.76**	**5.01**
Region 8--Eastern			
Illinois Basin (IL, IN, KY)	0.84	2.77	1.63
Warrior Basin (AL, MS)	1.49	3.43	2.30
North Appalachian (PA, NY, OH)	7.68	16.36	11.48
Central Appalachian (PA, OH, KY,WV, VA)	1.88	4.64	3.07
Cahaba (TN, AL, GA)	0.14	0.54	0.29
Total, Region 8	**14.34**	**24.00**	**18.78**
TOTAL, lower 48 States	**42.89**	**57.63**	**49.91**

Table 2. Updated (2001) assessment values (trillion cubic feet) for undiscovered, technically-recoverable coalbed methane resources in the Uinta-Piceance Basin and the Powder River Basin.

Basin	F_{95}	F_5	Mean
Uinta-Piceance Basin (CO, UT)	1.16	4.07	2.32
Powder River Basin (WY, MT	8.24	22.42	14.26

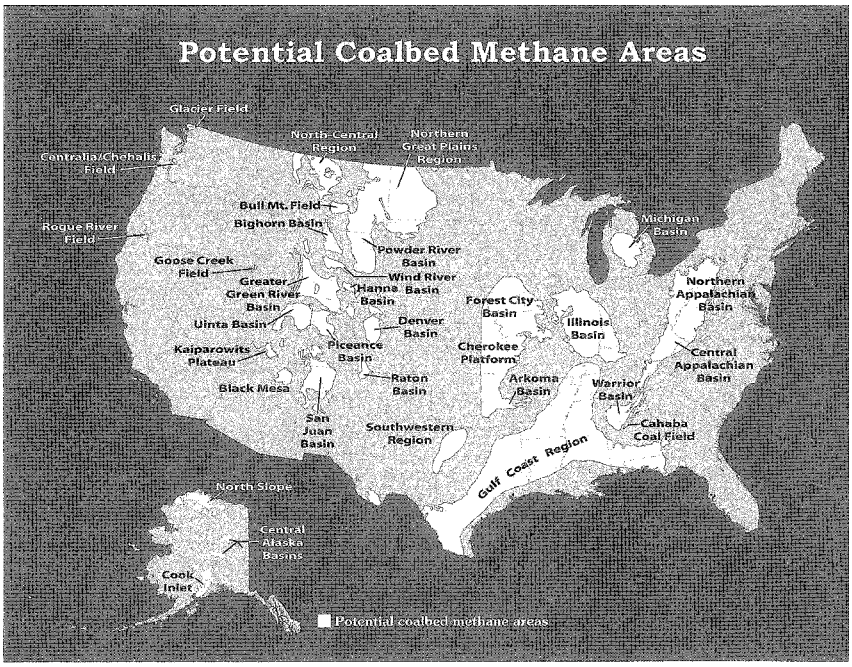
Table 3. U.S. Coalbed Methane Proved Reserves and Production, 1989-1999

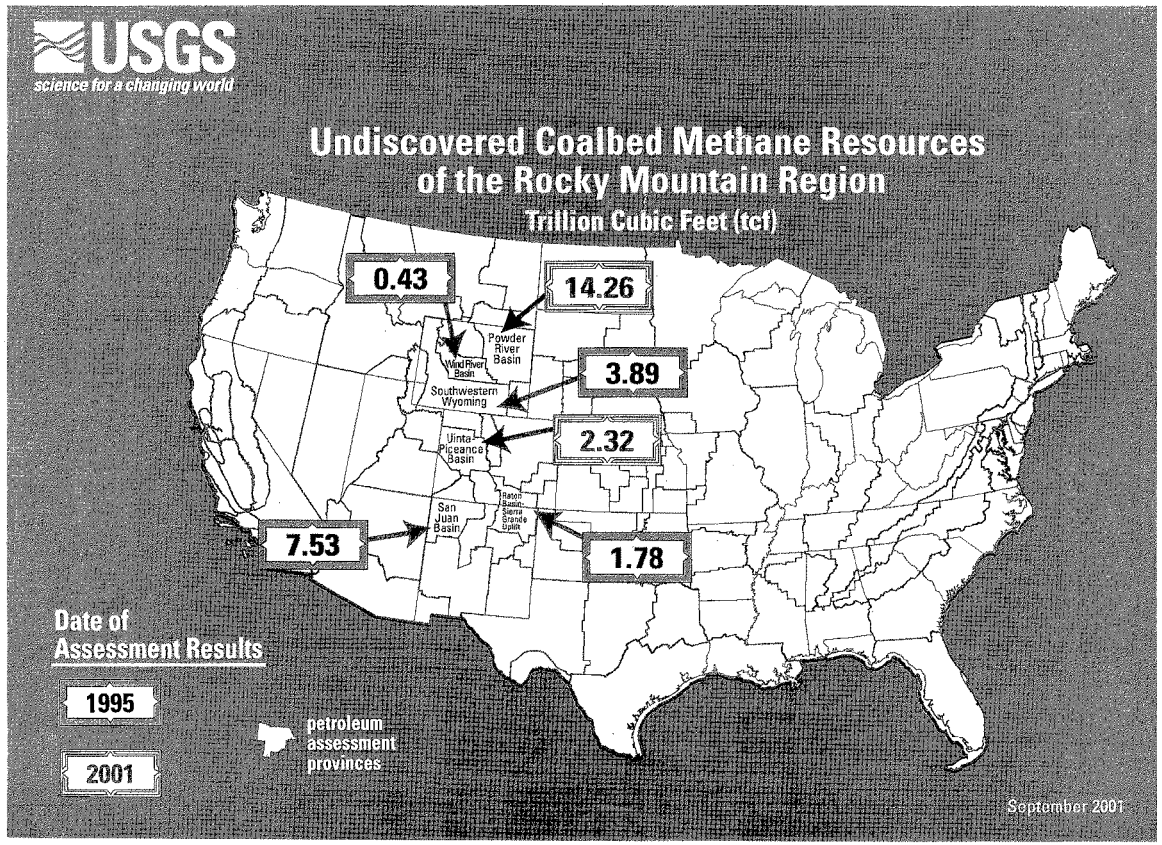
(Billion Cubic Feet at 14.73 pounds per square inch atmospheric pressure (psia) and 60° Fahrenheit)

	Alabama		Colorado		New Mexico		Others[a]		Total	
Year	Reserves	Prod	Reserves	Prod	Reserves	Prod	Res	Prod	Reserves	Prod
1989	537	23	1,117	12	2,022	56	0	0	3,676	91
1990	1,224	36	1,320	26	2,510	133	33	1	5,087	196
1991	1,714	68	2,076	48	4,206	229	167	3	8,163	348
1992	1,968	89	2,716	82	4,724	358	626	10	10,034	539
1993	1,237	103	3,107	125	4,775	486	1,065	18	10,184	752
1994	976	108	2,913	179	4,137	530	1,686	34	9,712	851
1995	972	109	3,461	226	4,299	574	1,767	47	10,499	956
1996	823	98	3,711	274	4,180	575	1,852	56	10,566	1,003
1997	1,077	111	3,890	312	4,351	597	2,144	70	11,462	1,090
1998	1,029	123	4,211	401	4,232	571	2,707	99	12,179	1,194
1999	1,060	108	4,826	432	4,080	582	3,263	130	13,229	1,252

[a]Includes Oklahoma, Pennsylvania, Utah, Virginia, West Virginia, and Wyoming.

Source: Energy Information Administration, Office of Oil and Gas, U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves:1999 Annual Report, 2000


Potential Coalbed Methane Areas
Glacier Field
Centralia/Chehalis Field
North Central Region
Northern Great Plains Region
Bull Mt. Field
Bighorn Basin
Rogue River Field
Goose Creek Field
Powder River Basin
Wind River Basin
Greater Green River Basin
Hanna Basin
Uinta Basin
Denver Basin
Piceance Basin
Kaiparowits Plateau
Raton Basin
Black Mesa
San Juan Basin
Southwestern Region
Forest City Basin
Illinois Basin
Cherokee Platform
Arkoma Basin
Warrior Basin
Michigan Basin
Northern Appalachian Basin
Central Appalachian Basin
Cahaba Coal Field
Gulf Coast Region
North Slope
Central Alaska Basins
Cook Inlet
Potential coalbed methane areas


USGS
science for a changing world
Undiscovered Coalbed Methane Resources
of the Rocky Mountain Region
Trillion Cubic Feet (tcf)
0.43
14.26
Powder River Basin
Wind River Basin
3.89
Southwestern Wyoming
2.32
Uinta-Piceance Basin
San Juan Basin
Raton Basin-Sierra Grande Uplift
7.53
1.78
Date of
Assessment Results
1995
2001
petroleum assessment provinces
September 2001

Mr. REHBERG. Thank you very much.

We are going to time the testimony. We forgot to push the button on the first. You didn't go over your time, though. Thank you.

[Laughter.]

Welcome, Tom. Tom Fulton, formerly with Senator Burns' office, resident of Harlowton, Montana. For those of us who just traveled to Denmark to look at wind generation, you live in the area that has the greatest potential in the entire world for wind power. We welcome you and thank you for coming before us today. Tom Fulton.

STATEMENT OF TOM FULTON, DEPUTY ASSISTANT SECRETARY FOR LAND AND MINERALS, DEPARTMENT OF THE INTERIOR

Mr. FULTON. Thank you very much, Mr. Chairman. It is a deep honor and a pleasure to be able to testify before a Chairman from Montana. I hope that in the future there is a Chairmanship in your future.

I would like to have my testimony submitted for the record, if I might.

Mr. REHBERG. Without objection.

Mr. FULTON. I will attempt to summarize from there.

Mr. Chairman, members of the Subcommittee, thank you very much for the opportunity to provide the Administration's views on coalbed methane development.

I am accompanied today by Mr. Erick Kaarlela, who is the senior petroleum engineer with the Bureau of Land Management.

I want to discuss briefly some of the challenges the industry and we in government face as demand for access to Federal coalbed methane continues to increase rapidly.

The department views coalbed methane as a domestic energy resource with tremendous potential. And we pledge to allow the development of this vital national asset in an environmentally responsible way.

While coalbed methane development exists in several Western states, a dramatic increase in new coalbed methane exploration and development is occurring in the Powder River Basin in Wyoming. Currently in Wyoming, there are more than 5,500 CBM-producing wells. At the time of the original environmental impact statement for this area, no one anticipated or planned for the rapid development of this resource. Consequently, there is a need for a new EIS, which is currently scheduled for completion in May 2002.

This EIS will analyze the effects of drilling over 50,000 CBM wells and 3,000 conventional oil and gas wells over the next 10 years.

In Montana, another state that has shown tremendous promise for the development of coalbed methane, the Bureau of Land Management is in the process of amending its Billings, and Powder River resource management plans, to address the development of CBM in these areas. These plans cover approximately 3 million acres in south-central and southeastern Montana. These plans were last amended in 1994 prior to large-scale coalbed methane development. And the BLM and State of Montana are currently preparing a joint environmental impact statement, which will provide

the foundation for decisions concerning oil and gas development made by each agency involved in this process. The final EIS for Montana is expected to be published in July or August 2002.

Existing planning documents and the accompanying NEPA analysis do not fully address the specific impacts from CBM. In most cases, there was no analysis for CBM such as occurred in the San Juan Basin of New Mexico, Utah and Colorado; the Powder River Basin in Wyoming and Montana; and in central Utah. All of these states have had to make some planning amendments or revisions as well as initiate additional NEPA analysis, usually in the form of an EIS.

As a result, the approval of some CBM operations has been delayed by as much as 1 to 2 years, with significant cost to operators and the bureau. In undertaking efforts to update land use plans, top priority has been given to areas with the highest potential for oil and gas occurrence, using information, as was mentioned, jointly collected by BLM and USGS.

We have included funding for these plans in the Administration's budget and are pleased that Congress has acknowledged the need for coalbed methane development and its related planning, analysis, and documentation.

Under the Secretary of Interior's four C's of communication, cooperation, and consultation, all with the goal of conservation, public involvement is another important aspect of this process.

The NEPA process calls for public input as well and is, therefore, inherently open. Public scoping meetings are used to develop the EIS, and are considered an important part of that process. The BLM Montana has organized a CBM coordination group, for instance, composed of Federal, state, tribal, private landowners, industry, and environmental groups to discuss the issues and share information related to the CBM EIS.

In addition, there are two specific issues I would like to address.

One is the role of water, which is vital in the production of CBM. The coalbed methane extraction process involves pumping water from coal seams to the surface in order to reduce water pressure that traps the gas in the coal. Managing that water produced with methane is a challenge for the oil and gas industry as well as Federal and state regulators. We must work together to find innovative solutions to address the surface water issues and the potential impacts to the entire land and water system.

I am glad to see that the states of Wyoming and Montana are working on a water quality memorandum of understanding.

Finally, the BLM in Montana and Wyoming is presently discussing the appropriate model to use to assess cumulative impacts to air quality in the Powder River Basin. Wyoming selected Argonne National Lab as the contractor to do its air quality study. The contract may be expanded to include Montana.

In conclusion, the Administration, the Department of the Interior, the Bureau of Land Management and other Federal agencies stand ready to work with members of the Committee and others to ensure that development of the CBM methane industry makes sense and takes into account the various pushes and pulls.

With that, I conclude my remarks and stand ready to answer questions the Committee might have.

[The prepared statement of Mr. Fulton follows:]

Statement of Tom Fulton, Deputy Assistant Secretary, Land and Minerals Management, U.S. Department of the Interior

Madame Chairman, members of the Subcommittee, thank you for the opportunity to come before you to provide the Administration's views on coalbed methane (CBM) development. I am accompanied by Erick Kaarlela, senior petroleum engineer with the Bureau of Land Management (BLM).

I will provide you with a broad overview of the status of BLM's coalbed methane program. Additionally, I will discuss briefly some of the challenges we face as industry demand for access to Federal coalbed methane continues to increase rapidly. The BLM views coalbed methane as a domestic energy resource with tremendous potential and we pledge to allow the development of this vital national asset in an environmentally responsible manner.

While coalbed methane development on the public lands occurs in several western states, a dramatic increase in new coalbed methane exploration and development is occurring in the Powder River Basin in Wyoming. Currently in Wyoming, there are more than 5,500 CBM-producing wells under an EIS completed in 1999 and a supplemental drainage environmental assessment completed in 2001. At the time of the original EIS, no one anticipated or planned for the rapid development of this resource. Consequently, there is a need for a new EIS which is currently scheduled for completion in May 2002, with a Record of Decision expected in July 2002. This EIS will analyze the effects of the drilling of 50,000 CBM wells, and 3,000 conventional oil and gas wells, expected to be drilled in the next 10 years.

In Montana, another state that has shown tremendous promise for the development of coalbed methane, the BLM is in the process of amending its Billings and Powder River Resource Management Plans (RMP's) to address the development of CBM in these areas. These plans cover approximately 3 million acres in south-central and southeast Montana. These plans were last amended in 1994, prior to large-scale coalbed methane development. The BLM and the State of Montana are preparing a joint EIS, which will provide the foundation for decisions concerning oil and gas development made by each agency involved in this process. The Final EIS is expected to be published in July/August 2002.

As the updates for the states of Wyoming and Montana reveal, decisions concerning oil and gas leasing and production are made by the BLM in the context of land use planning and appropriate environmental analysis. The original land use plans were developed at a time when it was not possible to foresee the extensive development potential of CBM. The Reasonably Foreseeable Development scenarios (numeric parameters for the analysis) did not contemplate the number of wells which are anticipated.

Consequently, the planning documents and the accompanying NEPA analyses did not fully address the specific impacts from CBM. In most cases, there was no analysis for CBM. This has occurred in the San Juan Basin (New Mexico, Utah and Colorado), Powder River Basin (Wyoming and Montana), and in central Utah. All of these states have had to make some planning amendments or revisions as well as initiate additional NEPA analysis, usually in the form of an EIS. As a result, the approval of some CBM operations has been delayed by as much as 1 - 2 years, with significant costs to the operators and the BLM.

As noted earlier, the BLM is undertaking efforts to update land use plans. Top priority has been given to areas with the highest potential for oil and gas occurrence, using information collected by a BLM and U.S. Geological Survey (USGS) cooperative project in the Powder River Basin. BLM and USGS have used this project to collect information and analyses of the coalbed methane resources to accomplish their agencies" respective resource evaluation and management missions. We included funding for these plans in the Administration's budget and are pleased that Congress has acknowledged the need for coalbed methane development and related planning analysis and documentation.

Public involvement is another important aspect of the NEPA process. As dictated by law, policy, and our desire to maintain an informed public, the NEPA process calls for public input and is therefore inherently open. Public scoping meetings are used to develop the EIS and are considered an important part of the process. Web sites and newsletters also serve to inform the public concerning this issue. The BLM Montana organized a CBM Coordination Group, composed of Federal, State and tribal agencies, private landowners, industry, and environmental groups, to discuss issues and share information related to the EIS. Comments will be sought on the draft EIS.

The role of water is vital in the production of CBM. The CBM extraction process involves pumping water from the coal seams to the surface in order to reduce the water pressure that traps the gas in the coal. This releases the methane. Managing the water produced with methane is a challenge to the oil and gas industry, as well as Federal and State regulators. We must work together to find innovative solutions to address the surface water issues and the potential impacts to the entire land and water system. Current water disposal options include treatment prior to surface discharge, discharge to the surface and into drainage facilities (in accordance with applicable law), and on a limited basis, reinjection, back into the subsurface. Beneficial uses of the water also include dust abatement, stock watering, creation of wildlife watering areas, and enhancement of fisheries and riparian zones.

The BLM in Montana and Wyoming are presently discussing the appropriate model to use to assess cumulative impacts to air quality in the Powder River Basin. Wyoming selected Argonne National Laboratory as the contractor to do its air quality study. The contract may be expanded to a comprehensive analysis of the EIS areas in both Montana and Wyoming. The BLM in Montana and Wyoming is committed to share all resource data with affected parties in the northern portion of the Powder River Basin that straddles the state line, such as soil, water, air, vegetation, wildlife, cultural, economic, etc., in order to better analyze cumulative impacts resulting from development in both states.

Thank you for the opportunity to testify before you today. I welcome any questions the Committee may have.

Mr. REHBERG. Thank you Mr. Fulton.

Our last panel member in this segment is the representative of the Coalbed Methane Coordination Coalition, Dr. D.G. Mickey Steward.

Dr. Steward?

STATEMENT OF D.G. MICKEY STEWARD, COORDINATOR, COALBED METHANE COORDINATION COALITION

Ms. STEWARD. Good morning. My name is Mickey Steward. I am the coordinator for the Coalbed Methane Coordination Coalition in Wyoming.

This coalition is composed of five counties and two conservation districts where coalbed methane development is occurring.

Coalbed methane is growing rapidly in Wyoming right now, but it is a boom different from ones we have experienced before. The difference is that each CBM well is hardly noticeable, but there are thousands of wells expected, one to several on every 80 acre tract of coal. And the coal lies under several million acres. We are in effect platting the coal-rich portion of the Powder River Basin.

In a sense, each lot has water, power, roads, and gas. The gas lines lead to compressors, one to every section or two in the developed area. Thus, in a real extent, this kind of development is very different from the impact of a coalmine or a power plant. It is extensive development, not intensive development. And surface use agreements between private landowners and operators, guiding the terms of this development, are being made in somewhat of an information vacuum.

While the mineral rights are owned in large part by the Federal Government, the surface rights in the Powder River Basin are owned in large part by private parties, as many as several thousand. These private surface owners and the decisions they make with regard to their surface management as part of mineral development affect their neighbors and, in many cases, neighboring counties and even states. Their decisions often have transboundary

effects; that is, effects that pass beyond the boundaries of their own property.

Yet the private landowner typically does not have readily available the means to identify, analyze, and mitigate the possible outcome of his land-use management decisions with respect to CBM. Resources that can be affected include surface and groundwater, the coal and the methane itself, soils, air, wildlife, landforms, vegetation, and cultural resources.

Despite the sweeping cumulative effects of individual decision-making, these decisions are very often made with limited information. This decision-making in the dark is probably the single largest effect on the surface environment to grow out of the CBM development.

Conservation districts have the possibility of filling the information gap and significantly improving the effectiveness of the surface owner in making resource management decisions and surface-use agreements.

GIS mapping and free flow of existing information from many sources will provide an information-rich environment within which surface use for mineral development can occur. Using information generated by the conservation districts, decision-makers and managers can share a connectivity and thus a cumulative strategic effect without interfering with the right of each private person to make his own decisions. A network of information providers can lead to unified, positive development.

But at this moment, the conservation districts do not have the resources to provide this service. The network of conservation districts exists, but the information source within each district needs to be developed.

Fortunately, Wyoming is at the forefront of states that provide high-quality electronic information. We need to put information specialists in place in each conservation district office that is affected by coalbed methane and the flow of decision-making information can begin. The cost is only several technicians and some equipment purchase. This is a small price to pay for optimal development and strategic planning.

The major mineral owner, which is the Federal Government, and thus all of us, should help pay for optimal CBM development by funding effective information transfer for rational development.

What stands between good information and its ready availability to stakeholders? A lack of personnel and equipment at the local level; a deplorable lack of current soils information; poorly developed links between information sources, which are plentiful; lack of experience in interpreting and applying the information that is available. These deficiencies must be rectified and rectified quickly if CBM is to develop with maximum benefit and minimum impact.

How can these deficiencies be rectified? The answer is straightforward: accelerate soil mapping, supply trained personnel to the conservation districts, advertise a conservation district program, and coordinate its application throughout the development areas. Provide the CBM Methane Coordination Coalition with sufficient resources to address issues of specific interest to the counties and to further facilitate the transfer of information.

After a long discussion yesterday in Cheyenne, we would like to suggest that the mode of funding for this initiative that would be most applicable is via the USDA NRCS conservation technical assistance initiative.

Thank you very much for this opportunity to speak on an issue that's important to the counties and the local landowners. And I will be happy to answer questions.

[The prepared statement of Ms. Steward follows:]

EFFECTIVE INFORMATION TRANSFER FOR RATIONAL DEVELOPMENT

INTRODUCTION

The effects of significant change can be optimized through management. Such management is composed of: assessment of the existing situation, estimation of the magnitude of change, and development of methods to maximize the positive and minimize the negative aspects of change. For large projects in which the Federal government is involved, this management process is formalized as an Environmental Impact Study.

In the case of **coalbed methane (CBM)** development in Wyoming, however, much of the needed management rests on the shoulders of private landowners, private business, and city and county government. While the Federal government is accustomed to the process of, and has funds for, assessment, estimation, and mitigation, others who find themselves involved in CBM development are faced with a task of great magnitude, whose consequences, both positive and negative, are of unknown duration. The following presentation regarding a solution to this issue was developed by the Wyoming Coalbed Methane Coordination Coalition, a coalition of county commissions, the State of Wyoming, several local Conservation Districts, and the CBM industry. The Lake DeSmet Conservation District out of Buffalo provided the maps presented in this document.

The hallmarks of CBM development in Wyoming are rapid expansion, multiple stakeholders, high financial stakes for those stakeholders, diffuse but widespread impact, and the often significant impact of *transboundary effects*. *Transboundary effects* are those that pass beyond an immediate area of disturbance and beyond any clearly defined "circle of influence." They may or may not affect the landowner on which development occurs, but will very likely affect landowners and residents beyond the boundary of the property on which development occurs. Often persons that have no direct benefit from development are those most affected by *transboundary effects*. Some *transboundary effects* that may need to be addressed include:

Water Trespass

- Haygrounds and Bottomlands
  - Spreader dike systems inundated and unworkable – loss of winter forage
  - Soil salinized and vegetation lost through in-situ saturation and evaporation
  - Soil salinized and vegetation lost through interaction of discharge waters in soils
  - Soil salinized and vegetation lost through low quality discharge
    - Due to greater than historic quantities
    - Due to intrinsically poor quality
- Livestock wintering and calving in bottomlands
  - Flooding – calf loss at birth and in first weeks of life
  - Ice – causing slips and falls that can cripple adult wintering animals and cause abortions and premature birth
- Flooding and embankment damage and overtopping during high precipitation events
- Well inundation and subsequent loss of use

Water Reduction

- New reservoirs retaining historical floods used for stock water or irrigation result in loss to downstream users. Such reservoirs may significantly alter the stream geomorphology, resulting in long-term changes in flooding and erosion patterns
- Flow in stock wells and house wells is reduced or eliminated

Sedimentation

- Increased erosion at discharge point
  - Channel cutting, head cutting
  - Vegetation changes
- Increased erosion and deposition along streambed downstream of discharge
- Increased erosion at road and pipeline crossings
- Increased transport and downstream deposition of agricultural sediments
- Inundation of vegetation in stream channels

Wildlife Habitat

- Impact to migratory patterns and breeding
  - Mule Deer
  - White-tail Deer
  - Pronghorn

Raptors
Gamebirds
Black-tailed Prairie Dog
Migratory Birds of High Federal Interest
Inundation of Nesting Zones

Weed expansion and spread of non-native species used for reclamation
From drilling
From repair and maintenance
From reclamation

Gas Migration
From geological formations into open range
From housing foundations
From improperly abandoned wells – with no means supplied for detection
From active water wells that have been drawn down

Fugitive Dust
During drilling due to haulage of water and materials
During operation due to maintenance and checking

Noise
During drilling
From compressor stations

Light Pollution
During drilling
From compressor and pumping stations

Roads
Increased traffic on state, county, and private roads leading to higher repair and maintenance and need for services such as snow and trash removal

Human Impacts
Public safety
Worker safety
More demand for medical, recreational, law enforcement, and infrastructure services
Rising costs of real estate and services
Employee base for CBM and other businesses

Wetlands
Wetlands may be disturbed or may be developed as a result of added surface water

Powerlines
Visual resources and wildlife may be affected by powerline development

Up to this point, individual stakeholders have worked together, sometimes effectively and sometimes not so effectively, to address *transboundary effects*. As the sphere of CBM development continues to expand, *transboundary effects* will gain importance. *Transboundary effects*, and CBM development in general, can be most effectively managed if stakeholders and managers have good information that is accurate, readily available, and easily understood. When good information is available to all, the positive effects of development can be maximized and the negative effects held to a minimum.

To be most useful, information should be current, germane, and readily grasped by stakeholders of different backgrounds and training. It should be publicly available so all stakeholders work from the same information base. It should also be easy to obtain. Given these criteria, four assumptions are made:

Small watersheds are the optimum units of management. Small watersheds allow many of the *transboundary effects* to be taken into consideration. Watersheds are not so large as to be conceptually or practically unwieldy, and they fit well into the larger structure of the river basin management approach used in the State of Wyoming. There is also a defensible ecologic and hydrologic basis for the watershed approach.

Mapping is the best way to illustrate existing conditions. Maps are information rich, are readily understood,

and can be viewed simultaneously by multiple stakeholders. They are a good basis assessing current conditions and making decisions. Maps can be broadly defined as visual information with a geographic base, or "geographic information systems".

The information should be locally available as a service. Private landowners, small operators, and local government do not have the resources to develop a comprehensive information base on which to base decisions. However, the local ***conservation district office***, if properly staffed and funded, has the knowledge, the contacts, and the resources to provide such an information base for a local area. Given the transboundary nature of CBM development, it is especially important that this information be equally available to all stakeholders. It serves no purpose if a private landowner, an operator, and governing bodies such as city councils and county commissioners are not working with the same information.

There must be rapid response to requests for information. Large working groups such as coordinated resource management units are an ideal matrix in which to imbed watershed planning. However, the needs of landowner, operator, and governing entity alike are usually pressing and cannot wait to be developed in the context of a large management plan, which may take several years to reach fruition. The real basis for resource management in CBM is the surface use agreement between surface holder and mineral developer. And there is definitely a need for speed.

EXAMPLE

Wildcat Creek is a 120,000 acre watershed found approximately 20 miles north of Gillette, Wyoming, and serves as a good example of the way information can be processed and presented to aid in resource management decisions. The upper end of the watershed is in the heart of methane development. Wildcat Creek was selected as an example of how information about a watershed can be rapidly generated and then used to identify important issues and possible transboundary effects. Management can then be based on this information. For space reasons, not all maps have been appended to this document. However, four examples are appended to provide the reader with the essentials of the concept.

Figure 1 outlines the watershed drainage. This defines the management unit and provides the base for determining stakeholders. It also shows significant features such as roads and topography. Of note in Wildcat are the broad, flat upper valley, the central constriction, and the broadening and flattening once again of the valley downstream.

Figure 2 (not attached) shows the major sub-drainages of the watershed, particularly the two major divisions upstream, and the important side tributary, Boxelder Creek, downstream. This provides the basis for the calculation of flood events and entry points for overland flow to the main drainage.

Figure 3 (not attached) is the soils map of the watershed. This is one of the single most important mapping units as it helps predict the outcome of discharging water in the watershed. The poor quality of the map and the lack of recent information for the soils indicate the urgent need for updating the soils database.

Figure 4 (not attached) shows the bottomland and wetland vegetation along the stream channel margin and the shift from one vegetation type to another midway down the watershed. This indicates the need for careful management with respect to the discharge of water and the likelihood of change in vegetation productivity from the upper to the lower watershed.

Figure 5 (not attached) is a color infrared photograph of the central part of the watershed. This shows areas of sub-irrigation (the photo was taken in late summer) and developed agriculture. A photograph of the entire watershed will identify areas of concern with respect to agriculture and alluvial aquifers that may require special management. Also available are digital ortho-photographs, which would assist in the identification of unpermitted reservoirs and other land use features.

Figure 6 (not attached) shows sage grouse leks. Sage grouse are an important gamebird species that may soon be listed as threatened and endangered. The map also represents the need for information regarding game animal herd units and should bring to mind the need for compliance with the Migratory Bird Treaty, the Bald Eagle Protection Act, and the Endangered Species Act. It also highlights the probable need for the collection of further wildlife information.

Figures 7 and 8 show ownership and clearly demonstrate the broad difference between mineral ownership and surface ownership. The preponderance of control by private owners of the surface contrasts sharply with the preponderance of Federal and State control of the minerals. Figure 7 also highlights early homesteading of the watershed bottoms as reflects in private ownership of the minerals along Wildcat Creek.

Figure 9 illustrates coal thickness in the watershed. Because the likelihood of CBM development is reflected in coal thickness, the map shows where surface use is likely and where it is not. Combined with information from the other maps, this map is a good predictor of likely areas and owners who will require special management beyond a standard surface use agreement.

Figure 10 provides an understanding of the magnitude of drilling in the watershed prior to CBM development. It does not reflect SEO water wells or the many un-permitted boreholes of unknown origin that are typical of the Powder River Basin. It does indicate to some degree the likelihood of gas migration to non-CBM wells.

Figure 11 and 12 overlay CBM wells permitted with the WOGCC at the time of map construction. These maps forecast development areas and give an idea of development density in the watershed. Figure 12 (not attached) is an example of how CBM wells are often multiple on each development unit of 40 or 80 acres. This information helps keep in mind the likely magnitude of water discharge from the area and the extent of gas gathering, compression, and gathering and pipeline facilities likely to be installed as part of development.

Figure 13 (not attached) shows permitted reservoir locations in the watershed. This information is important for the interpretation of water rights and as an indicator of the actual number of reservoirs in the watershed. Because surface reservoirs are significantly under-permitted with the SEO (excluding those reservoirs associated with CBM development), it may be estimated that reservoir numbers are double or triple the number shown. For Wildcat, the number of permitted reservoirs is over 100; the actual number is likely closer to 500. This has ramification for forecasting flooding and erosion patterns, as well as downstream safety in the event of major inundation.

Figure 14 (not attached) helps stakeholders understand the pattern and extent of discharge in the watershed. Combined with maps showing soils, topography, vegetation, and the location of permitted CBM wells, an estimate of the magnitude of effect of discharge can be developed and discussed.

Other information may be needed to complete the picture necessary to develop a management plan. However, our experience shows that even the level of detail shown in the maps presented in this document is sufficient to stimulate very useful dialogue regarding key management issues in the watershed.

SHORTCOMINGS

What stands between good information and its ready availability to stakeholders? A lack of personnel and equipment at the local level. A deplorable lack of current soils information. Poorly developed links between information sources, which abound. Lack of experience in interpreting and applying the information that is available. These deficiencies must be rectified and rectified quickly, if CBM is to develop with maximum benefit and minimum impact. How can these deficiencies be rectified? The answer is reasonably straightforward: accelerate soil mapping, supply trained personnel to the Conservation Districts, advertise the program, and coordinate its application throughout the development areas. Provide the CBMCC with sufficient resources to address issues of specific interest to the counties and to further facilitate the transfer of information.

BUDGETARY NEEDS

Conservation Districts and NRCS staffs are underfunded to meet the challenge of CBM development. While Conservation District funding may appear to be a local funding issue, transboundary effects that pass beyond state boundaries, primarily impacts to water, air, and wildlife, provide impetus to requests for federal funding. In addition, the Federal Government represents the single most significant mineral holder in the PRB, yet the bulk of the surface overlying that mineral belongs to private landowners. The Federal government has an obligation to substantively assist those landowners in making good resource management decisions.

The need to rapidly develop effective and cost effective management plans is equally urgent for the CBM industry. Their continued ability to operate may depend on protection and mitigation of the non-CBM resources. The operators, particularly the smaller operators, could benefit greatly from readily available information on non-CBM resources. We must look beyond the boundaries of individual properties to the collective effect of development on

the collective resource base.

The primary elements of a budget for providing resource management to all stakeholders include:

- personnel and equipment for affected Conservation Districts and coordination between them
- support funding for data sources such as the Spatial Data and Visualization Center at the University of Wyoming
- NRCS funding for soils mapping
- technical support for local governing bodies via the CBMCC.

A detailed breakdown of the budget can be found on Table 1. There are two primary funding elements: funding for Conservation Districts (CD) and funding for soil surveys, which are conducted by the Natural Resource and Conservation Service (NRCS). Funding vectors for both could occur through USDA, the parent agency of the NRCS. It is suggested that the CDs for the areas experiencing significant CBM be provided with immediate funding. Funding for the secondary development areas can be considered as development begins to accelerate. Soils mapping, however, should be accelerated in all areas, with priority of execution given to the areas currently experiencing CBM development as shown on the second page of Tables 1 and 2.

CDs require funding directly at the district level. Funding is also needed at the University of Wyoming level through the SDVC, where high level technical support can be provided. In addition, the CBMCC will be challenged to provide communications support throughout a five county area and will also need additional funding. There will need to be administrative support for the new CD GIS functions. The existing GIS infrastructure at the Lake DeSmet Conservation District will need to be supplemented to provide this oversight and administrative support. Thus, for the CD structure, $980,000 per year is being requested.

Soil surveys are large, very specialized activities and the number of professionals available to conduct them are limited. Even with the greatest acceleration of funding, completion of the statewide needs is probably not possible in a timeframe shorter than 10 years. Thus, immediate availability of annual funding at the ten year level ($2,753,275) is requested.

Both CD and NRCS support is requested for a three-year period. Any questions or suggestions regarding these funding requests will be gratefully received and promptly answered. Please contact the Coalition at:

cbmcc@vcn.com
Mickey Steward at 307 351 0618
Bj Kristiansen at 307 351 2546

Table 1. Budget Needs for Information Transfer.

Conservation Districts	
Personnel and Equipment	
Big Sandy	$100,000
Campbell County	$100,000
Converse County	$50,000
Dubois/Crowheart	not yet
Lake DeSmet	$100,000
Lincoln County	not yet
Little Snake River	$100,000
Lower Wind River	not yet
Medicine Bow	not yet
Popo Agie	not yet
Powder River	$100,000
Saratoga-Encampment-Rawlins	$100,000
Sheridan County	$100,000
Sublette County	not yet
Uinta	not yet
Administration and Coordination of GIS Functions	$70,000
Wyoming Geographic Information Sciences Center Support	$100,000
CBMCC Technical Support	$80,000
Annual Cost	$980,000

Note: Conservation Districts not yet funded will need funding as CBM development expands. Annual figures should be inflated 3 percent annually.

Table 2. Funds Requested to Complete Soil Surveys in Wyoming
(excluding lands within National Forests)

Annual Funds Needed to Complete Soil Surveys on Lands in Wyoming That Do Not Yet Have a Complete Soil Survey

Project Time Frame	*Annual Funds*
10 Years	$2,753,275
15 Years	$1,911,997
20 Years	$1,491,357

Total Funds Needed to Complete Soil Surveys on Lands in Wyoming That Do Not Yet Have a Complete Soil Survey

Project Time Frame	*Total Funds*
10 Years	$27,532,750
15 Years	$29,679,948
20 Years	$29,827,145

Areas in Wyoming That Do Not Have a Completed Soil Survey

Survey Area Name	Priority for CBM Development	Acres	Percent of Area Unsurveyed
Campbell County, North	1	296000	8.7
Carbon County	1	4427650	87
Converse County, South	1	420000	15.4
Johnson County, North	1	1144739	42.9
Lincoln County, South	2	1573723	60.3
Sublette County	2	1973105	62.6
Sweetwater County South	2	4389257	(with south)
Sweetwater County, North	2	2202996	98.3
Uinta County	2	1297835	97.1
Wind River Basin (Fremont County)	2	992000	16.8
Big Horn County	3	1671418	82.8
Hot Springs County	3	961777	69
Park County	3	1623458	36.4
TOTALS		22943958	

Source: Natural Resrouces Conservation Service Staff

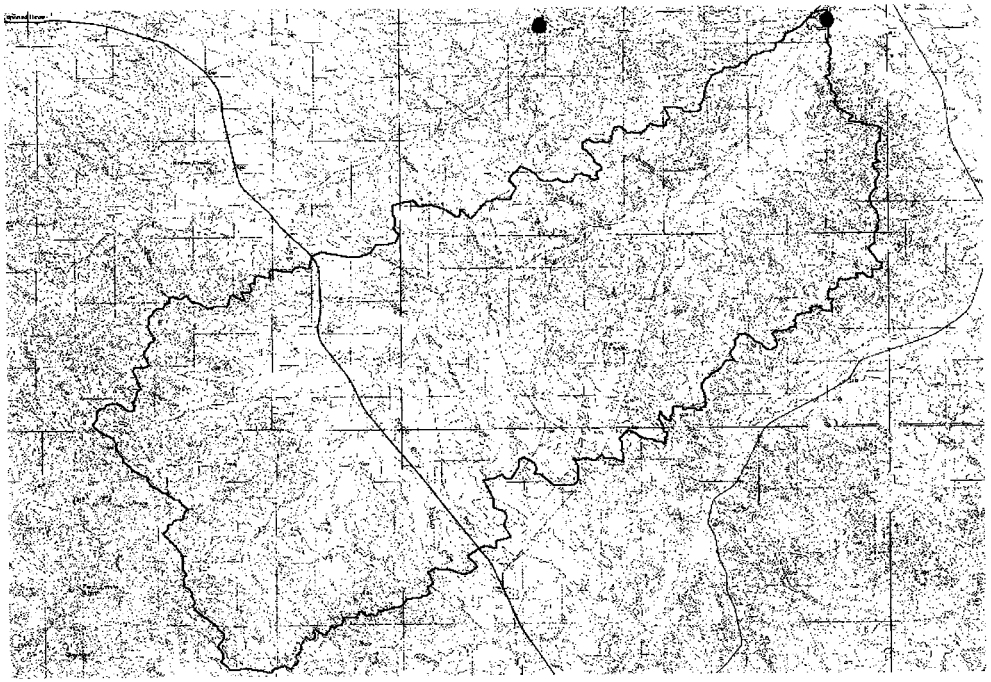


Figure 1. Wildcat Creek Drainage, Powder River Basin, Wyoming.

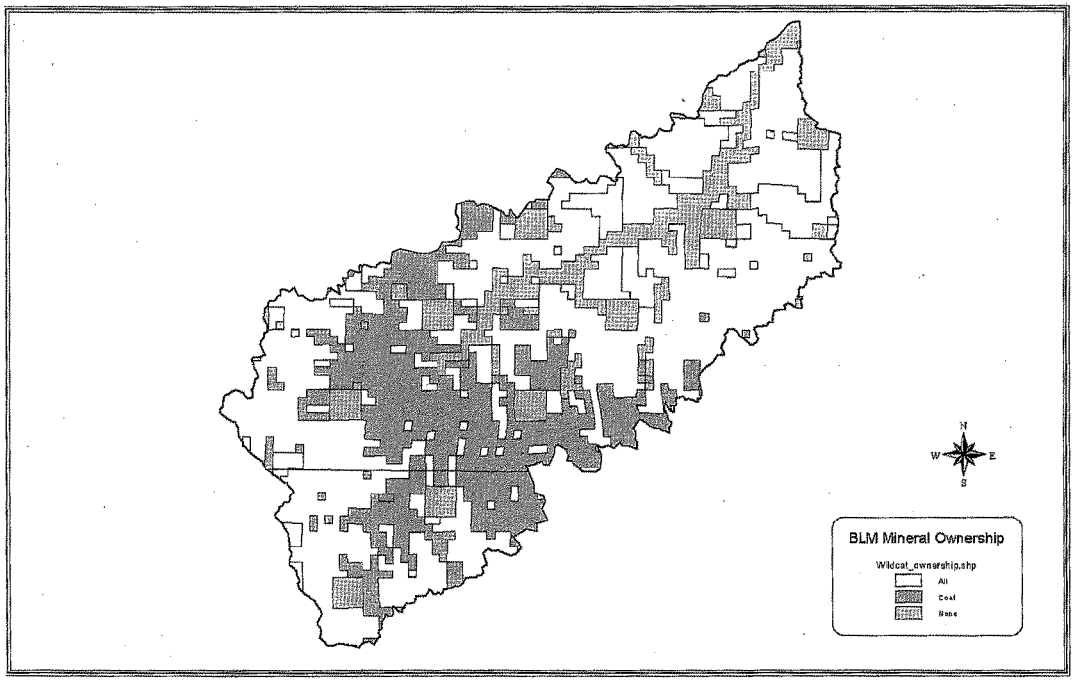


Figure 7. Mineral Ownership in Wildcat Creek Watershed.

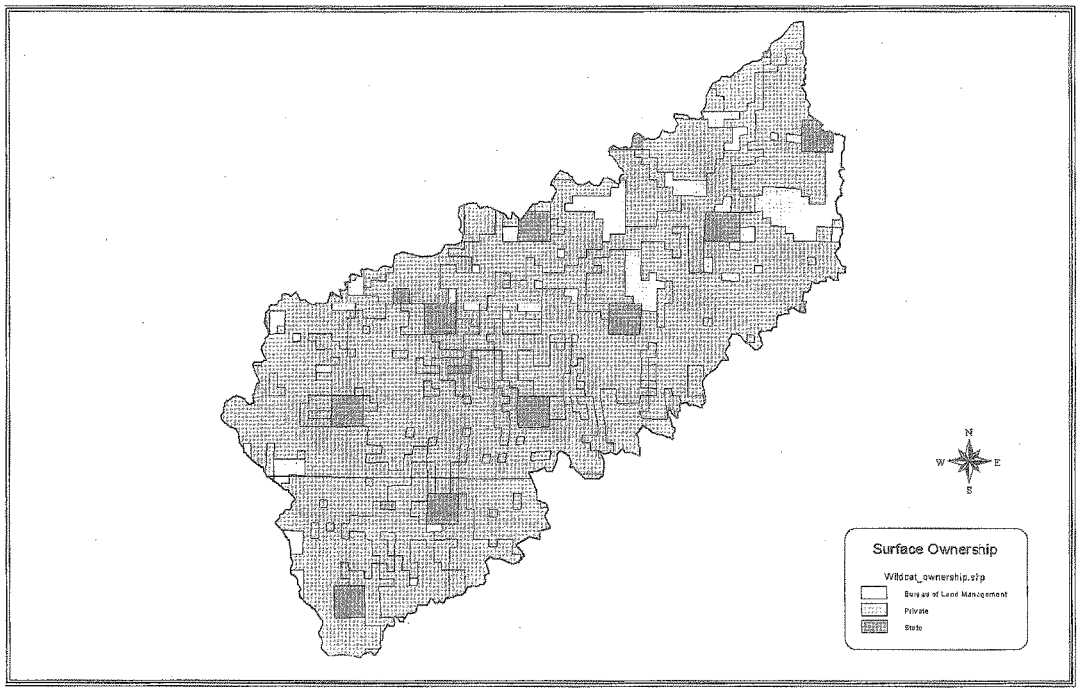


Figure 8. Surface Wonership in Wildcat Creek Watershed.

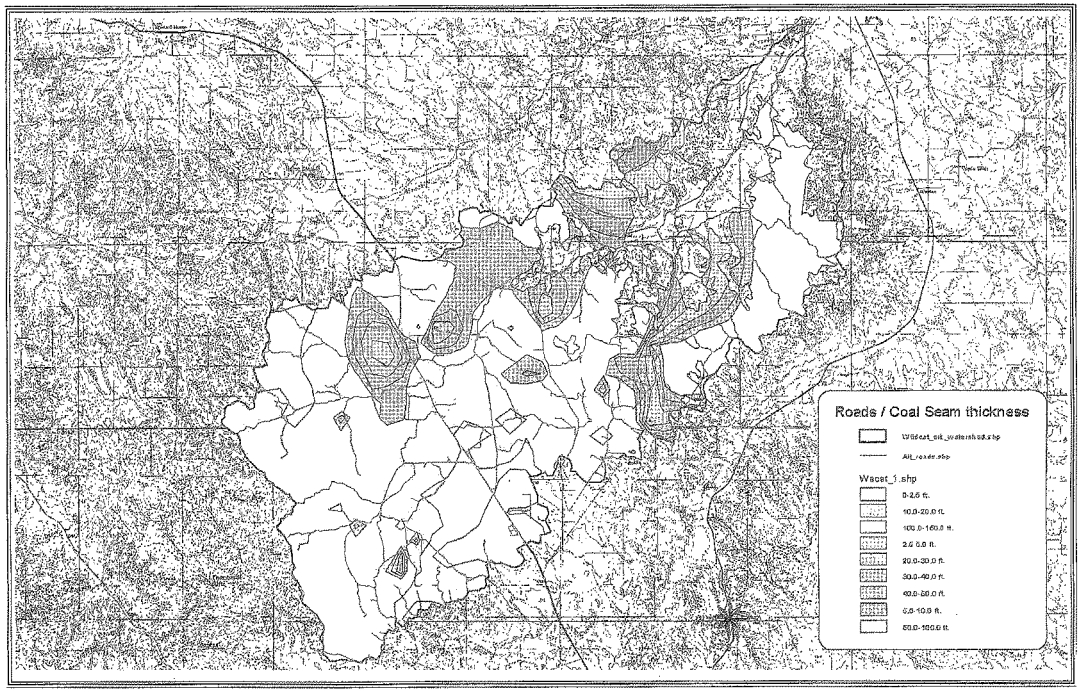


Figure 9 Coal thickness in Wildcat Creek Watershed.

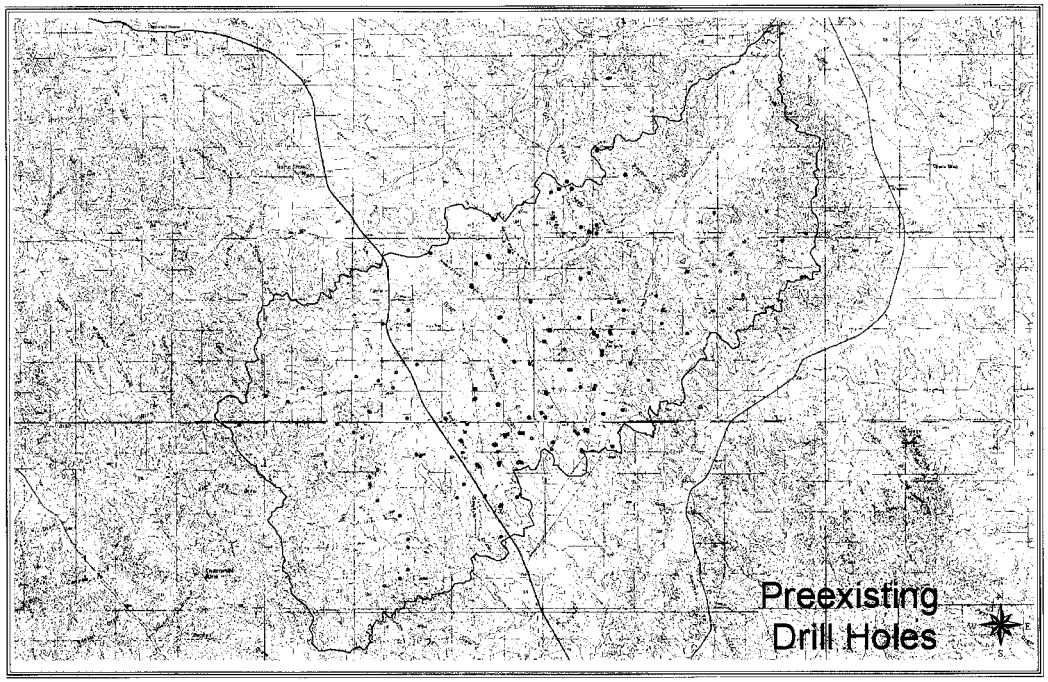


Figure 10. Pre-existing Drill Holes in Wildcat Creek. Watershed

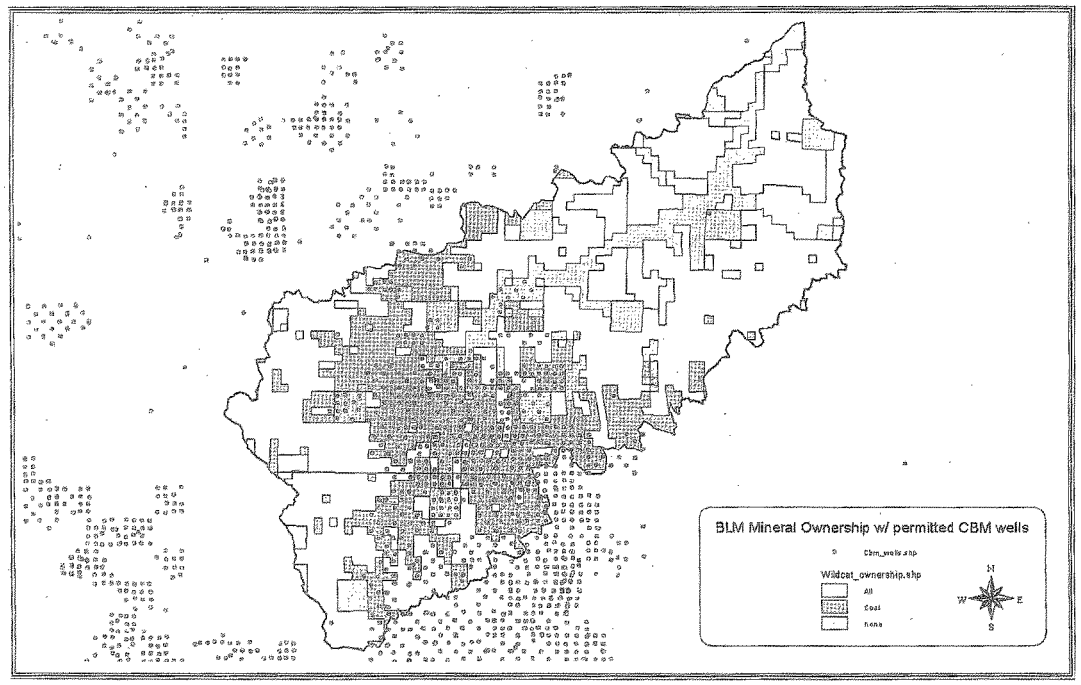


Figure 11. CBM Wells in Wildcat Creek Watershed (as of March 2001).

Mrs. CUBIN. [Presiding.] Thank you for your testimony.

I apologize to all of you for not being here on time. I was at the White House.

I will now defer to Mr. Kind for opening questioning. He has to leave early, so please go ahead.

Mr. KIND. Thank you, Madam Chair.

Thank you for your testimony.

Mr. Whitney, let me start with you. USGS apparently is doing a comprehensive survey right now in regards to the availability of methane coalbed reserves. Is this geographic specific, just for the Rocky Mountain area, or it is national in scope, the survey that is being conducted?

Mr. WHITNEY. In 1995, we conducted a national overview of coalbed methane resources. Because additional data and new technology will cause those estimates to change, we are updating our 1995 assessment on a basin-by-basin basis.

So the first two basins that we have updated are the Powder River Basin and the Uinta-Piceance Basin. We are currently working on the San Juan Basin and the Green River Basin.

Mr. KIND. How long is that going to take to complete?

Mr. WHITNEY. I think the San Juan Basin results will be out this fall, and the Green River basin will be out a year from this fall.

Mr. KIND. Thank you.

Mr. Fulton, in regards to the EIS that the agency is working on, that was pushed back to the middle of next year? Is that the current estimate, as far as when you are going to complete that?

Mr. FULTON. Yes, 2002.

Mr. KIND. As you progress in the EIS statement, in the information that you are collecting, are you finding that the date is solid right now, or is it raising more questions as you move along, and that might be pushed back even further? Because wasn't it originally due this year, this summer?

Mr. FULTON. The development in this area has been rapid and keeping up with new information has been difficult. But I think that the additional funding that was provided to allow us to staff up and get a handle on fast-changing events means that that EIS will be completed mid-year next year.

Mr. KIND. Dr. Steward, let me ask you if you could be a little more specific in regards to the surface water challenges that are being posed right now in regards to the production of the coalbed methane. What specific challenges are you looking at?

Ms. STEWARD. I am probably alone in the room in thinking that the surface water is not the largest issue facing us in coalbed methane development. But with respect to surface water, I think that the optimum beneficial use of that water has yet to be realized. That water is almost as precious of a resource in the West as energy. Although sometimes in the winter we wouldn't think so. And I would like to see some more focus on optimization of the use of that water.

Mr. KIND. What is currently being done? It is my understanding that in order to extract methane, you have to pump the water up from a hundred to sometimes thousands of feet below the surface. What is currently being done with that discharged water?

Ms. STEWARD. I think we will hear some testimony on that today. Typically the water is used primarily for livestock watering and wildlife. I have seen a lot of enhancement of some migratory waterfowl in the area. But the water, I think, could be used also for irrigated agriculture, but it will take some highly technical irrigation to do that. And we ought to be looking into that, I think.

Mr. KIND. Is the pumping having any effect on current surface water supplies?

Ms. STEWARD. I think that's a topic for open discussion. And there are many experts on that, of which I am not one. And I would defer to them.

Mr. KIND. Your response kind of begged the question: You don't think surface water is the biggest challenge; what, in your view, is the biggest challenge with this production?

Ms. STEWARD. I think that we need to look at the basin in a coordinated and integrated way, and also at our neighbors, and address all aspects, not only the surface water, but the air, the groundwater, the wildlife, and the general land use, and ensure that while we are extracting this valuable resource, that we also maintain our capacity to use the other resources.

Mr. KIND. Mr. Fulton, in your opinion or estimation, do you think that enough is being done in order to adequately protect or even compensate the surface owners that are being effected by the production now?

Mr. FULTON. Yes, I do. The scoping process in the EIS is meant to identify the conflicts and to attempt to find ways to mitigate those conflicts, to reduce the level of conflict, and to make sure that single uses aren't disadvantaging other uses. And in that way, we get a good handle on what it is the competition means and how to deal with it.

Mr. KIND. And you think enough steps are being taken at this time in regards to the health and safety of surface residents in this area?

Mr. FULTON. I believe that that is the case.

Mr. KIND. Okay, thank you.

Thank you, Madam Chair.

Mrs. CUBIN. The Chair now recognizes Mr. Gibbons.

Mr. GIBBONS. Thank you very much, Madam Chairwoman.

And I want to tell our guests here, welcome and glad to have you here.

I wanted to talk to Dr. Whitney a little bit about the potential coalbed methane areas. It seems that USGS is focusing on the Rocky Mountain region. Have you made an attempt to assess and inventory the potential for other coalbed methane areas, whether it is the Green River Basin, whether it is the Forest City Basin, whether it is the Northern Appalachian Basin? Have you done all that and provided that information to the appropriate agencies?

Mr. WHITNEY. Yes. Our 1995 assessment includes all those basins. And in fact, there is a table in my written testimony that contains the results of that 1995 assessment.

Also, in our update of the assessment of various basins, although we are concentrating on Rocky Mountain basins, because of the booming production activity there, we also look at the Appalachian basins, the Gulf Coast, and other coalbed methane-bearing basins.

Mr. GIBBONS. Is there a great deal of activity going on with regard to the exploration and development of coalbed methane in the northern Appalachian region?

Mr. WHITNEY. Coalbed methane has been produced for a long time, as you know, in the northern Appalachian region. I think there is a renewed interest there.

The problem with the Northern Appalachian Basin is it is a very complex, geologically complex, basin. And exploration is a little more difficult there.

Mr. GIBBONS. Let me direct a question to Mr. Fulton.

Knowing the number of applications that are coming forward with the production for coalbed methane by resource entities, that are private entities, and the number of people that are now applying for exploration of potential sites, do you feel that the 32 personnel increase is adequate to handle all of that?

Mr. FULTON. Yes, I do. You have to balance not attempting to build the church to the size of the Easter crowd, and there is definitely a backlog that has to be addressed. But I think that the increase is adequate over the longer term to catch up with the backlog.

There may be some continued backlog over the short term. But in the longer term, those added resources should catch up with the number of applications.

Mr. GIBBONS. Can you explain the difference between the application for permit to drill as processed by the BLM for a well on a private surface split estate and Federal surface? Tell me what the difference in the application process is.

Mr. FULTON. I am afraid I am not technically very knowledgeable about that. I do have Erick Kaarlela here, who is the senior petroleum geologist for the Bureau of Land Management. And if you would like, he could offer an explanation. Or we could submit a written explanation.

Mr. GIBBONS. Let me ask you, basic knowledge, do you believe, to your knowledge that state oil and gas regulatory agencies and their laws and regulations, that they are required to protect the rights of surface owners as well as the environment?

Mr. FULTON. It is my understanding.

Mr. GIBBONS. So your answer to that is yes.

Mr. FULTON. Yes.

Mr. GIBBONS. Dr. Steward, let me go back and ask you that question. Do you feel that the Federal Government is adequately staffing its levels for the ability to handle the exploration needs of resources, whether it is coalbed methane or other resource development, from your industry's standpoint?

Ms. STEWARD. I am not qualified to answer that question with respect to the BLM or the USGS, who both are doing a fine job, in my opinion. But I do think that because of the nature of coalbed methane, where the water resource is extracted at the same time as the gas resource, that we need to look carefully at the interaction of the water with the rest of our environmental resources, particularly the soil.

And I don't think that we have the information at our fingertips to manage that properly. And I don't think we have the information necessary for private individual surface owners to

properly manage the suite of resources that they are responsible for. I think they need some help. And I really think that the soil can be done by NRCS, and the conservation districts through the NRCS can help get information out to private landowners so that they are good land-use managers.

They are in large part the surface land-use managers for the Federal underlying mineral in the Powder River Basin.

Mr. GIBBONS. Thank you, Madam Chairman.

Mr. CARSON. Thank you so much, and thank you for being here today.

Let me ask a question to the panel, just to clarify some information that was in your testimony. I am not that familiar, coming from a state where we don't have a lot of federally owned lands, is the bulk of the coalbed methane production in Wyoming, let's say, in the split estate, where the surface rights and the mineral rights, the Federal Government will have the mineral rights but the surface rights will be owned by the private landowner? Anyone who is capable of answering that.

Dr. Steward?

Mrs. STEWARD. In the Powder River Basin, approximately half of the mineral estate is held by the Federal Government, but approximately 90 percent of the surface in the Powder River Basin is held by private landowners. In the southern part of the state, where coalbed methane is just starting to develop, in Carbon County, it is a very different situation because much more of the surface is owned by the Federal Government.

So the answer to your question is, it depends.

Mr. CARSON. I understand. In say the Powder River Basin, when it becomes of interest to be able to exploit the mineral resources in that area, the surface landowners, what rights and what compensation do they received in those instances?

Ms. STEWARD. In the Powder River Basin, the typical situation is that there is a mineral lease agreement made and a surface-use agreement made. It is probably the exception rather than the rule that only one individual makes both those agreements. And the terms of the agreements are, as part of free enterprise, made by the parties participating in the development of the enterprise.

So the specifics of the agreements are somewhat specific to the agreement itself.

Mr. CARSON. I guess my question, though, is, the surface landholder, what rights does he have in the negotiating process; for example, the groundwater that he is relying on for livestock or for other uses, conservation uses perhaps. I mean, he has no rights, obviously, to stop the exploitation if he doesn't own the mineral rights. But what rights does he have? What compensation does he have, if any, for, say, the exploitation of water resources that he is relying upon, too, that are part of the coalbed methane production?

Ms. STEWARD. Typically those types of questions are addressed in the surface-use agreement, and there are several people speaking this morning that can give you good information on that. But I think that the point I am trying to make is that sometimes the private landowner is not completely aware of the value of his other non-coalbed resources and the need to manage them. And I think

that that is exactly what I am trying to stress here, that assistance is needed to help the private surface owner properly manage those agreements.

But in direct answer to your question regarding wells, wells are typically addressed in the surface use agreement.

Mr. CARSON. In response to Mr. Kind, you implied that current usage of the water resources are not being optimized. But you didn't specify what, in your mind, the optimal uses of those resources might be. Can you give us some indication of that?

Ms. STEWARD. There is a wide variation in water quantity and quality associated with coalbed methane development. And the use of the water needs to be tailored to both the quality and the quantity of the water. I think that in the Powder River Basin we could do more with respect to agriculture. We could do more with respect to focused development of wildlife opportunities. And I think that, given the diverse and extensive nature of the development, I don't think you are going to see one big one-size-fits-all use of the water.

Once again, the surface owner and the operator, as part of their surface-use agreement, need to work out what is best for that particular area. The surface owner is the land-use resource manager for that particular piece of ground, so he needs to know what he could do and how he could do it in conjunction and working in partnership with the developer.

Mr. CARSON. Let me ask a final question, Mr. Fulton or Dr. Whitney. You talk a lot in your testimony about technically recoverable coalbed methane resources; what are the economically recoverable resources there? And if you could address what the economics of your typical natural gas production versus the coalbed methane production are.

Mr. WHITNEY. I think I can try to answer that. The USGS does technically recoverable estimates. Technically recoverable means that there are resources that are in the ground that could be recovered using existing technology or foreseeable technology.

We don't do economically recoverable resources for several reasons. As you know from recent experience, economics depends primarily on price of the commodity; in this case, natural gas. When you get to a fine scale in an area like the Powder River Basin, the economics of production will depend not only the depth of drilling, the rate of production of the well, but it also depends on the availability of pipeline infrastructure, gathering facilities, and so on.

So when you get to economically recoverable resources, you have to specify a particular play or a particular piece of land and do the economics on that. It is very difficult if not impossible to do a one-size-fits-all economic analysis of a basin.

Mr. CARSON. Thank you very much.

Mrs. CUBIN. We do try to run the Subcommittee in a more orderly fashion than we have so far today, but we do have to take a recess now. The president of Mexico will be addressing a joint session of Congress, and our rules do not permit us to sit during sessions, such as this.

So we will recess right now. I expect that we will start the hearing up again at noon.

I was hoping that we would be able to finish with this panel, so that you could relax. But unfortunately, we do have more questions.

So now the Committee will recess until noon.

[Recess.]

Mrs. CUBIN. The Subcommittee on Energy and Mineral Resources will come to order. I am going to go ahead and start. I realize it has been confusing. It is not quite 12:30 yet, but we do need to get through this work today.

So since there aren't any other members here, I would like to pose a question. I would like to start with Dr. Steward.

First of all, I want to remind you that this Committee authorizes legislation, but we don't appropriate any funds. We do make funding requests to the appropriators, and our success in getting the appropriations we want varies from time to time. It helps enormously, though, when the Administration supports the request that we make, or when the request comes from them.

And I just wondered if you have made any requests of the Secretary of Agriculture to understand more of what your conservation districts' needs are.

Ms. STEWARD. Mrs. Cubin, earlier in the summer, our coalition submitted to your staff and the staff of Senator Enzi and Senator Thomas a request for funding. And to be perfectly honest, we have been relying heavily on the staffers to advise us on the best routes to take. And we just now, I think, in Wyoming are ramping up to make a full presentation with respect to the soil surveys.

However, with respect to the conservation districts, we are looking to your office for some advice about the best way to pursue this.

Mrs. CUBIN. And we have made our request, as you know, to the Secretary of Agriculture, asking for their support. But I guess some guidance that I would like to offer is that they get requests from congressmen all the time, and so the more you can weigh in and the more you can have other constituents weigh in with the Secretary, that is helpful in our getting their support and in our being able to actually get the appropriation.

And as you said, the senators and I have been working on that, along with the staff. And we will try to make sure that all those needs are met.

I had on the map here, I wanted to ask Dr. Whitney, on your map of the Powder River Basin, it says that there are 14.26 trillion cubic feet of coalbed methane.

Mr. WHITNEY. Yes.

Mrs. CUBIN. I thought that the state estimate of that is more like 25 trillion cubic feet. Do you know?

Mr. WHITNEY. Well, the estimate that the USGS made is for technically recoverable undiscovered resources.

I have heard that the State of Wyoming commissioned a contractor to do a similar assessment, and their number I believe was 25 TCF.

There are serious differences in methodology used by different groups. The USGS methodology is well documented and open to the public. I don't know very much about the contracted assessment that the State of Wyoming did.

Mrs. CUBIN. Mr. Fulton, according to the requirements of NEPA and FLPMA, as well as the BLM's process for drilling permit approvals, those things have resulted in lands belonging to the United States being drained of CBM to nonfederal wells. And some of those estimates are up to $1.5 million a month. And half of that money is to go to the state. And so my feeling is, not only could the Federal treasury absolutely use that money, but the state treasury could as well.

What is the Administration doing? What is the Department of Interior doing to try to minimize those losses from drainage?

Mr. FULTON. The drainage issue is an important one in the Powder River Basin. And as we have worked to get through the backlog of permits, the focus has been to permit those wells that have the ability to address the drainage issue because of the royalty loss that you mentioned.

Mrs. CUBIN. Would you repeat that for me, please?

Mr. FULTON. Yes, certainly.

As we work to get the backlog of permits to drill up to the number required, our focus in the Powder River Basin has been to permit those wells where we can address the drainage problem because the royalty issue is important.

Mrs. CUBIN. There has been a lot of discussion, especially between our delegation, basically, on how to get—I think there is a backlog of something like 3,500 APDs in the Powder River Basin—on how to get those moving.

I have suggested looking at—I am not proposing this, but I have suggested it is worth looking at a program like the pilot fee program that we have in parks, where the money is generated in a certain area and a certain percentage of that is kept to meet the needs of that area. And some people are in favor of that.

Other folks think that we have enough personnel. Other folks think what we need to do is utilize technology like the state does so that those permits could be processed more quickly. What are you looking at in order to address those pending APDs?

Mr. FULTON. Well, it is a matter of great concern to the Department of the Interior in getting this backlog up to speed and getting these permits approved. It is a balancing act in many respects. We are in competition for the trained personnel that we need to do these permits. When we get a good one, the industry is equally interested in hiring them.

In addition, we very much appreciate the additional funding to ramp up our effort, but we want to be very careful and not simply waste the money carelessly. So we are looking at responsive efforts to meet the high demand while at the same time doing it in a rational way.

And these processes are very open, and they involve a lot of public input, and we don't want to short that process either. So we are trying to balance competition for the dollars, for the personnel, for the public comment, and trying to get this done in a way that makes sense to everyone.

Mrs. CUBIN. Okay. So I guess I am asking, then, do you need more personnel?

Mr. FULTON. I don't think so. I think that the Congress has been very generous in helping us get to the problem and the money. And

as we ramp up with the additional personnel, we fully anticipate being able to meet this need. It will take awhile.

Mrs. CUBIN. That was my next question. How long do you think that will take?

Mr. FULTON. Well, I would think we could probably have it up probably within 2 years. Within 2 years, we could have that backlog disappear.

Mrs. CUBIN. What about technology needs? Is there any intention in the Department of Interior to move to a system like the state has?

Mr. FULTON. Well, there is a great deal of interest in making sure that we are aware of additional technologies that would make our work easier, better, more efficient. The new Secretary wants each and every individual in the Department of the Interior to take a fresh look at the way things are done. And if there are ways of doing it better, more cheaply, then that's something we'll take a hard look at.

Mrs. CUBIN. Dr. Whitney, it has been made clear, and will be made more clear later in the day, that water is certainly a major issue in the production of coalbed methane. What percentage of water in a coal seam is actually removed during the coalbed methane production?

Mr. WHITNEY. Well, I am not sure that there is a maximum amount. The water is never removed until the coal is dry, of course. There is a production curve so that as the proportion of water is removed from the coal, the production of natural gas increases.But I am not sure I can put a percentage on it, but you don't have to remove all the water from the coal.

Mrs. CUBIN. What was your last sentence?

Mr. WHITNEY. You don't have to remove all the water from the coal.

Mrs. CUBIN. Just a rough estimate: Would 5 percent be a reasonable guess?

Mr. WHITNEY. I don't have any data to answer that question, so I hesitate to put a number on it.

Mrs. CUBIN. Okay. Well, thank you very much. Thank you for your patience. We don't intend to have any other interruptions, unless we have votes.

So I do appreciate your testimony. I appreciate your answering questions. And you are now excused. Thank you.

I would like to now call the next panel: Mr. Edward Swartz of the Powder River Basin Resource Council; Mr. Walter Merschat, Scientific Geochemical Services; Mr. Dennis Hemmer, the Director of the Department of Environmental Quality for the State of Wyoming; Gene George, Chairman of the Coalbed Methane Committee for the Petroleum Association of Wyoming; and Terry Dobkins, Vice President of production for Pennaco.

Thank you so much. Thank you for your patience.

The Chairman now recognizes Mr. Edward Swartz to testify for 5 minutes. The timing lights are on the table, and the yellow light indicates there is 60 seconds left, and the red light indicates that your time is concluded.

I would like to remind you that your entire testimony will be entered in the record, and we limit the oral testimony to 5 minutes.

Mr. Swartz?

STATEMENT OF EDWARD SWARTZ, POWDER RIVER BASIN RESOURCE COUNCIL

Mr. SWARTZ. Thank you, Madam Chair and members of the Committee.

I am a full-time rancher from Campbell County, Wyoming, the third generation doing that. My son is a full-time rancher. He is the fourth generation on the ranch. And that ranching is all we do for a living.

And regarding this coalbed methane issue, I am downstream from where water is being dumped. And that water is coming down the creek, and it is loaded with salt. And it is pulling alkali out of my soil, which natural water never did. And it has destroyed all the vegetation in my creek bottom, and I don't have any grazing there for the winter months.

And when that salt gets out on my hay meadows, which it probably will with flood, I am going to wind up losing my hay meadows. And without the hay meadows, that ranch is not a viable economic outfit.

It has been a good ranch for years and years, and treated a lot of generations of the Swartzes pretty fair. But it is being threatened by water being dumped. There is no production whatsoever of coalbed methane or water being dumped from my own ranch. It is coming from up the creek, and it is really, really damaging me.

Last winter, the ice froze over the top of that coalbed methane water; it caused a lot of erosion in the creek channel as well as leaving the deposits of salt, which you will see on the first two pages of pictures in your handout there. And that creek used to be full of grass that I grazed all winter long. The natural water didn't kill it; methane water does.

The State of Wyoming refuses to stop that water from being dumped. They say I have to prove damages to my meadows. Well, if my meadows get damaged like that, I won't have a viable operation.

Also, I have a lot of water rights on that creek, going back to 1901. And they have built a bunch of reservoirs above me that are storing CBM water, but they are also storing my natural water. If that was good water, I am a good rancher, so I would be saying, "Dump those reservoirs. I have water rights. Send me that water." But those reservoirs are mostly full of CBM water, and I don't dare put it on my meadows.

The amount of salt coming out of these wells is just unbelievable. I don't think the State of Wyoming is even aware of how much salt is pumped because of the quantities of water. The State of Montana DEQ wrote Wyoming DEQ a letter January 2, 2001, stating that since each coalbed methane well produces 20 tons of salt per year, we are concerned that this water stay out of the Powder River drainages and we are concerned that the reservoirs that are holding these waters not leak and leach this water into Powder River.

Twenty tons of salt per year: If you don't remember anything else that I say today, remember that each well puts out that much salt. And plug your own figure in. There are 10,000, 12,000, 15,000

wells drilled. They aren't all producing yet, but they are talking 50,000, 70,000, 90,000 wells over the next 20 years, 20 tons of salt per well per year. Those are Montana DEQ figures.

I can see the salt on my place. You can see the salt in those pictures. Trees are dying along my creek. We don't have many deciduous trees, and I really, really like them. I like the box elder trees and the cottonwood trees, and they are starting to die on my creek.

I am not the only one that is having this problem. There are other ranchers that are having problems with water coming down the creek. It has killed some of their meadows. It has killed several hundred-year-old cottonwood trees on Bill and Marge West's places. There are all these other problems, too. There is the noise problem, compressor noise put out, a compressor built 8 miles in the country where there is a large subdivision, and it ruined those people's peace and quiet. It is just kind of like there was a jet motor running 24 hours a day, 365 days a year, that they had to sit and listen to.

One retired gentleman, a retired school administrator named Ron Moss, has everything he has invested in there. He wanted to have a peaceful, quiet place in the country, and then here comes the methane and the compressor. It has really bothered him.

Some of the surface damage—as you can see on some of the pictures in there, the lady walking down the road there up at Sheridan—have just been extensive and major. And I don't know if they have been remediated.

The split ownership of the surface and the mineral estate has been really hard to live with for a lot of people. And I think Mickey Steward mentioned it, but there is 10 percent of the land in the Powder River Basin that is federally owned. That leaves 90 percent privately owned, but the Federal Government owns about 57.86 percent of the minerals in the Powder River Basin. This can lead to problems also.

There is a gentleman with a trailer park that had a well go dry in that trailer park from when they started pumping methane, and then they started filling the reservoirs with water, and it has raised the water table, inundated his sewer system. He has had to start a suit.

I personally have spent over $33,000 of my own money, with nobody to repay me, trying to get a lawyer and soil scientist to back up my contention and to be heard.

Anyway, I want to thank the Committee and testify that not all is well in the business. Thank you very much for letting me be here.

[The prepared statement of Mr. Swartz follows:]

Statement of Ed Swartz, Rancher, Powder River Basin Resource Council, Sheridan, Wyoming

Madam Chair and members of the subcommittee on behalf of myself and the Powder River Basin Resource Council I would like to thank you for the opportunity to speak to you about coalbed methane or CBM development. My name is Ed Swartz, I am a third generation rancher, who has successfully operated a cattle ranch in Wyoming's Powder River Basin. I hope to pass this ranch onto my son and grandson to continue operating this great ranch, unfortunately, myself and other ranchers and landowners in the Powder River Basin are facing very real and destructive impacts from CBM development. The Powder River Basin of Wyoming is, according to industry, the site of the largest gas development in the country. Unfortunately,

there has been nothing orderly about this development, with the possible exception of the collection of revenues. While I and fellow ranchers have faced bad economic times, drought and other mining booms, nothing has presented the kind of challenges and damaging impacts to our soil, water and lifestyle as the CBM development.

While this hearing is entitled the, "Orderly development of coalbed methane on public lands" you must understand it is not that simple. In my experience, it is rare to have the same entity owning both the surface and the mineral rights. This includes the federal government. This split estate issue of different owners of the surface and minerals is the root of many problems and inherently inhibits orderly development. We have many cases where private lands overlie federal minerals, in a few cases we have public minerals under public lands, and we have many cases where the minerals are owned by one individual and the surface by another. And finally what seems to be the minority, private minerals owned by same person who owns the surface. These various situations can exist adjacent to each other and cause overlapping impacts. Again, trying to proceed with orderly development on this foundation is an oxymoron.

Let me explain. First off, some background. The Powder River Basin Resource Council was founded 29 years ago by myself and other ranchers threatened by the rapid expansion of strip mining and the proposal for several mine mouth coal fired power plants. We joined together to protect our land, water and air from the potential abuses and impacts of coal strip mining. At that time, in 1973, many landowners and citizens around the country were at the mercy of individual coal companies that desired to develop the coal beneath our property. We, along with landowners from other states, banded together to educate and work against the innumerable cases of unconscionable land abuse and destruction at the hands of unregulated coal-mining companies. Our efforts, and the leadership of many elected officials, lead to the passage of the Surface Mining Control and Reclamation Act. The promulgation of SMCRA was the beginning of land bonding, environmental reclamation, a comprehensive mine permitting system, and most importantly, rational control and the orderly development of coal mine operations to mitigate effects on land, surface and groundwater, and land owners.

Today, surface owners and citizens of the Powder River Basin and other states where coalbed methane development is occurring, or will soon occur, are again at the mercy of an under regulated and uncontrolled mineral development industry. Furthermore, coalbed methane development, which requires the dewatering of freshwater aquifers, is proceeding with minimal understanding of its long-term consequences and with little regard by either State government or industry for its short-term side effects. Unfortunately, most of industry will not regulate itself and those companies that are willing to do the development in more responsible ways that will not damage the land and water resources of the surface owner or neighbor are penalized in the economic arena by companies that are cutting corners. Coalbed methane companies are not required to maintain adequate bonds that would cover the costs of reclamation of the surface or water, despite the fact that we have thousands of miles of new roads bulldozed across the prairie, the spread of noxious weeds, the construction of hundreds of noisy compressor stations, thousands of miles of gas pipelines, and hundreds of miles of new powerlines. Incidentally, we have over 80 companies in the CBM production business in the Powder River Basin.

We also have the construction of large reservoirs that are damming up natural drainages which impede the flow of natural runoff used for irrigation. We also have severe erosion, salinization and ruination of soils from the discharge of millions of barrels of water a day to extract the gas. To this, I can personally attest as I have had the creek upstream dammed by several reservoirs. Consequently, the soils in the creek bed on my ranch are now loaded with salt deposits, which killed the vegetation in the creek and eroded the creek bed. This is now threatening to destroy my hay meadows. Without the hay meadows I do not have a viable ranching operation and I am not the only landowner in this situation. According to the state of Montana DEQ in a letter dated January 2, 2001 to the Wyoming DEQ, each CBM well in the Powder River Basin produces an average of 20 tons of salt a year.

Furthermore, regarding water quantity issues, we do not understand the long-term impacts of the depletion of the aquifers the industry is pumping from in order to extract the gas. Most of us in the Powder River Basin rely completely upon these aquifers for stock, wildlife and domestic water supplies. As of March of this year, according to the Wyoming Oil and Gas Commission, there were just over 44 million barrels of water per month being discharged (42 gallons in a barrel of water). According to the Coal Bed Methane Coordinatior, that is enough water to supply 300,000 people per day which would be 2/3 of Wyoming's population or 2.5 million cows per day. This is water that we are pumping out and letting run away. Yes,

this is water that is suitable for livestock and wildlife and for people who are not on a sodium restricted diet. In fact, it is water that most of us in the Powder River Basin rely upon for stock and domestic water. The problem comes when you start to dump this water on the surface on our clay soils and in our drainages and streams. It does not mix well with the soil and hay, trees and native grasses are destroyed.

Where are the protections for those of us bearing the brunt of the impacts for the development of this energy? The extraction of coalbed methane development is mostly experimental and the Powder River Basin has actually been referred to by industry representatives as a laboratory. Why should we, who call this place our home be guinea pigs? We are watching our homes and ranches transformed into an industrial gas field. There are about 14,000 CBM wells permitted, around 6,000 producing and the BLM predicts up from 80,000 to 100,000 wells by 2010. The development of CBM is primarily being carried out on the backs of landowners that have essentially no say in how the development can proceed. We are being required to sacrifice our ranches, our water resources, our soil, our privacy, the wildlife—which also provides an income to many landowners - and our livelihoods.

As I mentioned before, the two groups of landowners that are primarily adversely affect by CBM development are: 1.) The surface estate landowners who do not own the minerals beneath their land; and 2) Adjacent or downstream landowners who have no legal tie to the resource being extracted or the surface of the land where the extraction is taking place. The natural runoff water that traditionally flowed through our land is now oftentimes impeded and impaired by the discharge of CBM water and our soils and land are being damaged by the CBM discharge water.

The direct, indirect and potential impacts to landowners is requiring us to spend thousands of dollars on attorneys and experts to try and protect our property. Currently, under the federal law there is no obligation to compensate the surface owner for the reasonable use of an easement that must be given by the surface owner. Even if the oil and gas operation causes substantial damage to the surface estate, in most jurisdictions in the West there is no obligation for adequate compensation by the gas company to the surface owner. A landowner must show excessive, wanton or negligent use of the easement by the gas developer, which means thousands of dollars in attorney fees. As a matter of justice and fairness, no oil and gas development should occur until the surface owner has given his/her written consent.

While the current practice by CBM companies is to generally get a surface use and damage agreement signed with the landowner that will preclude legal action down the line, how good that surface agreement is depends on how much the landowner knows, how good their lawyer is and how much money they have to pursue the issue in court. Those who have the money and knowledge might get a fairly good agreement while those who don't will not. The point being there is no governmental oversight to require an agreement that protects the rights of the surface owner. Various states have varying requirements for surface damage payment but there is not an overlying requirement by the federal government. In the West, the mineral estate seems to be granted more dominance allowing the gas developers far greater rights than is necessary to develop the resources. What is needed is a federal protection that requires the industry to act in a disciplined and fair manner: requiring landowner consent, the negotiation of a surface use and damage agreement from the surface owner and prohibiting impacts to downstream or adjacent landowners.

The immediate benefits being reaped from the coalbed methane industry are obviously not to be ignored. From the individual mineral owner to the local merchant to county, state and federal governments, the prosperity from gas development is being widely enjoyed. And yes, it is clean energy for urban areas—unfortunately, the production end in rural areas is not clean. We should not let the glitter of ten to twenty years of affluence blind us to the impacts and damages being felt very directly by others that are not reaping the benefits. We should also not let it blind us to the long-term impacts that we will be paying down the road. Coalbed methane is finite, and with the end of our reserves come the end of the boom. The faster we allow industry to develop, the quicker we'll be suffering the bust!

Despite industry claims that the Surface Mining Control and Reclamation Act (SMCRA) would put the mining industry out of business, the set of controls and regulations the Act encompasses have insured surface owner protection and environmental reclamation. Meanwhile, Wyoming's coal mines continue to set production records to this day. Incidentally, the coal mines cannot just discharge their water they pump out of the pit, the same water as CBM discharge water, into creeks and drainages. This is just one example how the coal industry must conduct their operations to ensure environmental protection and reclamation. We need a similar set of regulations and controls, including equitable and realistic bonding, limitations on water discharge, treatment of low quality water, and requirements for reclamation

for the coalbed methane industry. At the very least, we will probably need a fund established like the Abandoned Mine Lands Fund for messes that will be left to clean up.

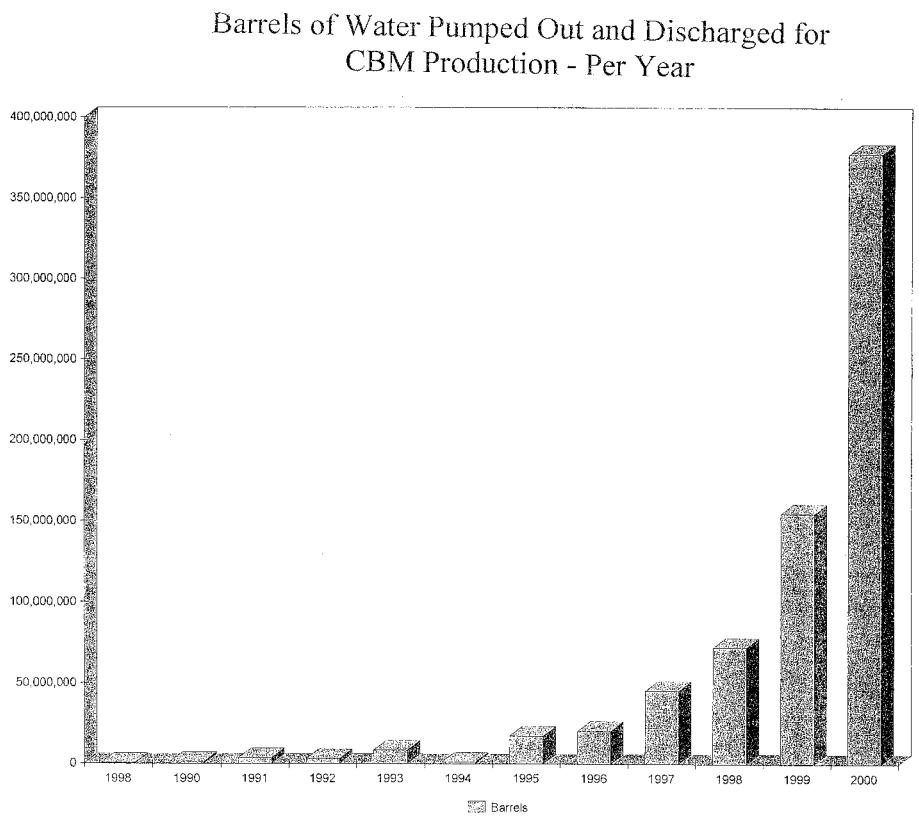
A set of rules to insure that coalbed methane development is maximized as a beneficial industry for the United States and controlled to preclude its potential problems to the people living with the development is only logical, fair and just. We hope and believe there is a way to proceed slowly, thoughtfully and scientifically with the development of CBM gas. We need you as leaders to step up to the plate and address the failures in current laws and regulations and provide the protections for surface owners and safeguards for land, air and water resources impacted by coalbed methane development.

Thank you again for this opportunity to testify on this important issue.

The Powder River Basin Resource Council is a grassroots, membership based organization in Eastern Wyoming. Founded in 1973 our mission is, The preservation and enrichment of our agricultural heritage and rural lifestyle; The conservation of our unique land, minerals, water and clean air consistent with responsible use of these resources to sustain the livelihood of present and future generations; and the education and empowerment of our citizens to raise a coherent voice in the decisions that will impact Wyoming residents" environment and lifestyle.

NOTE: Pictures and articles attached to this statement have been retained in the Committee's files.

[Supplemental testimony submitted for the record by Mr. Swartz follows:]


Barrels of Water Pumped Out and Discharged for CBM Production - Per Year
400,000,000
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Barrels

Barrels of Water Pumped Out and Discharged for CBM Production

Year	1998	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Barrels	480,828	1,148,662	3,441,499	3,043,242	8,360,424	958,326	17,456,164	20,444,355	45,227,828	72,169,257	154,835,139	377,126,580
Gallons	20,194,776	48,243,804	144,542,958	127,816,164	3,581,137,808	402,583,692	733,158,888	858,662,910	1,899,568,776	3,031,108,794	6,503,075,838	15,839,316,360

Committee on Resources
U.S. House of Representatives
1328 Longworth House Office Building
Washington, D.C. 20515

Subcommittee on Energy and Mineral Resources of the
Committee on Resources of the House of Representatives

Supplemental Testimony
Of
Ed Swartz
Powder River Basin Resource Council

"The Orderly Development of Coalbed Methane Resources from Public Lands"
Thursday, September 20, 2001

Madam Chair and members of the committee thank you for the opportunity to keep the hearing record open for supplemental testimony regarding the September 6th hearing on, "The Orderly Development of Coalbed Methane Resources from Public Lands." I have a few additional corrections and points I would like to make regarding the testimony and the issue.

First, I would like to address in more detail Mr. Dennis Hemmer's comments that the soil tests they conducted on Wildcat Creek on my ranch and that the buildup of the white sediment on the creek bottom was calcium carbonate and therefore was not a salt caused by coalbed methane discharges. As I stated at the hearing, Wildcat Creek, the actual creek bottom on my ranch was always belly deep in grass. CBM discharge water running down that creek bottom for several months each of the past two winters has resulted in a creek now barren of any vegetation and covered with a white sediment.

I had Dr. Jim Bauder, a soil scientist, at Montana State University and three of his associates come here to my ranch recently, to test and study the soils and their interactions with the CBM discharge water. Dr. Bauder also operates a business; Soil Resource Consultants and I requested him to come here as a private consultant. Dr. Bauder said, calcium carbonate found in the creek channel is a salt formed from the interaction of CBM discharge water and the soil. While calcium carbonate is insoluble and has no effect on plants Dr. Bauder indicated that the interaction of the CBM discharge water and the soils was the apparent cause of the loss of vegetation.

Furthermore, what I referred to as erosion in the creek channel in the photos I submitted, Dr. Bauder actually called soil slumping which he says is caused by the soil losing its structure from the CBM water interacting with the clay soils. He also said, that what he saw here on my ranch, "was some of the worst interactions he has seen between CBM

discharge water and the soils." I will have a written report from Dr. Bauder in the near future and would be happy to submit that for the committee.

Mr. Hemmer also made the statement in his testimony that, "the water is not salty." This is not entirely accurate. The water does contain salts and depending on where you are in the Powder River Basin, the salts in the discharge water can vary. The measurement of salts is in parts per million of specific conductance or SC. In a recent review of a discharge proposal by Phillips Petroleum to the Cheyenne River they proposed discharging water that has an average of 1300 ppm of SC. According to Dr. Larry Munn, a soil scientist at the University of Wyoming, Phillips proposed discharge rate of 50 cubic feet per second, comes to 12 billion gallons of water a year which at 1300 ppm of SC calculates out to 64,000 tons of salt each year discharged in the Cheyenne River.

Next, I'd like to respond to some of the most erroneous and incorrect statements made in the written and oral testimony of Mr. Gene George of the Petroleum Association of Wyoming. Mr. George's testimony states, "No one can go on someone's surface without permission or an agreement unless court action has taken place. To date, court action has never had to be taken by an operator." This is simply not true! Mr. Terry Dobkins of Pennaco, admitted it in his testimony, that they have taken court action in one case in order to gain access to a landowner's property. We also know of at least five cases where court action and condemnation cases have been filed for companies to gain access for CBM development. These are: Crump Land & Livestock, Barlow Livestock, Clifford Smith, Don Joslyn, Richard Lynde and Dave and RhodaTate. We have by no means done an exhaustive search of court actions and believe if we did we would find that there are others.

CBM discharge water is now flowing in drainages that are normally dry and only run water in a flood event or during spring runoff. This has created some isolated flooding problems. The bigger problems created in certain areas along Spotted Horse Creek, Willow Creek and Burger Draw has been the erosion, headcuts, destruction of soils and with it native grasses and trees that line these draws and drainages. There have also been additional problems created in the winter when the ground is frozen and water does not infiltrate as easily, extensive ice floes were created over the winter in Spotted Horse creek that have killed large old cottonwood trees and grasses along the creek bottom.

Mr. George also made the statement that the CBM discharge water does not change with time or volume. This is also a very general statement that is not accurate. We don't know yet what the water quality does over time in terms of quality. However, reports we have seen from coal mine dewatering show that the water does get worse over time. Also, some of the discharge monitoring reports we have begun to review also shows that water quality can get worse over time. Most of the CBM development to date has taken place in the shallower coals, however as the development proceeds to deeper coals and moves west the water quality is much worse.

Many domestic water wells have been impacted by CBM development. In most cases we know about the CBM developer has replaced those impacted water wells, as they should.

As Mr. George stated, those water wells are required to be replaced under a water well mitigation agreement which is only required on the development of BLM minerals. Since this mitigation agreement is not required on the development of state or private lands, there have been many upset landowners in rural subdivisions on individual water wells next to private and state CBM development who are not being provided with the same water well mitigation agreement or baseline testing.

Finally, on Mr. George's testimony regarding his statement that, "this is the cleanest project the oil and gas industry has." Well this may be true, however, I don't think that speaks very well of their other projects. We can find plenty that is not clean about the production end of coalbed methane development. I'll address just the air quality issue. The supposedly clean burning compressor engines, of which there are now over 500 in the Powder River Basin, emit hundreds of tons per year of the hazardous air pollutant, formaldehyde. They also emit significant volumes of Nitrogen oxides NOx and Carbon dioxide (CO). The DEQ has raised several concerns about the emissions from diesel-generated compressors and well pumps. Please see the attached letter related to our concerns over violations of the air quality standards and failure to enforce those standards regarding CBM development.

In closing, I think it is important to reiterate that in the Powder River Basin the federal government owns 57% of the minerals but less than 10% of the surface. With approximately 6,000 currently producing CBM wells and over 50,000 wells projected you can see we are in the infancy of production. There will be a lot more landowners affected as this development progresses. We hope that the development of coalbed methane resources in the future will be orderly, but I can tell you with these kinds of figures and our experience, some changes will need to made in order for the development to be orderly and to address the impacts to landowners and the environment.

While it has been a boon to the state coffers and to mineral owners, this development is transforming our landscape and with it our lives. Dealing with the development has consumed countless hours of time from ranchers and landowners, it has turned our lives upside down. We spend too many days and too much money negotiating with landmen and lawyers, policing the development and trying to protect our land, water and way of life. We ask only what is fair and just: That the industry not be permitted to run roughshod over our property and our lives, as they do in many cases now.

Lastly, I want to call you attention to the attached article written on September 7th, about an oil company operating in Wyoming that recently declared bankruptcy. They held $250,000 in bonds and left the state and federal government holding the bag for over $4 million in closing costs on 120 abandoned oil wells. This is exactly what we are talking about regarding the need for adequate bonding and reclamation requirements. With over 80 companies developing CBM in the Powder River Basin, many of them limited liability companies, the potential for this same situation to occur is very real. And if, and when it does occur, unless we take action now to prevent it, both the landowner and the government are going to be left to clean up a very costly bust. To add insult to injury, some lawyers have informed us that if a company goes bankrupt and walks away from

their responsibilities, the development easement reverts back to the landowner and the landowner can be held liable for these costs. This can apparently be done even if the landowner has no mineral rights and has done nothing to cause the problems. These issues need to be addressed before we face these problems. I urge you to act to address them.

Thank you for your attention.

POWDER RIVER BASIN RESOURCE COUNCIL

23 North Scott • Sheridan, WY 82801 • (307) 672-5809
P.O. Box 1178 • Douglas, WY 82633 • (307) 358-5002

August 25, 2001

Dennis Hemmer, Department Administrator
Dan Olson, Air Quality Division Administrator
Wyoming Department of Environmental Quality
Herschler Building
122 West 25th Street
Cheyenne, Wyoming 82002

Re: CBM air quality enforcement

Gentlemen:

The purpose of this letter is to urge prompt and strict enforcement of Wyoming's Air Quality Standards and Regulations (AQSR) with respect to coal bed methane development (CBM). As you know, CBM has a very direct and significant impact on the State's air quality, primarily due to electric power generators, compressor stations and service roads.

Memos issued from the Air Quality Division to CBM operators on 12/29/00 and 4/25/01 indicate the Division has relaxed its requirements for compliance with NO_x emissions from generators used to power well pumps. The earlier memo acknowledged ongoing violations of Ch. 6, Sec. 2 of the AQSR, by reasons of NO_x emissions in excess of BACT requirements and the existence of unauthorized generators. This memo provided a deadline of 3/1/01 for CBM operators to obtain permits for new generators and apply for permits or waivers for existing generators. We support the position taken by the Division on 12/29/00.

The second memo delayed the application deadline to 6/1/01 while offering an indefinite application shield for recently purchased generators and amnesty for older generators. This memo also made reference to a State policy still in the formative stage. We do not believe the Division's policy, as stated on 12/29/00, is ambiguous. It states that operators must obtain authorization for each generator, and either comply with NO_x limits or submit a BACT analysis. We see no justification for backing away from this position. It is consistent with protecting the air resource, regulating the industry in a manner fair to those who comply with the AQSR, and maintaining Division credibility with industry and the public. Moreover, few would seriously question the CBM industry's ability to afford emissions control technology. High operating profits are evidenced both by corporate income statements and by the explosive growth of CBM in Wyoming. Finally, although these generators are regarded as temporary, there is no guarantee that connection to centralized power will occur.

recycled paper

Regarding the regulation of CBM compressors, we are concerned about enforcement of the NO_x standard of 1 g/hp-hr for units larger than 100 hp. It is our understanding that the Powder River Basin has numerous compressors in violation of that standard. If so, we urge the State to pursue a replacement program with the CBM operators.

We would also urge consideration of new technologies for emissions control on diesel compressors. Microturbine technology is a potential BACT standard for mid-sized compressors. Microturbines would allow the use of produced methane in lieu of diesel, while dramatically reducing NO_x, CO and formaldehyde emissions. Another potential BACT technology that can be applied to larger diesel engines (100 to 2,500 hp) is Selective Catalytic Reduction (SCR), as exemplified by RJM Corporation's ARIS technology. RJM has dozens of units in operation and many more under contract. The ARIS SCR can be retrofitted to existing diesel engines. SCR is purported to surpass all other NO_x control technologies, at 75-90% reduction and a rough cost of $1,000 per ton of NO_x eliminated. This may offer an attractive alternative to replacing CBM compressor engines.

Our final area of concern is fugitive dust from CBM service roads. While the Division may currently lack an enforcement mechanism, we believe the problem is of sufficient magnitude to warrant a rigorous PM-10 emissions inventory. The results could help bring statutory relief to the jurisdictional dilemma. The State might also pursue enforcement authority outside the air quality arena. CBM roads total in the thousands of miles, at least an order of magnitude greater than the State's surface mine haul roads that are subject to very strict dust control measures. CBM roads are typically of primitive quality and carry heavy traffic. The promise of exponential growth in CBM development could signify rising PM-10 background readings in the Powder River Basin, threatening air quality and visibility in general, as well as the growth potential of mining and power generation in particular.

Thank you in advance for your consideration. At your convenience, we would appreciate your response to the three areas of concern listed above.

Sincerely,

Pennie Vance

Pennie Vance
Chair, Powder River Basin Resource Council

cc: Region 8 Office of U.S. Environmental Protection Agency

Well bonds not enough

CST 9-7-01

State, feds holding the bag for 120 abandoned wells

By DUSTIN BLEIZEFFER
Star-Tribune energy reporter

GILLETTE – State and federal resource managers say a bankrupt Gillette oil company has left them with possibly $250,000 in bonds to pay for an estimated $4 million in closing costs on 120 abandoned oil wells in northern Campbell County.

The Wyoming Oil and Gas Conservation Commission took action on Wednesday to collect $125,000 in bonds put up by Emerald Restoration & Production, according to OGCC director Don Likwartz. Those bonds are to cover 56 wells on private lands. The remaining wells are on federal and state lands, and resource managers may recover at least an additional $75,000 in bonds for those.

Bob Hartman, petroleum engineer for the Bureau of Land Management office in Buffalo, said the state and federal agencies are left holding the bag in the case of Emerald's bankruptcy because companies are required to pay only one bond amount regardless of how many wells they drill.

To operate oil and gas wells on federal land in Wyoming – whether it is one well or 500 – a company must pay $25,000, Hartman said. Or companies can pay one $150,000 bond if they operate wells on federal lands in more than one state.

"When do you start asking somebody like Exxon for more (bond) money vs. a mom and pop operation?" Hartman said.

"In this case, it just blew up

Please see OGCC, A16

OGCC: *Firm says it's willing to pay partial bond*

Continued from A1

on us." The bond situation is similar with OGCC. When Emerald bought the field from Rex Monahanas, the commission stuff requested $500,000 in addition to the blanket bond of $25,000, Likwartz said. The commissioners decided to require only an additional $100,000 based on assurances by Emerald that there was enough value on the wells to cover the costs of plugging.

In the meantime, the owners of Emerald sold off most of the equipment on the wells and the OGCC began asking for additional bonding, in the amount of $400,000, according to Likwartz. But Emerald declared bankruptcy and sold its interests to Roland Marquardt. Marquardt couldn't revive the operations, and he didn't show up at bankruptcy hearings, which allowed the dismissal of the bankruptcy and allowed the OGCC to pull the $125,000 in bonds, Likwartz said.

But a Florida firm specializing in secondary oil recovery said the Emerald Restoration case shows that the bonding system must be modified to encourage secondary and tertiary oil recovery. Richard Lueck, CEO of Geotec Thermal Generators Inc., said his company could retool up to 53 of the wells so long as it only pays a portion of the bonding fees.

Lueck said he'd like to see concessions from the government agencies to allow companies to pay a pro-rata amount of the capping fee.

"Once we get a certain level of success and once we get to a higher level we pay the whole capping fee and take it over," he said in a phone interview from his Florida office Thursday.

"But that can all be negotiated and that makes all economic sense," Geotec is currently in those negotiations with the BLM.

The federal bankruptcy that was protecting Emerald was recently dismissed, enabling Geotec to foreclose on eight of the original Emerald wells where Geotec held liens, according to a press release. Lueck said he believes the combined production of the wells, with Geotec's patented technology, should be up to 200 barrels per day.

But the company is not willing to retool more wells if it is required to pay the full bond amount on top of the possible $40,000 per well cost to restart production. Some of the wells have been left idle for 15 years.

Mrs. CUBIN. Thank you very much.

I now recognize Mr. Dennis Hemmer, the State of Wyoming DEQ.

STATEMENT OF DENNIS HEMMER, DIRECTOR, DEPARTMENT OF ENVIRONMENTAL QUALITY, STATE OF WYOMING

Mr. HEMMER. Madam Chairman, my name is Dennis Hemmer, director of the Wyoming Department of Environmental Quality.

For the past years, my state and my agency in particular have been the focus of a great increase in coalbed methane production. This boom is very parallel to the one the Powder River Basin experienced at the beginning of my career with the development of coal.

Then as now there were great controversies about the development. The primary issue related to coalbed methane development is produced water, both quantity and quality.

When describing the water, we must be careful about generalizations, even if it is just within the Powder River Basin. Both quantity and quality vary with area.

The quality of the water being discharged is generally good. It is very typical of the water of the region. And in fact, it is the same water often used for watering stock and drinking.

In article after article, I read about the water being salty. The water is not salty. Some of the water does have an elevated sodium adsorption ratio, or SAR. While sodium is a component of salt, the sodium adsorption ratio is not a measurement of salinity. Rather, it is a ratio of sodium to the calcium and magnesium in the water.

A water can be very low in salinity, which is measured by electrical conductivity or total dissolved solids, and have a high SAR, if the ions in solution are predominantly sodium. Likewise, water can be very high in salinity and be low in SAR, if the ions are predominantly calcium and/or magnesium.

Sodium adsorption ratio is a measure of the suitability of water for irrigation on soils with significant clay content. The effect of adding water with a high ratio of sodium to clays is to displace the ions on the clay lattice with sodium. That sodium has a high affinity for water, causing the clays to swell and limiting infiltration.

While SAR is a very real issue, we must remember it relates only to irrigation. It does not affect the water's capability for other uses, such as drinking and supporting fish. It also does not affect sandy soils. We have addressed high SAR waters in a variety of ways. In some areas, where the SAR are low enough, very little management is needed. In others, discharges must be managed such that they are not used for irrigation. And there is one drainage where the SAR is such that we currently do not allow direct discharges and other means must be found to deal with the water.

Being a headwater state, Wyoming drainages flow into adjacent states. We have recently entered into an agreement with Montana to ensure that the Powder River and Little Powder River maintain a quality acceptable to both states.

Unfortunately, over the past decades, both state and Federal Governments have decreased their water quality monitoring. When we negotiated with Montana, we found we had little current data on water quality at the state line and throughout the basin.

Wyoming has established an extensive water quality-monitoring program in the Powder River. Our ultimate goal is to have sufficient data to allow Montana and Wyoming to apportion the assimilative capacity of the rivers to allow coalbed methane production in both states.

We have contracted with the USGS to perform the monitoring for us. USGS brings a high level of credibility to the area.

While Wyoming is funding this monitoring, an increase in funding to the USGS efforts is needed if we are to intelligently address coalbed methane development. To ensure that coalbed methane is addressed in a cohesive and coordinated fashion, Governor Geringer created the Coalbed Methane Working Group composed of the heads of the agencies dealing with coalbed methane. The group has worked extremely well.

Where there have been problems—and there have been problems—the agencies have coordinated to assure that the issue is addressed.

We have also had great cooperation from industry. They have cooperated and coordinated to a level that I have not seen in my years of dealing with the petroleum industry.

It is very easy to dwell totally on the negative of coalbed methane in my business, because that is what I see. However, there are positive aspects as well. During the past 2 years of drought, coalbed methane discharges have frequently been a welcome source of water for many ranchers. Over the past year, I have gotten far more complaints from ranchers wanting us to hurry up and issue the permit so they can get the water to fill their reservoirs than from landowners upset with the water. The discharges have also allowed ranchers to use new areas that previously didn't have water.

Where the quality allows, the water has been used for irrigation. Produced water is being re-injected into the aquifer as far as the city of Gillette with its drinking water, and there are many new wetlands from the discharges.

While admittedly a little biased, I firmly believe Wyoming has done coalbed methane development right. We have done it a pace that allowed us to address each issue as it has arisen. We have gathered enough information to make informed decisions. At the same time, we have progressed at a pace that has allowed the coalbed methane to become a significant source of clean energy.

I see no reason why coalbed methane production in Wyoming cannot be a sustainable source of energy far into the future. I expect to see coalbed methane development spread to other parts of Wyoming. In those other areas, we will be faced with new challenges. However, I am confident we can address those challenges.

Wyoming will continue to develop coalbed methane. It may not be as fast as industry desires or as restricted as others might like, but we will continue to do it right.

Thank you.

[The prepared statement of Mr. Hemmer follows:]

Statement of Dennis Hemmer, Director, Wyoming Department of Environmental Quality

Madam Chairman, members of the Committee, my name is Dennis Hemmer, Director of the Wyoming Department of Environmental Quality. For the past few

years, my state and my agency in particular have been the focus of a great increase in coalbed methane production. This "boom" is very parallel to the one the Powder River Basin experienced at the beginning of my career with the development of coal. Then as now, there were great controversies about development.

The primary issue related to coalbed methane development is the produced water, both quantity and quality. When describing the water, we must be careful about generalizations. Even within the Powder River Basin, both quantity and quality vary with area.

When people describe the quantity of water being discharged, it sounds huge, however, you must realize that the area over which this water is being discharged is also large. We have monitored the drainages into which this water is being discharged and have found very little actually flowing. Most of the water has infiltrated back into the various formations.

Another quantity concern is the effect on adjacent private wells. The State Engineer has had relatively few complaints regarding impacts on private wells. We believe this is primarily due to the companies" willingness to replace wells, many of which had other problems before the operators came.

The quality of the water being discharged is generally good. It is very typical of the water in the region and is in fact the same water often used for watering stock and drinking. In article after article, I read about the water being salty. The water is not salty. Some of the water does have an elevated Sodium Adsorption Ratio or SAR. While sodium is a component in salt, the Sodium Adsorption Ratio is not a measurement of salinity. Rather, it is a ratio of the Sodium to the Calcium and Magnesium in the water. A water can be very low in salinity, which is measured by Electrical Conductivity or Total Dissolved Solids, and have a high SAR if the ions in solution are predominantly sodium. Likewise, water can be very high in salinity and be low in SAR if the ions are predominantly calcium and/or magnesium.

The Sodium Adsorption Ratio is a measure of the suitability of the water for irrigation on soils with a significant clay content. The effect of adding water with a high ratio of sodium to clays is to displace other ions on the clay lattice with sodium. That sodium has a high affinity for water causing the clays to swell and limiting water infiltration. While SAR is a very real issue, we must remember it relates only to irrigation. It does not affect the waters capability for other uses such as drinking and supporting fish. It also does not affect sandy soils. We have addressed high SAR waters in a variety of ways. In some areas the SARs are low enough, very little management is needed. In others, discharges must be managed such that they are not used for irrigation. There is one drainage where the SAR is such that we currently do not allow direct discharges and other means must be found to deal with the water.

Being a headwaters state, Wyoming's drainages flow into adjacent states. We have recently entered into an agreement with Montana to assure that the Powder River and the Little Powder River maintain a quality acceptable to both states. Unfortunately, over the past decades, both the state and federal governments have decreased their water quality monitoring. When we negotiated with Montana we found we had little current data on water quality both at the state line and throughout the basin. Wyoming has established an extensive water quality monitoring program in the Powder River. Our ultimate goal is to have sufficient data to allow Montana and Wyoming to apportion the assimilative capacity of the rivers to allow coalbed methane production in both states. We have contracted with the U.S. Geologic Survey to perform the monitoring for us. The U.S.G.S. brings a high level of credibility to the data. While Wyoming is funding this monitoring an increase the funding going into U.S.G.S efforts is also needed if we are to intelligently address coalbed methane development.

To ensure that coalbed methane is addressed in a cohesive and coordinated fashion, Governor Geringer created the Coalbed Methane Working Group composed of the heads of the agencies dealing with coalbed methane. The group has worked extremely well. Where there have been problems, and there have been problems, the agencies have coordinated to assure the issue was addressed.

We've also had great cooperation from the industry. They have cooperated and coordinated to a level I have not seen in my years dealing with the petroleum industry.

It's very easy to dwell totally on the negative impacts of coalbed methane discharges, however there are positive aspects as well. During the past two years of drought, coalbed methane discharges have frequently been a welcome source of water for many ranches. Over the past year, I have gotten far more complaints from ranchers wanting the water to fill reservoirs than from landowners upset with the water. The discharges have also allowed ranchers to use new areas that previously didn't have water. Where quality allows, the water has been used for irrigation.

Produced water is being reinjected into the aquifer that supplies the City of Gillette with its drinking water. There are also many new wetlands from the discharges.

While admittedly a little biased, I firmly believe Wyoming has done coalbed methane development right. We have done it at a pace that has allowed us to address each issue as it has arisen. We have gathered enough information to make informed decisions. At the same time, we have progressed at a pace that has allowed coalbed methane to become a significant source of clean energy.

I see no reason coalbed methane production in Wyoming cannot be a sustainable source of energy far into the future. I expect to see coalbed methane development spread to other parts of Wyoming. In these areas we will be faced with new challenges. However, I am confident we can address those challenges. Wyoming will continue to develop coalbed methane, it may not be as fast as industry desires or as restricted as some would like, but we will continue to do it well and do it right.

Mrs. CUBIN. Thank you.

The Chair now recognizes Mr. Merschat.

STATEMENT OF WALTER MERSCHAT, SCIENTIFIC GEOCHEMICAL SERVICES, CASPER, WYOMING

Mr. MERSCHAT. Thank you, Madam Chair, and thank you, Committee.

My name is Walter Merschat. I am with a company called Scientific Geochemical Services, which is my own company. I do exploration and environmental geochemistry.

I understand the oil business. I work in the oil business. I work with the oil companies. But it gets to a point in your life sometimes when you as a scientist see something you think is being developed improperly. And I believe that the coalbed methane operation in particular in the Powder River Basin is not being developed properly.

I have a series of concerns that I will go through, and questions afterward would be great.

First of all, I think that one of my major concerns is water. I just added up, I think, on the Web site, we have produced about 1 billion barrels of coalbed methane water to date.

And, madam, your question, I think it is about 5 percent or 8 percent of the reservoir.

In my opinion, the water is gold in Wyoming. Without water, we have nothing. And drawing down coal aquifers 200, 300, 400 feet and throwing away, disposing of, 1 billion barrels of water so far and how many in the future with 80,000, 90,000 or 100,000 wells over 10 to 20 years I think is a totally inappropriate use of groundwater.

Other aspects of the coalbed methane operation that I don't see eye-to-eye with is coal fires. I think there might be some further discussion about that. But as you dewater the coal, the water level goes down. If the coal is close to the outcrop or near the surface where oxygen can infiltrate or impregnate or move into the porosity of the coal, you can have spontaneous heating or combustion and burn coal.

According to phone calls and reports that I have read, there are new coal fires in the San Juan Basin in the Fruitland Formation, and I fully expect coal fires to be a problem in the peripheral edges of the Powder River Basin.

There have been coal fires in the past. The clinker beds, the 1,600 square miles of clinker beds all over northern Wyoming, are

a result of past burned coal. Now with new fuel, with the dewatering of the coal, I think we are going to have a problem. I believe we are not monitoring that correctly or taking that seriously enough.

Another concern is compaction and subsidence. Around the world, the use of groundwater removes the water as part of the fabric of a sediment or a rock. And if you remove that water, you can have compaction. It is projected that there will be a little bit of compaction or minor compaction in the coal because coal is crystalline in the Powder River Basin. But any kind of compaction, according to some of the engineering reports, could cause problems with construction, the sewer lines, waterlines, and et cetera.

So I think what I am leading up to is that probably my greatest concern is that of methane venting. In my business, I go around the world looking for seeps. I look for methane coming out of the ground, and other gases, because that is part of doing exploration geochemistry.

When Rawhide Subdivision, which was north of Gillette, was evacuated about 10 or 12 or maybe 15 years ago because of dewatering of the coal underneath the subdivision and gases venting to the surface, I worked on that project. And the entire subdivision was declared unsafe, and it was purchased by Amax Coal Company, who was responsible for the dewatering and the causing of the venting of the methane under the subdivision.

I attended a meeting several years ago, 4 years ago, in Gillette, when I said as coalbed methane operations proceed and the dewatering of the coal underneath Gillette continues, you are going to have seeps. You are going to have a problem in Gillette.

I was chastised for it and received quite a series of hate mail for my position. But nevertheless, I continue to say that methane venting is going to occur and it is a very serious problem we are going to face in Gillette.

Well, finally, and more recently, a company by the name of CE&MT has produced a document, an engineering company saying that, yes, methane venting in Gillette is possible and probable and could be a problem.

My big fear is that it is going to be more than a problem. I am a geologist. I understand methane. I understand a lot of the hydrodynamics of it. I was up at a ranch south of Gillette where a fellow by the name of Orrin Edwards took me to the Belle Fourche River, and the river has two spots in it where the methane is coming up and boiling. I mean, I have seen seeps around the world and there is nothing comparable to this.

That type of methane underneath a building will blow up and kill people if ignited. That I could only see because it was in the river and you could see the bubbling coming up through the river. How many of those vents are around the countryside, where methane is coming to the surface, that you can't see because it is colorless, odorless, and tasteless?I think there is going to be tremendous problem in Gillette. I think part of the problem can be solved, but I do not believe that industry, the government, state and Federal level, have properly addressed the potential hazards of seepage, especially in Gillette and, probably, in Buffalo and Sheridan and any other area on the fringing edges of the development.

Thank you very much.

[The prepared statement of Mr. Merschat follows:]

Statement of Walter R. Merschat, Scientific Geochemical Services, Casper, Wyoming

Dear Honorable Subcommittee Members:

Thank you for the opportunity to present my testimony at this hearing entitled, "The Orderly Development of Coalbed Methane Resources from Public Lands." I am a professional geologist with over 25 years of experience working for major oil companies as well as conducting my own geologic/geochemical consulting business in Casper, Wyoming. During those years I have worked throughout the United States (with an emphasis in the West) as well as many foreign countries. I am familiar with the vast distribution and ownership of federal lands in the western United States and especially in Wyoming. Coalbed Methane Development (CBM) is not only new to Wyoming, but it is a rather new extractive technology to industry. Companies are "learning as they go" and are often times surprised with the outcomes. Impacts to federal land are of great concern and are addressed in numerous Environmental Impact Statements (EIS). The vast amount of federal land intermingled with state and fee lands in the CBM areas of Wyoming somewhat bind all impact findings together. This is especially true when it comes to the subsurface. The continuous nature of the underground coal beds and the methodology used to extract the coalbed methane transcends surface or mineral ownership. Recently, the Bureau of Land Management (BLM) obtained approval to drill CBM wells on federal lands since CBM wells on neighboring state and/or fee properties were draining methane and revenue from federal lands.

CBM operations have been ongoing in the San Juan Basin of New Mexico and Colorado for over a decade. I had the opportunity to work in a portion of that basin where adverse impacts were surfacing due to the CBM operations. The geologic conditions in the San Juan Basin are different from those in Wyoming; however, the methane extractive techniques are similar. Simply put, by removing the water from the coal, reservoir pressure is lowered and the methane gas that is within the coal is liberated and produced. Similar adverse impacts resulting from CBM operations in the San Juan Basin are happening in Wyoming. Federal, state and fee lands are affected. In my opinion, due to the different geologic conditions in Wyoming, the impacts will be more severe.

Water

The phrase "water is gold" use to mean something in Wyoming and the West. Without water, you had nothing. "First in right, first in might" settled many water allocation disputes. Today, Wyoming water is being wasted at rates never thought possible in the past. Hundreds upon hundreds of millions of gallons of water are being sacrificed for methane profit. Untold numbers of wells have gone dry as both sand and coal aquifers are drained. Groundwater experts inform us not to worry because 30% of the water will return to the aquifers. That number has two problems. First, it implies the remaining 70% will be lost, a totally unacceptable waste of water. Second, upon discussions with the experts regarding the 30% that will return to the aquifers, we find out it will take from 50 to 150 years to recharge the aquifers. The problem is that the dewatering is and will continue to cause aquifer degradation that can impede or cease water infiltration thus permanently damaging the reservoirs. Water may not be able to get back into the aquifers. Even if we accept the formula that recharge will occur, the 50 to 150 years for recharge is an unacceptable time frame to impose on any land (federal, state, or fee) and it's inhabitants.

Storing the water in artificial ponds or reservoirs is a short-term fix with long-term problems. This type of temporary water storage appears environmentally sound by creating wildlife habitat, fishponds, recreation areas, and other surface storage uses. For the short term, this may be an acceptable use of water. But, what happens when the methane play is over? Water production will decline, ponds and reservoirs will dry up, and the green areas will turn brown. Creating and then destroying environs in this callous fashion is an unacceptable impact to the land.

Additional consequences related to the temporary storage of water on the surface have developed recently near Gillette, Wyoming. Produced CBM water both stored in ponds and discharged into drainage systems has seeped into near surface sediments and filled them to capacity. Certain shallow sediments cannot transmit the discharged CBM water fast enough to depth so surface swamping results.

We are experiencing severe droughts throughout the West. In a recent article in a Wyoming newspaper, a district conservationist at the federal Natural Resources

Conservation Service discussed the serious nature of the current drought and that not only were stock dams down in water levels, but many ranchers had to deepen their wells from 40 to 60 feet or deeper. CBM dewatering wells are nearby. Even though the ranch wells are in strata above the coal, recent information indicates that shallow sand aquifers are in communication with the coal. Dewatering (drying-up) of shallow sand aquifers and stock ponds is in part due to the vertical continuity of the water column. Continued dewatering and depletion of shallow aquifers degrades the value and usefulness of surface lands.

Coalbed Fires

In addition to wasting groundwater by massively dewatering aquifers, the lowering of groundwater in the coal exposes the coal to oxygen and coal fires are possible. Lightning strikes, grass fires, or spontaneous combustion can ignite coal seams. The areas most likely to be a target for coal fires would be along the edges of the basin where coal is close to the surface and oxygen can enter the coal when the water is removed. One (possibly more) coal fire is burning north of Sheridan, Wyoming near Decker, Montana. This old fire could expand as dewatering lowers the groundwater level thus exposing more coal (fuel) to oxygen. If new fires start or old fires expand, the loss of coal resources as well as surface damages could be extensive.

Methane Seepage/Venting

Methane seepage/venting is the most disastrous problem facing communities or individuals living over CBM operations especially along the edges of the Powder River Basin. Several years ago I attended a meeting in Gillette, Wyoming where concerned citizens, industry, local and state officials, and others discussed the upcoming CBM operations and how they might impact Gillette. I was asked to attend the meeting as a speaker and discuss my concerns regarding consequences of CBM operations. I showed slides and answered questions related to my earlier work pertaining to the dewatering of the aquifers and methane venting in and around Rawhide Village (north of Gillette) and how upcoming CBM dewatering might impact Gillette. The relationship was clear; dewatering coupled with structural and stratigraphic geologic conditions caused methane to vent to the surface and collect in explosive levels in homes. Rawhide Village was evacuated. The groundwater drawdown maps presented in the U.S. Department of the Interior's May, 1999 "Wyodak Coal Bed Methane Project Draft Environmental Impact Statement" indicate water levels will be lowered by several hundred feet in and around (beneath) the Gillette area. Gillette is located in a precarious position.

I expressed my concern at that meeting and later in letters and interviews to state, federal and industry representatives of the potential for methane seepage in Gillette. Responses ranged from denial; "it can't happen here, the geology is different", to name calling; "you ——— environmentalist" to threats. In a June 2001 report by Consolidated Engineers & Materials Testing, Inc. (CE&MT) titled "Subsurface Investigation of the City of Gillette Planning District Area, Gillette, Wyoming", CE&MT reported that the combination of dewatering coupled with structural and stratigraphic geologic conditions have created methane migration pathways within Gillette. CE&MT recommended "the City of Gillette continue on its proactive approach to potential impacts from coal bed methane production". Several recommendations (which I believe fall short) were proposed to monitor the potential seepage problems. I applaud the City of Gillette if they continue on this course, but I fear it's too little too late.

On July 17, 2001, I visited a site southeast of Gillette where extremely voluminous amounts of methane were erupting through the Belle Fourche River. Given its geologic and geographic setting (surrounded by CBM operations), it's a good bet that this is a methane seepage/venting area. By all accounts, this was an extremely large seep and probably not one of the historic seeps noticed in the Powder River Basin. A long time rancher of the area that accompanied me does not remember ever seeing the seep before. The seep was checked again on August 24, 2001; it continues to erupt through the river. This seep is simply too big to go un-noticed. The seep was evident because the bubbles were visible as the gas passed through the water interface. Additional seepage in the area probably exists, but without the aid of the water to see and hear the bubbling, the venting goes undetected. The large amounts of venting gas surely indicate hydrologic conditions are altered. The strongest venting in the Belle Fourche River was in two spots each covering an area about five feet across. Numerous other small seeps are evident on the river and near shore. How many of these seeps dot the landscape? Where are they? The volume of gas venting in the Belle Fourche River would fill a building to explosive levels in minutes. As dewatering continues, more methane will vent and increase in it's aerial

extent. People and homes in Gillette as well as other areas where dewatering and geology make for a dangerous combination are in jeopardy. The City of Gillette, the Wyoming Department of Environmental Quality, Federal Agencies, and Industry should study the venting problem more seriously. It's only going to get worse.

Compaction/Subsidence

Water is part of the fabric of a rock or reservoir that helps preserve the rocks integrity, i.e., holds the rock open. By removing water from the rock, the pore spaces are without water and the rock can collapse. Transmitting this loss of rock volume to the surface results in compaction or subsidence. The removal of enormous quantities of water from shallow aquifers in other parts of the world (Mexico City, California, Saudi Arabia, and many others) has caused the land surface to drop (subside) as much as 40 feet. Utility lines (gas, water, sewage, and electric) have ruptured, buildings have been toppled, and roads have been damaged. The compaction/subsidence resulting from the CBM dewatering operations is anticipated to be minimal. This is due to the expectations that the coal is crystalline (rigid) and confined (dewatering will only affect the water in the coal). We now know the coal is not confined and that the overlying shallow sediments (sand and shale) are in hydrologic communication with the coal. Dewatering of these non-crystalline rocks will result in more compaction/subsidence than estimated. The surface impacts from this future compaction/subsidence are unknown. Also, the compaction/subsidence impacts reduce porosity and permeability (ability of a material to transmit fluids) thus further aggravating the water recharge rate.

Conclusions

The widespread nature of public lands in Wyoming and the West and the apparent wealth of income from CBM operations has made the orderly development of coalbed methane resources from public, state, and fee lands a difficult if not impossible task.

The Scottish geologist, James Hutton, whose Theory of the Earth, published in 1785, maintained that the present is the key to the past and that, given sufficient time, processes now at work could account for all the geologic features of the Globe. In other terms, what is happening now in geologic time reflects what happened in the past, and visa-versa. The present mode of CBM operations is that of "full speed ahead" without adequate concern to what consequences this brings. In my opinion the race for CBM income has not given ample time or consideration to the lessons we have already learned and the penalties we have been and will continue to pay for this uncontrolled development.

Again, thank you for the opportunity to discuss my concerns,

[Supplemental testimony submitted for the record by Mr. Merschat follows:]

WRITTEN SUPPLEMENT TO TESTIMONY

Of
Walter R. Merschat
Scientific Geochemical Services
PO Box 356
Casper, WY 82602

Dear Honorable Subcommittee Members:

Thank you for the opportunity to present these written comments to supplement my testimony at the September 6, 2001hearing entitled, "The Orderly Development of Coalbed Methane Resources from Public Lands." I continue to stand by my written and oral testimony as presented at that hearing. I would, however; like to clear up a misunderstanding that was apparent during the oral testimony.

The Honorable Barbara Cubin, Chairman of the Subcommittee on Energy & Mineral Resources was misled or misinterpreted the possible amount of compaction/subsidence related to dewatering of the coal for Coalbed Methane (CBM) production. My written testimony stated; "The surface impacts from this future compaction/subsidence are unknown" (page 4). I discussed other areas of the world where compaction/subsidence has occurred as examples of this phenomenon, but made it perfectly clear that the impacts from CBM dewatering are unknown.

I also stated that I felt the development of CBM operations was far from orderly. I stand by that statement. As reported in the Casper Star Tribune on September 6, 2001, a methane leak from a water well ignited and caused about $45,000.00 damage to a trailer near Gillette, Wyoming. The residents were away and unharmed. The lowering of the water level in the aquifers for CBM production will release methane that will find it's way to the surface. Old wells that were gassy will become more gassy, while wells without gas problems will soon have them. Public awareness (Hazard Study) of potential dangers associated with CBM development is paramount. Orderly development of any resource requires risk assessment prior to development.

Thank you,

Walter R. Merschat

Mrs. CUBIN. Thank you.

The Chair now recognizes Gene George.

STATEMENT OF GENE GEORGE, CHAIRMAN, COALBED METHANE COMMITTEE, PETROLEUM ASSOCIATION OF WYOMING

Mr. GEORGE. Thank you, Madam Chairman, members of the Committee.

My name is Gene George. I am a Wyoming professional geologist. My license number is 8, thanks to Mrs. Cubin's help when she was in the Legislature.

I also have a bachelor's of science degree from the University of Kansas, master's degree from Oregon State University. I am a former Wyoming oil and gas conservation commissioner. I am currently a board member of the Petroleum Association of Wyoming, and the current Coalbed Methane Committee chairman of that association. I am also the Chairman of the Wyoming Department of Environmental Quality Water and Waste Advisory board. And I have been an independent geologist in the oil and gas business since 1971.

I am here today to represent the Petroleum Association of Wyoming, who represents the majority of the operators that are operating in coalbed methane in the Powder River Basin, and that goes all the way from major oil companies to the smallest independents.

I am also here today to try to dispel some of the myths that you have heard and you have just heard.

First of all, the water is great. The water is good for livestock. It is good for wildlife. The majority of it is drinking water quality. In fact, as Mr. Hemmer mentioned, Gillette is currently using some of the water for their drinking water, restoring their reservoirs, and they plan to go for a larger development.

One of the questions you have asked today in your title is, is the development orderly? And I come here to tell that it is very orderly and is strictly regulated. The Bureau of Land Management has done seven environmental assessments, two environmental impact statements, and is currently doing an impact statement on Sheridan, Johnson, Campbell, and the north half of Converse counties. That is over 8 million acres.

There is only 2 percent of that entire area that is expected to be disturbed by coalbed methane development. The Wyoming Oil and Gas Commission has gone from 40-acre spacing to 80-acre spacing as an orderly method of regulating the activity in coalbed methane.

We currently are required to get permits from the Wyoming Oil and Gas Conservation Commission, the Wyoming Department of Environmental Quality, both the Water Quality Division and the Air Quality Division, the State Engineers Office, the Corps of Engineers, the State Land Board. And we are bonded by the agency that has jurisdiction over the particular minerals on which we drill.

There are some other myths going around about, "We need more study." Again, I mentioned all of the EAs and EISs.

The Wyoming Water Development Commission also has several projects. The Conservation District have several projects. The University of Wyoming has several studies. The State Engineer is in-

volved in a study. The Wyoming Geological Survey is currently putting together a water quality list in conjunction with the USGS and other Federal agencies. And even the EPA is currently conducting a study on best management practices.

We talked about flooding. The only flooding that anyone is aware of is occasionally in meadows. One was described today. There are four of those, according to the Oil and Gas Conservation Commission. Two of them have been resolved by changing the channel to allow the water to easily pass through. The other two are still in negotiation, and the Oil and Gas Commission has those wells shut in while that negotiation is going on.

The next thing I would like to address would be subsidence, underground fires, and methane leaks. You don't have to trust me; we have a working model that has been going on for 25 years. The coal mines extract a majority of the water out of the coal out in front of them. There are no underground fires in that area, there is no subsidence in that area, and there are no methane leaks that anyone has detected out in front of those coalmines.

Not only that, the Wyoming Geological Survey has published an article, saying spontaneous combustion does not occur under the conditions in which coalbed methane is produced. And they also have a study out that is on their Web page that says the maximum subsidence would be one-half of an inch and would probably not be translated to the surface. There are currently pipelines, roads, houses, and other facilities out in front of the coalmines, and they have not been affected to date.

As far as the Belle Fourche goes, the Oil and Gas Conservation Commission has investigated the one flow that they can find in the Belle Fourche, and there are no coalbed methane wells working in that area. The three wells that were drilled have been plugged and abandoned.

So, as final things I would like to talk about, it is great water, it is clean gas—we are talking up to 2 billion cubic feet a day coming out of that area. And the estimate that the State has come up with is 25 trillion cubic feet of ultimate reserves, providing clean power and lower energy bills to the people of the United States.

The environment is fully being protected by our best management practices and by strict regulations.

Thank you for the opportunity to testify. I would be more than happy to answer questions.

[The prepared statement of Mr. George follows:]

Statement of Gene R. George, WPG8, Petroleum Association of Wyoming

INTRODUCTION

Madam Chairman Cubin and distinguished members of the Subcommittee on Energy and Mineral Resources of the Committee on Resources of the House of Representatives, my name is Gene R. George. I am here on behalf of the Petroleum Association of Wyoming (PAW). I am a Wyoming Professional Geologist, license number Wyoming No. 8. I have a Bachelors Degree in Geology from the University of Kansas and a Masters Degree in Geology from Oregon State University. I have been an independent in the oil and gas industry since 1971. I am a past President of the Wyoming Geological Association and a former two-term Commissioner for the Wyoming Oil and Gas Conservation Commission. I serve as the current Chairman of the Wyoming Department of Environmental Quality Water and Waste Advisory Board. I am a board member of the Petroleum Association of Wyoming and am the Chairman of the PAW Coalbed Methane Committee. PAW represents coalbed methane producers who account for the vast majority of drilling and producing activity

now occurring in Wyoming and particularly in the Powder River Basin of Wyoming. These producers range in size from major oil companies to small independent producers.

ORDERLY DEVELOPMENT OF COALBED METHANE RESOURCES FROM PUBLIC LANDS

The subject at hand is the orderly development of coalbed methane (CBM) resources from public lands. First, nearly 82% of the CBM activity in the Powder River Basin of northeast Wyoming has occurred on private and Wyoming State minerals. This is due in great part to the National Environmental Policy Act (NEPA) and Federal Land Policy and Management Act (FLPMA) constraints on issuing permits on federal minerals. The Buffalo Field Resource Management Plan's Reasonably Foreseeable Development does not account for the extent of the CBM activity and surface disturbances. Although the actual short-term disturbance for CBM will be two (2) percent of the surface area analyzed, it was deemed necessary to analyze the entire CBM area of Johnson, Sheridan, Campbell and the north half of Converse Counties in a new Powder River Basin Oil and Gas Environmental Impact Statement. The Wyoming Oil and Gas Conservation Commission (WOGCC) has changed well densities from 40-acre spacing (16 per square mile) to 80-acre spacing (8 per square mile) to assure the prevention of waste of natural resources and to protect correlative rights. This density reduction further reduces surface disturbance.

Since 1986, there have been a total of 11,658 CBM wells drilled. Two thousand fifty four (2,054) CBM wells were drilled on federal minerals. Of the 5,890 wells analyzed by the Wyodak EIS only about 1,000 wells were drilled on federal minerals. The rest of the wells were drilled on private and state minerals while waiting on the Wyodak EIS process. The same situation currently exists in that many wells are being drilled (eleven per day) on private and Wyoming State minerals while the Powder River Basin Oil and Gas EIS is being completed. The Record of Decision for that document should be completed by July of 2002. BLM is permitting CBM wells at the rate of 1,250 wells per year while the Wyoming Oil and Gas Conservation Commission is approving permits at the rate of over 700 per month or 9,000 per year. The BLM completed the Wyodak Drainage Coal Bed Methane Environmental Assessment in March of 2001. This allows for 2,500 wells to be drilled in the Wyodak EIS area to protect federal minerals from drainage from wells on private and state minerals. To date, the BLM has approved 900 new federal drainage protection wells. The BLM is staffing up in the Buffalo Field Office and hopes to be able to approve and monitor 3,000 well permits per year.

Between the NEPA and FLPMA requirements and the slow process for approving drilling permits on federal lands, the activity on federal lands is being tightly controlled and is extremely orderly. The problem is that the Federal Government and the people of the United States of America are losing the battle to capture their fair share of the methane. It is suggested that the rapid pace of activity in the CBM play will slow down as the play approaches the central portion of the Powder River Basin where federal minerals dominate. As operators run out of private and state minerals to develop, the federal minerals will become the focus of activity.

The second major pace-controlling factor is in securing NPDES permits from the Wyoming Department of Environmental Quality (WDEQ). Although the water is of very high quality, the antidegradation requirements and the sodium issues to protect agricultural uses dominate. The severe restrictions being faced for discharge permits particularly on the Powder, Little Powder and Tongue Rivers and their tributaries have caused operators to reduce the drilling pace and cut back on expenditures. Most of the water produced from the coal in the aforementioned drainages will be held onlease in total containment ponds. The recent agreement between Montana and Wyoming for the Powder and Little Powder Rivers will ease some of the restrictions. The WDEQ is attempting to expedite the process by the use of General Permits for these structures. It has been taking 4 to 6 months or more to obtain permits in these areas. It is estimated that over 1,000 currently drilled wells are waiting on NPDES permits. These wells could represent over 250 million cubic feet of gas per day in production.

Coalbed methane activity in the rest of Wyoming is limited currently to a few pilot projects and is occurring primarily on private and Wyoming State minerals. There are two Environmental Assessments and one Environmental Impact Statement involving federal lands for CBM pilot projects in south central Wyoming that are being conducted by the BLM. CBM success is still a question and the water quality issues are even greater outside of the Powder River Basin of Wyoming.

The members of the Petroleum Association of Wyoming believe that development is orderly and even overly restricted by regulation and the slow pace of the NEPA

requirements. In order to drill a coalbed methane well, the following items are required:

1. Wyoming Oil and Gas Conservation Commission Application for Permit to Drill
2. Wyoming State Engineer's Office Water Well Appropriation Permit
3. Wyoming Department of Environmental Quality NPDES Discharge Permit
4. Wyoming State Engineer's Office Reservoir Appropriation Permit
5. On federal Lands a BLM Application for Permit to Drill
6. On federal Lands a Water Management Plan
7. Wells on state minerals must meet an eight-point water management plan
8. On federal lands a water well agreement with every water well owner within one-half mile
9. Notification for some pipelines to the U.S. Corps of Engineer's 98–08 General Permit
10. All wells require bonds for surface restoration either by the BLM, the WOGCC or State Land Board
11. Wyoming Department of Environmental Quality Air Quality Permit for compressor engines

To further show that the development is orderly, a number of false perceptions concerning the CBM play of Wyoming need to be exposed to the bright light of scientific analysis. The following discussion concerns these perceptions.

COALBED METHANE PERCEPTIONS

Activity "Out of Control"

The current coalbed methane activity particularly in the Powder River Basin of northeast Wyoming is often portrayed as "out of control". The primary reason for this perception is that the wells are shallow (500 to 2,000 feet) and are drilled by small truck-mounted rigs and are drilled in 2 to 5 days. Conventional drilling for a single well usually occurs from weeks to months. Therefore, the number of coalbed methane wells drilled and hooked up for production and the surface owners affected by those wells appears to occur at random and covers a lot of area quickly. It is true that a lot of wells can be quickly drilled, but it is not random, and it is not "out of control".

Orderly development is exactly what is happening today. All wells are drilled on lands for which an oil and gas lease has been secured from the holder of the mineral estate. The operator must negotiate or competitively bid for the right to drill for coalbed methane. Then the operator must negotiate with the surface owner (if different from the mineral owner) on paying for surface disturbances and for gaining access. Wyoming case law has long established that the surface owner is entitled to actual surface damage payment. Because the mineral estate dominates over the surface estate, if an agreement cannot be reached, the mineral lease owner can gain access by putting up a bond in the amount of the estimated surface damage costs and proceed. The final agreement will be set by court action. No one can go on someone's surface without permission or an agreement unless court action has taken place. To date, court action has never had to be taken by an operator.

Next, the operator must get a permit for all wells from the Wyoming Oil and Gas Conservation Commission. If the lease is on federal minerals, the operator must also get a permit from the Bureau of Land Management. The BLM permit also requires a water management plan and an agreement with any water well owner within one-half mile of the well even if they are off the operator's lease. The BLM also does a site specific Environmental Assessment for each group of 32 wells. A permit from the Wyoming State Engineer's Office is also necessary before drilling starts. Wells drilled on Wyoming State Minerals must meet an eight-point water management plan. The State Engineer also approves all reservoirs or other appropriations of the water. Then a permit to discharge any water must be obtained from the Wyoming Department of Environmental Quality/Water Quality Division through the National Pollutant Discharge Elimination System (NPDES) process.

Until all of these permits are approved and are in hand and until the lease is secured and the surface access is obtained, the operator cannot move a single spade of dirt nor discharge a single drop of water. This process may take a few months, or even in some cases, a year. This is hardly a case of uncontrolled activity!

The Powder River Basin is Being Flooded with Water

There are no creeks, rivers, or streams that are or ever have been in flood stage due to CBM discharges. Four instances of minor short-term, site-specific flooding occurred when the surface owner and operators of upstream discharges failed to clean out the tree debris dams or to bypass the man-made silted-in hay meadows or spreader dikes. Two cases have been resolved and the other two are being negotiated. In these negotiated cases, the wells have remained shut in. In most places,

the water is kept on location by reservoirs and dams. What water is directly discharged to the Belle Fourche and Cheyenne Rivers adds little to the natural flows due to percolation and transpiration of plants. Some ice damming in the winter has occurred where shallow gradients in the creek are insufficient to allow the water to move through the area. These areas have been put in pipe or channelized. The water management plans by the BLM and the Watershed Plans for Dead Horse, Spotted Horse and Wild Horse Creeks all show that the creek channels have the capacity to handle all CBM discharges without flooding. Virtually all of the receiving creeks are normally dry most of the year. The only streams that flow most of the year under normal conditions are the five major rivers and four small creek tributaries. Currently, the second year of drought conditions exist in northeast Wyoming. Ranchers are asking the WDEQ to issue permits to the operators to gain water for livestock. The gauging station on the Belle Fourche River shows no increase over the last several years where CBM development has been intense. The area is certainly not awash with water!

Water production from CBM wells occurs at predictable rates. The initial rate for an average well is very high and may range between 5 and 100 gallons per minute. The average well also declines by at least 50% in the first year and will decline by another 50% in the second year. The rates continue to decline until they stabilize at a very low rate as gas depletion is achieved. Estimates in the Wyodak EIS were that an average well would produce 12 gallons per minute. The statistical average as of May, 2001 with 5,771 wells producing is 7.3 gallons per minute. It is not reasonable to apply a flat rate of water production to the total number of wells to be drilled. All estimates of water production must take into account the rapid decline in water production rates as a well ages through its short five to ten-year average life. The BLM EIS models will predict the total discharges from wells relative to the sequence of drilling, production and abandonment and for specific drainages. Flooding of drainages will not occur. The current practice of retaining the water on lease by total containment will further ease any concerns about excess water. In fact, the City of Gillette, Wyoming recently announced that flooding was greatly reduced in the City by CBM reservoirs during a major thunderstorm event.

As of May 2001, 5,771 wells were producing over 50 million gallons of water per day. Even with this large number, the individual wells are so spread over the area that no flooding is occurring. In fact, the water is not leaving the State of Wyoming and in many cases up to 90% of the water is lost through percolation, evaporation and transpiration by plants.

Need for More Study

Since 1990, the Bureau of Land Management has written seven environmental assessments (EAs), two environmental impact statements (Gillette South and Wyodak) and is in the process of completing a new Powder River Basin Oil and Gas Environmental Impact Statement due out in July of 2002 that covers the entire CBM play in the Wyoming portion of the Powder River Basin. Montana is also conducting an EIS for the entire Powder River Basin in Montana. The BLM requires a site specific Water Management Plan for each 32-well Plan of Development (POD) that it approves on federal minerals. Watershed studies have been completed by the CBM operators for Dead Horse Creek, Spotted Horse Creek and Wild Horse Creek. The operators and the Wyoming Department of Environmental Quality (WDEQ) have prepared studies on Barium, Conveyance Losses, Main Stem Flow Quality. The University of Wyoming is completing studies on CBM water toxicity on plants, Plant/Soil/Water interactions and erosion in Burger Draw. The Wyoming Water Development Commission (WWDC) is planning Powder–Tongue Rivers Basin Watersheds, Northeast Wyoming Basin Watershed, and Tongue River Watershed Management plans. The WWDC is also funding a Digital Elevations Model study, a Channel Fluvial Morphology Study and a GIS erosion model. The Wyoming Geological Survey is conducting a State/Federal water quality project involving numerous State agencies, the BLM and the U.S. Geological Survey to be funded by the WWDC. The WDEQ requires analysis of all downstream irrigation areas for each NPDES permit. Montana and Wyoming have reached an agreement requiring monitoring for the Powder and Little Powder Rivers based on a baseline analysis. The Conservation Districts are doing Watershed studies on Dead Horse, Wild Horse and Spotted Horse Creeks. The Wyoming Geological Survey has published articles on underground fire potential, subsidence and has a great information pamphlet for public use. Many studies and plans are on-going. It is currently impossible to know all of the studies that are being conducted at any one time. Even the EPA is conducting a CBM Best Management Practice study.

More Monitoring is Needed

Currently, the operators are required to monitor each NPDES discharge point and submit complete water analyses monthly to quarterly. WDEQ also requires point of compliance monitoring which sometimes is daily. The BLM is requiring operators to drill and equip monitoring wells with federal mineral development. The BLM has more than 40 monitor wells in operation. The Wyodak EIS mandates up to 280 monitor wells be drilled at operator cost and equipped by operators for BLM use. The Wyoming State Engineer's office has monitoring wells spaced throughout the CBM area. The Wyoming State Engineer's office also requires separate water volume reports. The Wyoming Oil and Gas Conservation Commission (WOGCC) requires that total gas and water production be reported on a monthly basis. The WOGCC has monthly hearings on spacing and compliance issues. What else is there to monitor? The water quality does not change with time or volume.

Withdrawing Water from the Coals Will Cause Subsidence

First, the BLM EIS states that only about three to five percent of the total groundwater resource will actually be withdrawn. The coals are not totally dewatered. The Wyoming Geological Survey published a document on their web site (wsgweb.uwyo.edu/oilandgas/subsidence.html) entitled Subsidence potential related to water withdrawal in the Powder River Basin. This article concludes that up to ° inch of subsidence may occur but it may not be transmitted to the surface. To date, no surface subsidence has been associated with other equally significant water withdrawals in the Gillette area. This means that even at the coal mines, where the coal is nearly dewatered before mining, there has been no subsidence recognized at the surface.

Withdrawing Water from the Coals Will Cause Underground Fires

The coal mines near Gillette have been active for over twenty years and even though they nearly dewater the coals, there have been no underground fires. The Wyoming Geological Survey has published Coal Report CR 01–1 March 2001. The title is Pryophoricity (spontaneous combustion) of Powder River Basin coals - considerations for coalbed methane development. This paper concludes that "During the production phase of CBM activity, conditions necessary to foster spontaneous combustion of coal are not present. After the coal seam is depleted of economic methane resources, wells must be plugged and sealed. Unlike abandoned mines, CBM wells leave no underground voids susceptible to further subsidence and associated spontaneous coal ignition." Finally, oxygen is required for combustion. All pipelines have oxygen sensors that will shut in wells if any oxygen is recorded. Without oxygen fire cannot exist.

As Pressure in the Coals is Drawn Down, Methane Leaks Will Occur at the Surface

As nature erodes the surface and brings the coals near the surface, methane has been known to escape. Rawhide village was just such a case. The erosion breached the overlying confining shale layer and allowed the gas to escape. When homes were placed in the ground where the overlying shale had been breached, gas did escape into those homes. The gas seeps in this area were historic and known to predate the homes. Currently, the coal mines, which nearly dewater the coal in front of the highwall, have some methane pass out of the coal mine face to the atmosphere but until the overburden is stripped, no methane escapes out in the area in front of the mining pit. When coalbed methane wells are drilled and completed (cased), they maintain the overlying sealing layers which confine the water, the formation pressure and the methane in the coal. As water is pumped from the coal bed, a cone of depression is created around the well. All water and gas flows from high pressure to low pressure. Therefore, because the confining layer is maintained, and because the gas flows to the lower pressure wellbore, methane does not escape to the outcrop and does not migrate to the surface.

The City of Gillette, Wyoming contracted a subsurface investigation by CE&MT, Inc. This study found no actual faulted well in the area of study but concluded that because of changes in dip that faulting was inferred. It states that "These "faults" are interpretive only". The study then suggests that these inferred faults may be paths of water and gas migration as CBM wells are drilled and produced in the vicinity of Gillette. The Ayers article cited in the American Association of Petroleum Geologists Bulletin, Volume 70 deals with wells in which coals are not present by faulting in well logs and where faulting is seen on the surface many miles north of Gillette. No such evidence of faults exists in the Gillette area.

Methane seeps in the Belle Fourche River have been cited as evidence that CBM causes gas to escape to the surface. The Wyoming Oil and Gas Conservation Commission investigated one report of seepage in the Belle Fourche River which is about

3 miles from the Cordeo Rojo coal mine. The WOGCC field inspector reports that gas has been seen seeping from this area for many years according to oil field pumpers in the area with RIM. There are no coalbed methane wells anywhere close to the seep. The seep is very low volume and the surface disturbance of the water is easily masked by a slight wind or breeze.

Domestic Water Wells are Being Ruined by CBM Production.

The BLM monitoring wells show that there is little connection between sands above and below the coal beds. The BLM and the Wyoming State Engineer's Office monitor wells suggest that water wells in zones other than the coal will show little affect from CBM production. The BLM requires that an agreement be made with owners of all water wells permitted with the Wyoming State Engineer's Office within one-half mile of the CBM well. Operators generally provide the same agreement when drilling on fee and State lands. These agreements are voluntary. To date, the Wyoming State Engineer's office has no reports of wells being damaged by CBM production that have not been taken care of by responsible operators.

A photograph has been shown of a water well in front of a house on an old farm on land owned by P&M Coal Company near Sheridan, Wyoming with gas and water blowing out of the well. This is an old livestock water well drilled in 1982. The water in the coal from which the well was producing had been drawn down by both the nearby coal mining just across the border in Montana and by CBM wells operated by Redstone Gas Partners. Redstone voluntarily plugged the well and checked the house for safety. Once the well was plugged, the house was declared safe. The person to whom P&M rented was not evicted.

COALBED METHANE FACTS

The members of the Petroleum Association of Wyoming would prefer that the title of this play be: "GREAT WATER, CLEAN NATURAL GAS AND A SAFE ENVIRONMENT".

Great Water

The water produced by CBM is near drinking water quality, is generally higher in quality than the shallow groundwater and even the surface water and is beneficial to livestock, wildlife and to most agricultural operations. Attached are photographs of water discharged to the Belle Fourche River and to reservoirs for livestock and wildlife use. The primary water quality issue is Sodium. While the Sodium content meets drinking water standards, the lack of Magnesium and Calcium in the CBM water to offset the Sodium may negatively affect the irrigation of crops. There is no harm to creek bottoms, to livestock or the wildlife. Most of the water is being retained on the surface for agricultural use. Some CBM water has already been injected into the City of Gillette's sandstone aquifers to recharge those zones. Gillette is considering a large-scale CBM water injection project.

Clean Natural Gas (Methane)

In May, 2001, 5,771 wells produced over 653 million cubic feet per day of coalbed methane (natural gas). It is projected that the maximum production will reach 2 billion cubic feet of natural gas per day. The ultimate reserves are expected to be 25 trillion cubic feet of natural gas. The revenues to the Federal and State Governments will be in the billions of dollars for twenty or more years. The demand for natural gas is driven by the Clean Air Act requirements. Wyoming will greatly aid in increasing the supply of natural gas to help maintain a reasonable price for home heating and electrical supply to the consumer.

Safe Environment

There are no oil liquids with this gas and no natural H2S with the methane. The wells do not emit any volatile organic compounds to the atmosphere and the compressor engines are lean-burn natural gas fired. This is the cleanest project that the oil and gas industry has. The disturbance of the entire three and one-half county area will only be 2% of the total area on a short-term basis and about 1% on a long-term basis. An average well only disturbs about one-half an acre. The water is of high quality and discharges must meet protection for wildlife, agriculture, drinking water and groundwater uses.

CONCLUSION

The members of the Petroleum Association of Wyoming represent the majority of the CBM activity in Wyoming. The development of CBM on federal lands is controlled, regulated and orderly. The water is of good quality and is beneficial to the surface user and to wildlife. The product is clean-burning natural gas which is beneficial to America's air quality and our citizens" health. The methane supply is imme-

diately needed to supply electrical generation demand and to lower home heating costs. Our environment is fully protected by operator best management practice and by strict regulation. Thank you for this opportunity to make the truths of Coalbed Methane known.

Mrs. CUBIN. Thank you, Mr. George.

I now recognize Mr. Terry Dobkins.

STATEMENT OF TERRY DOBKINS, VICE PRESIDENT OF PRODUCTION, PENNACO ENERGY

Mr. DOBKINS. Thank you, Madame Chairman. I appreciate being here today.

As you said, my name is Terry Dobkins. I am vice president of production for Pennaco Energy. Pennaco was a company formed to develop the coalbed methane in the Powder River Basin.

Last February, we were bought by Marathon Oil Company. We are now a wholly owned subsidiary of Marathon Oil. We have been the most active driller in the basin over the last 2 and a half years. We have drilled over 1,400 wells that we operate.

Our focus has been to do this in an environmentally and socially responsible manner. We feel like we have done that.

I have been involved with this project from the very beginning, from the first well that Pennaco has drilled.

I have a degree in chemical engineering. I have worked in the oil and gas business for 25 years, most of it in the State of Wyoming.

Mr. George has already talked about the importance of the resource. You are already aware of the 25 TCF and how important that is to us, that it is a clean fuel, so I will skip to what I see as the primary issues there.

And first is that we in the industry recognize that Wyoming is a beautiful place to live and beautiful environment. We appreciate it, we respect it, we take care of it just as anyone else would want to. We are not there to damage it, so we are doing the best job that we know how to find a balance between the country's need for energy and the need to do this correctly.

And I say that for Pennaco, but I think I can speak for the rest of industry, that we recognize the need for this important balance.

We respect the right of the surface owners. We work with them continually to find solutions.

So the issues that need to be covered out here are groundwater, the impact on the groundwater, what to do with the surface water, and the issue of surface impact and the surface owners themselves.

Studies have been done of the impact of coalbed methane development on the groundwater. And I reference in my written testimony the most recent study published shows that 1.75 percent of the coal seam water will be impacted in Montana out of all the water in the coal seam. That ignores completely the water in the rest of the aquifer in the sands. So that is, we will only touch 1.75 percent of the coalbed methane water.

In the studies in the EIS done last year, those numbers were under 10 percent of the total aquifer will be impacted. The new report coming out will give more detail. We will know what that is.

We do expect to impact water in the zones where the coal is and where the coalbed methane is. We will impact that, so if the ranchers and the city and residents have their water wells in that zone, we will impact it. But all of us as operators have voluntarily agreed to enter into agreements with surface owners to remedy that problem.

We monitor their wells, and we have contractually agreed to take care of any problem that they have run into on their water wells. The state engineer's office continues to report that there are no legitimate outstanding claims that have not been settled by operators in regard to water wells.

We are taking care of those issues.

Surface impacts. Again, this water is fresh. If it were not freshwater, we would not be discharging it. Sodium contents are low. Saltwater is 30,000 parts per million. We are down somewhere around 500 to 1,500 parts per million.

This is drinking water. In many cases, it is good for irrigation. We have done irrigation projects on Harry and Ruth Wolff's place, Leonard and Myrna Swanson, Chuck Rourke. So we do irrigation.

We have spent millions and millions of dollars as an industry studying water quality, soils, topography, what the best use of the water is, the impact on the surface, where does the water go, what is the water balance. All of this information is available.

And we put this water on the surface. We take it out of the subsurface, out of the groundwater, put it back on the surface. The studies are showing that upwards of 90 percent of that water reinfiltrates the surface before it ever reaches a stream or a river. This water is going back into the subsurface and is recharging. This is not being wasted.

There is much less water being produced than we thought there would be. These numbers start out at an average of say 12 gallons a minute per well. By the second year, it is about half that. By the third year, about half again. So when you start talking about how much water is being produced, remember that a high number is a temporary issue. It stops quickly.

It is critical to all of us to have good surface owner relationships. In a split estate, that is no different. All of us recognize the importance of having a good relationship. We pay as much in fees on a per acre generally as much or more as that land is appraised for as its value every single year. So in essence, we are buying that land at its appraised value every year that we are out there.

Where we run into a problem is that if a surface owner wants no change period, it is hard to deal with. We cannot do this business without creating a change. What we hope to do is make it a positive change.

The rules and regulations are in place. We need to develop practical policies to enforce those rules and live with them, and we need to add the staff and resources to the regulators to increase their effectiveness and efficiency to get the job done.

This operation is working. The rules are working. Industry is working with landowners. And it is the best I have seen in 25 years of oil and gas experience.

[The prepared statement of Mr. Dobkins follows:]

Statement of Terrell A. Dobkins, Vice President–Production, Pennaco Energy, Inc (wholly owned by Marathon Oil Company)

Executive Summary

Pennaco Energy is a wholly owned subsidiary of Marathon Oil Company, and is one of the three most active drillers in the Powder River Basin Coal Bed Methane Project. Over the last three years, Pennaco has drilled over 1400 coal bed methane wells in the project area, with over one thousand wells on production at this time. Pennaco's sole focus has been the development of coal bed methane in the Powder River Basin. I have worked in the Oil and Gas Industry for over twenty five years as an engineer, most of that time spent in the Rocky Mountain region. I have been closely involved with Pennaco in that development from the drilling of the first well and I am quite familiar with virtually all aspects of the technical, environmental, regulatory and political aspects of the activity throughout the Powder River Basin. Pennaco has been a leader in developing and using environmentally responsible methods of dealing with the impacts of coal bed methane development in the Basin. Therefore, I feel qualified to address these issues before this subcommittee.

The Coal Bed Methane resource development currently underway in the Powder River Basin of Wyoming is one of the most important sources of natural gas available to the United States today. The estimated 25 TCF of gas reserves in the basin make it comparable to the remaining natural gas reserves in the Texas offshore Gulf of Mexico. Although current gas production from the Powder River Basin is a healthy 220 BCF per year, the potential exists for the production to increase to 1 TCF per year. This production increase would accelerate the recovery of the reserves to about 30 or 40 years, recognizing that rates tend to decline over time. This resource is located in the center of the country and the gas is connected to pipelines capable of transporting it to both east and west coasts. The gas is poised to not only be a reliable and secure resource, but will also play a key role in the clean energy needs for the U.S. over the next 30 years.

Development of coal bed methane in the Powder River Basin has accelerated over the last three years due to a combination of factors, including enhanced technologies, new gas pipelines and favorable natural gas prices. As a part of this development, producing companies have spent millions of dollars on environmental studies and surface improvements. All of this work was done to monitor the impacts, using that information to minimize the damage and to maximize the benefits. We are using the information gained during the drilling and production of the first 10,000 wells in the basin to improve operations in the remaining development over the next 30 years. This development is being done in a responsible and environmentally sensitive manner.

The rules and regulations needed to protect the environment and to provide for orderly development of this vast natural resource are already in place and being implemented. The next step is to give the state and federal regulatory agencies the funding and directives to set forth and enforce reasonable policies to comply with existing rules and regulations. Support for states' departments of environmental quality and the federal BLM offices must be increased to handle the tremendous technical and personnel demands being placed on them. We must not stifle billions of dollars of development by inadequately funding the regulatory agencies responsible for controlling this critical natural resource. Specific examples include: 1) the current EIS documents being prepared in both Wyoming and Montana must be both timely and usable; 2) the BLM staffs must be increased in the Powder River Basin field offices to handle the huge demands being placed on them; and 3) procedures for processing permits to drill must be streamlined and made more efficient to reduce duplication of efforts for both the BLM and the operators.

Especially at a time when the President is developing a national energy strategy, it is critical that the industry and its governing agencies work together to ensure that this important natural resource be developed to help meet the needs of the Nation, while at the same time addressing the concerns of the local landowners.

Over the last three years, considerable attention has been given to issues surrounding the development of reserves in the Powder River Basin. Some of the criticism that has been voiced has been justified, while a great deal of it has no basis of truth. However, for those who are not intimately involved in the process, it is difficult to discern the difference. Thus, a continuing educational effort has been underway for the last two years to allow interested parties to make decisions based on sound and factual information. This document is an attempt to summarize the issues and comment on how those issues are being addressed. It is important to understand that this development, like any other, is a learning process. As better ways of doing things are identified, those improvements are incorporated into everyday practice.

Primary Issues

There are three primary issues surrounding coal bed methane development in the Powder River Basin. These issues are:

1. Impact on the Ground Water Resources
2. Impact on the Surface Resources, including water, soil, vegetation and animals
3. Surface Owner Rights and Compensation

Impact on the Ground Water Resources

Three studies on the impact of coal bed methane development on ground water resources are either complete or underway. The most recently published study is the "Water Resources Technical Report" for the Montana Statewide Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans, prepared for the BLM, Miles City Field Office. The report was prepared by ALL Consulting (Tulsa, OK) and CH2M HILL (Boise, Idaho). The report states on pages 40 and 41 and exhibit 27 and 28, that "these figures add up to an estimated 249.73 billion cu. ft. of ground water for the projected CBM area of the PRB. This total does not include the volume of all the coal seams in the PRB, instead only those coals in the CBM potential development area. This total does not include waters held in non-coal aquifers. The total water production for all CBM wells in all the watersheds is 4.4 billion cu. ft. per year or approximately 1.75% of the water in the coal seams of the Montana PRB Watersheds."

The calculations of water volumes in those studies indicate that, even though this is an arid climate, there are vast amounts of water in the subsurface. The numbers that have been reported show the production of water from coal seams for methane production will impact a very small percentage of the water in the aquifer. Even though the volumes of water withdrawn in coal bed methane development are significant, the huge amount of water left after the methane has been extracted appears to be very adequate for all current and foreseeable future uses of the ground water. Additionally, the water extracted with methane production and subsequently discharged will gradually be replaced over time by infiltration of the discharged water; rain and snow melt back into the subsurface. This will provide continuing water resources for future generations. The water discharged to the surface is not wasted.

A very thorough study, to be completed as part of the Wyoming Powder River Basin Environmental Impact Statement, should be ready for review by Spring 2002. The study will provide the operators an opportunity to review the important conclusions of the scientists involved. In the meantime, industry and governmental agencies will continue to monitor and document development impacts on the aquifers.

Another important issue related to ground water is the impact of coal bed methane development on water wells used by residents of Wyoming. Many of the water wells in the basin, both stock water and domestic water, are completed in the same coal zones being developed for methane production. It has been common for many years for people to report that they could light their household water. This was long before anyone knew what coal bed methane was and was certainly long before any development of that methane had begun. Now that the methane is being produced from coal zones, the impact on water wells completed in that same zone can be substantial. As a part of doing business, every coal bed methane producer in the basin has agreed to voluntarily negotiate a contract with the surface owner on the mineral lease that will define the terms of replacing any impacted water wells. The replacement of water supplies, either through a new well or other mutually acceptable means, has become common practice. To date, the State Engineer's office in Wyoming continues to state that no cases exist in its office of a legitimate complaint that a producer has not remedied an impacted water supply. This issue is important to all parties involved and has been handled by cooperative efforts between landowners and producers.

Surface Impacts on Water, Soil, Vegetation and Animals

There are two components to be discussed when it comes to surface waters. One is water quality and the other is water quantity. Both need to be discussed.

The quality of water produced from coals varies dramatically across the Powder River Basin; however, in almost all cases it can be considered fresh water that meets federal drinking water standards. The issue is not whether the water is suitable for drinking. The issue is whether it can be used for the irrigation of pastureland and crops.

The key issue of water quality has now been reduced primarily to the quantity of various salts in the water. All of the surface water, including coal bed water, contains some amount of salts. The most critical salts for irrigation decisions are sodium, magnesium and calcium. In this case, it is not the quantity of salt so much

as it is the relative combination of the salts to each other. This leads to a discussion of a term now common to the Powder River Basin known as SAR, or sodium adsorption ratio.

The SAR is important because is it is an indicator of whether the water will be compatible with certain soils and plants. Technically, the SAR is the ratio of the sodium ion concentration to the square root of the sum of the magnesium and calcium ions. In simple terms, if the sodium ions concentration is much higher than the magnesium and calcium ion concentrations, the SAR is high. If all the ions are present in similar amounts, the SAR is low. If the SAR of the water and the soil is low, say 10 or below, there should be no problems in most types of soils. As the SAR get higher, more care must be taken to match soils, water, plants and irrigation methods. The SAR and water quality vary considerably from one part of the basin to another. The attached map, Exhibit 1, shows the Powder River Basin with its various river drainages and the variations in SAR values from one end to the other. The operators and landowners must understand this variation and apply the knowledge to the specific sites being developed.

Operators have done many soil studies for landowners in an effort to match water and soils for irrigation. In general, irrigation is not effective on soils high in clay. The best soils are loamy and sandy loam. This type of soil tends to be away from the creek bottoms and into the hilly terrain. Soils in Wyoming and Montana tend to be high in natural salts also and this must be taken into account. The higher the salt content of the soil and the water, the more difficult it is to irrigate. In those cases, special methods must be used. Operators are keenly aware of these issues and work cooperatively with the landowners to find the best use for the water in the given terrain and soil type. It is important to remember that many ranchers in Wyoming are not used to having much water and have never irrigated and do not intend to start now. We often hear that "my father and my grandfather never irrigated and I am not about to start now. I am a rancher, not a farmer". Thus, we must fit the solutions to the desires of the landowner in addition to what works for the water, soil, terrain and vegetation.

A second issue is the quantity of the water produced from coal bed development. The water quality and quantity must be considered together in any decisions made regarding how to handle water on the surface. Industry has spent well over a million dollars studying the impacts of coal bed produced water on streams and rivers. The primary purpose has been to assure that water discharges do not negatively impact agriculture downstream. We have addressed all aspects of water quality, including constituents such as iron, manganese, barium, arsenic and salts. A large part of these studies deal with quantity of water in addition to quality. As a result, we believe we have a good understanding of the water and its impact on the surface. We have used this information, as well as knowledge gained from landowners and hydrologists, to customize the methods of handling water to fit the specific situations.

Experience in the basin has shown very clearly that the quantities of water produced vary considerably from area to area and from one coal zone to another. The quantities of water also change dramatically over time. For instance, an average coal bed methane well will produce 12 gallons of water per minute over the first year. The second year the volume will drop in half and then drop to half again in the third year. We are seeing a number of cases in which the water flow drops to near zero, yet the well still produces gas. These water volumes are often lower than what was anticipated prior to drilling, so impacts caused from discharges turn out to be less than expected. This is both good and bad. The change from normal has been less than expected, but the landowners who wanted to water livestock and irrigate have not been able to do as much as they had hoped.

Nearly all of the operators have gone to great lengths to work with the landowners to use the water on the surface for agricultural purposes. Operators have cooperated with landowners to build stock tanks, reservoirs, water distribution lines, power lines and roads to help in the management of their livestock. Those ranchers who have used the water on the surface have increased crop yields, stock carrying capacity and livestock production as a result of the additional water. Those wells and facilities can be used by the ranchers long after the methane production has ceased. Discharge points for the water are designed to prevent erosion and deposition of any residue on the stream banks. Examples are shown in the photos in Exhibit 2. Often, enough reservoirs are built to keep all produced water on the lease where the water is produced. Stock tanks and water lines have been installed to carry water up to the highland areas away from the stream bottoms. This allows cattle to move up into better grass and lets the stream banks re-vegetate with grass and brush. This in turn increases the habitat for wildlife. Ranchers have been able to increase their income by selling additional permits for hunting on their property.

When the landowner desires, the reservoirs have been built to allow for the stocking of trout. The operators have cooperated with the landowner to establish the food chain and then stock the trout.

There are several examples of creative ways that have been used to put the water to use. As one example, Pennaco worked closely with the City of Gillette to develop pipelines and pumping stations so the coal bed methane produced water could be chlorinated and then injected into the partially depleted aquifer used by the city for its domestic water supply. Although this is not a method that can be used in other areas, it was a very effective way to put the water to good use and has been operational for one and a half years. A second case is a cooperative effort between the Wyoming Highway Department, Natural Resource Conservation Service, Pennaco and the landowner. The parties worked together to plant hundreds of trees along Highway 59, south of Gillette, to form a natural show fence. Pennaco piped coal bed methane water to the site for a constant water supply. Exhibit 3 is a photo of that project. Other projects have included sprinkling, center pivot irrigation and several other methods of applying coal bed methane water onto the grasslands and cultivated crops to increase the agricultural yield for the ranchers. All this is done with soil testing and monitoring to assure long term benefits.

The other side of the coin is when a landowner does not want any change at all in his surface. Even though that is certainly his right, it makes a difficult situation for the operators. Coal bed methane cannot be developed without some change in the surface. Therefore, if a landowner is unwilling to help in the planning, the operator must make those decisions alone. This is the least desirable situation for an operator. We go to great lengths to avoid an antagonistic relationship with our landowner and constantly seek ways to cooperate.

Surface Owner Relationships

It is very important for operators to have good relationships with surface owners, whether the owner has mineral rights or not. A commonly heard statement is that the surface owner is completely "out of luck" if he does not have the mineral rights, leaving him susceptible to being run over by the operator. This is far from the truth.

The mineral estate has precedence to the surface estate, but this does not mean the surface owner is without rights. Operators realize that we can either get along with the surface owner and get things done the easy way, or we can fight constantly and spend more time and money than it would have taken to cooperate in the first place. Subsequently, the operators go to great lengths to get surface owner agreements in place before any activity takes place on the surface. This agreement defines in detail what the responsibilities of the operator are and what the expectations of the landowner are. The agreement also defines what fees will be paid to the landowner in return for the use of the surface. These agreements are very common and are the rule, not the exception. For instance, Pennaco has operations with over two hundred landowners. At this time, there is only one landowner that we have been unable to reach agreement with. As a result, we have held up drilling and production for over a year in an attempt to reach an agreement. In this particular case, the owner does not need money and wants nothing to do with us. So, he continually requests fees several times greater than those that his neighbors have received. Additionally, he asked for conditions that, if implemented, would make drilling and production uneconomic. We are still working with the courts to secure the ability to move forward with development. Fortunately, the vast majority of landowners and operators are able to reach agreement and go forward in a cooperative manner. This is good for both parties.

A number of landowners have asked for overriding royalties in the production rather than accept annual fees for access to their land. The general concept that if the landowner gets a share of the profits, he will be more cooperative, seems logical on the surface. However, this concept continues to be disputed by the producers. The reasons for not giving royalties in lieu of surface damage fees vary from operator to operator; but a few reasons are common. First, coal bed methane is inherently a risky business and may or may not be an economic venture. As the industry moves into deeper and more remote areas, it may take two or more years of pumping water from wells to get the first gas sales from a project area. Even though landowners may believe they will be much better off with a royalty, the reality could be quite the opposite. The activity on the surface could go on for some time with no revenue generated from gas production and sales. This leaves the operator in an awkward position of having a landowner receiving little or no compensation for the disturbance on his land. Additionally, coal bed methane tends to be produced in largest amounts in the second year after gas sales begin, and then the rates drop dramatically. Again the landowner is left in later years with little or no compensation. Finally, a royalty is a mineral assignment and can be separated from the title

of the land. If the surface owner sells the royalty or the surface separately, the operator is again in a situation in which the surface owner gets no compensation for the disturbance. This is not perceived as a good way to do business in the long run with surface owners.

Another issue is whether surface owners who do not have mineral rights are being adequately compensated for the presence of methane operators. Operators believe that surface owners are being compensated at a higher level than in any other oil and gas basin in the country. The agreements over the last three or four years allow for an initial payment and an annual payment that is quite substantial in relation to the value of the land. In addition, operators have been paying for new roads, power lines, water wells, stock tanks, reservoirs, trees, fish, soil testing and water well monitoring. These are expenses the operator bears that the surface owner could not afford nor justify in this arid land. Additionally, the operators agree to reclaim any of the surface and facilities after production is uneconomic. Consequently, the owner has the choice of taking over the improvements or having the land reclaimed to its original condition. This includes the wells themselves, so the owner can assume ownership and responsibility for any of the wells he wants as water wells, all with power supplied. Once the gas operation is finished, the landowner can also use the gathering pipelines for water storage and distribution on his ranch. For additional insight, read the attached news article from the August 23, 2001, Miles City Star, Exhibit 4.

As an example of the magnitude of fees paid to surface owners, I will give details of a specific case that is representative of Pennaco's payments in general. I am not revealing the name of the ranch or individual owners, but the numbers are those actually paid or are estimated to be paid. On this ranch in the Powder River Basin, Pennaco is actively drilling a total of 70 wells with one well per 80 acres. On average, each well site will disturb 4.0 acres initially and 1.9 acres in the long term. This includes the well site, access roads and pipelines. If power lines are not installed in the same trench as the pipeline, additional payments and disturbances should be considered. We have paid out approximately $70,000 of well damage payments to date and expect to pay out a total of $110,000 this year in initial damage payments. This amounts to an average of $390 paid per acre of actual surface disturbed. On an annual basis, Pennaco expects to pay approximately $80,000 per year for an estimated $615 per acre actually disturbed. The annual payments per acre are higher than the initial payments because the acreage disturbed drops as pipelines and well sites are reclaimed, but fees are still paid. As a reference point, the average value of the land, if valued as an entire ranch, should be in the $200 to $400 per acre range. The value of the land varies somewhat, depending on the proximity to Gillette or other population centers. However, the bottom line is that landowners are generally receiving more per acre disturbed every year than the appraised per acre value of their land.

Again, there is another side of the story. The people of the West tend to be very independent and private. Some of them have lived out in the country away from people due to the solitude and wide open spaces. Coal bed methane development is definitely an infringement on that privacy. It is difficult for an operator to put a price tag on that loss of privacy, so it can create a tough situation for both parties. There are also issues of erosion control, dust, low water crossings for cattle, ice in winter, fences left open and similar ranch operational problems to be addressed. This is a situation in which it is best for the two sides to spend time together to understand each other's position and try to find common ground. This can be time consuming and frustrating, but can usually be resolved.

Overall, the industry is working in good faith with landowners to cooperatively develop water and coal bed resources while compensating them for the inconvenience and loss of agricultural and hunting income. If the landowner desires to use the water, due to increases in crop yield and livestock carrying capacity, there should be an increase in income for the rancher rather than a loss. The bottom line is that there is not a single way of dealing with water that fits all situations. In every project, the operator must design the water handling plan to fit the water quality, water quantity, soils, terrain, vegetation and wishes of the landowner. The first choice is to use the water on the surface to benefit the landowner for his agricultural and domestic uses. If and when there is a case in which it is not appropriate to discharge the water on the surface, other solutions are explored, such as shallow injection. The industry and landowners must be able to use the full range of tools available to reach the best solutions.

Secondary Issues

There are a number of smaller issues that arise from time to time that are being dealt with continually. I will touch each of those briefly.

(1) "Bad Operators". In every industry there are operators or companies that cut costs or take short cuts. The coal bed methane industry is no different. Occasionally, there are one or two operators that cause problems for the rest of us. To minimize that, the operators formed a trade organization called the "Methane Operator's Group" or MOG. The purpose of the MOG is to educate and communicate with all the operators in the basin to improve methods and procedures. Subcommittees are operating at this time to address safety, environmental, community relations and best practices issues. As new issues arise, new subcommittees will be assigned to address them.

(2) Safety. Safety has become a concern in the Gillette area due to the number of accidents that have occurred over the last three years. On a per man hour basis, the safety record is average compared to other industries and areas. However, one injury is too much. As a result, a safety committee was formed through MOG that is establishing standards for operators and contractors. Educational programs are underway in cooperation with the local fire department.

(3) Potential Hazards. Some individuals and groups have expressed concern over the potential for three types of coal bed methane hazards: 1) gas migration to the surface, 2) subsidence and 3) underground fires.

The issue of gas migration was addressed by two studies done near the town of Gillette. The first study was funded by Pennaco, the second by the City of Gillette. The conclusions were similar: 1) gas migration through faults or old wells could occur, 2) monitoring should be done and 3) the solution is to produce the coal bed methane gas from under the city to prevent any future migration problems.

The issue of subsidence was addressed in a report done by the Wyoming State Geological Survey as published in December, 2000. The conclusion was that "minor aquifer compression up to ° inch may occur in the coal beds being developed in the Gillette area. That entire compression, however, may not be transmitted to the surface. To date, no surface subsidence has been associated with other equally significant water withdrawals in the Gillette area." This one half inch potential subsidence is much less than the actual shift in surface soils documented in the Gillette area due to rain and snow fall.

The issue of underground coal fires was addressed in report prepared by the Wyoming State Geological Survey, published in April 2001. The report stated "during the production and post-production phases of a coal bed methane well, conditions necessary to foster spontaneous combustion of coal are not present—The likelihood of completely dewatering a coal bed and exposing large areas of fine coal particles to oxygen seems extremely remote". These two WGS reports are included as Exhibit 5.

Summary

It is our belief that the appropriate rules and regulations are in place to control and monitor the activity of the Powder River Basin Coal Bed Methane Development. The operators and pipeline companies are working responsibly with the regulatory agencies and the landowners to develop the assets in an environmentally sound manner. The stories and reports of "environmental sacrifices" are exaggerated or often simply untrue.

The obstacles left to work through are related to establishing practical policies to enforce the rules and then adequately staff and fund the State and Federal agencies to implement them. Especially at a time when the President is developing a national energy strategy, it is critical that the industry and its governing agencies work together to ensure that this critical natural resource be developed to help meet the energy needs of the United States, while at the same time, addressing the concerns and needs of local landowners. Only by working together can we reach the full potential coalbed methane development has for the State of Wyoming, its citizens and for the people of this nation.

[Exhibits referred to in Mr. Dobkins' statement have been retained in the Committee's official files.]

Mrs. CUBIN. Thank you very much.

I will start questioning with Mr. Swartz.

You say that the current laws and regulations do not provide protections for surface owners or for the environment. But you did not elaborate whether it is Federal, state, or even county ordinance or what particular laws there are, because I know that the BLM will only approve a CBM permit on Federal-leased minerals when

all the requirements are met. And that includes environmental studies, water discharge permits, a water management plan, a water well agreement with every water well owner within a half a mile of the well, bonding and so on.

So could you elaborate for me, or give me specific regulations that you are referring to, that don't provide protections to the landowners or the environment?

Mr. SWARTZ. On the water discharge permits, I was never given a chance to protest those. When they were issued on private—this is private minerals and private surface up above me. But there is so much Federal that is going to be permitted. If just a little bit of private minerals can damage my creek like that, when they start dumping big quantities of water, if they insist on issuing these discharge permits from the Water Quality Division of the DEQ, I am going to be absolutely inundated with water. And as soon as it gets out of that creek and onto my meadows, all of my alfalfa hay is dead, and I don't have a viable economic unit anymore. I cannot make that ranch work if I have to go out and buy hay. And that ranch is paid for.

But anyway, the DEQ issued these water discharge permits without ever consulting downstream landowners, downstream water rights owners. They just granted them willy-nilly to start with. Nothing was done to see that somebody downstream wasn't hurt.

And they have taken the position that until I can prove damage on my meadows, I don't have a gripe.

Mrs. CUBIN. You said in your written statement that, "As a matter of justice and fairness, no oil and gas development should occur until the surface owner has given his or her written consent."

Mr. SWARTZ. Yes. We did that in the Strip Mine Act, when we worked on the Strip Mine Act in 1977. The surface owner consent was required before they could come in on that. And it wouldn't be a bad idea to have it again, because the split estate problems lead to some real anger.

Mrs. CUBIN. Yes, that is absolutely true. I can see how the mineral estate holder would say the same thing, that maybe no development should take place on the surface until the mineral rights were produced as well. So it is kind of a Catch-22 when you get into a situation like that.

Mr. Hemmer, I have worked with you for 16 years or 18 years and have admired your work. And I am familiar with your commitment to your job and to the State of Wyoming. I know that you listened to Mr. Swartz, to his testimony.

Did you get a copy of his testimony so that you could look at the pictures?

Mr. HEMMER. I did not, no.

Mrs. CUBIN. I would like him to get a copy of that. And also ask you for any of your comments in rebuttal, I assume, to what Mr. Swartz had to say.

Mr. HEMMER. Mr. Swartz and I don't necessarily disagree on the facts. We kind of disagree on where it comes out.

I actually have seen these pictures before. We have investigated Mr. Swartz's area. There are discharges coming down there. We

have looked at the salt that he shows in the pictures here. Actually, there was a sample taken to the state geologic survey lab.

Mrs. CUBIN. Mr. Merschat, you stated that subsidence, while unknown due to the dewatering of coal, will be more than the half an inch estimated by the Wyoming Geological Survey. My question is, how much more and how do you justify your conclusion, especially when there is no recognized subsidence, even over the coal mines where the coal is almost completely dewatered before the produce it.

Mr. MERSCHAT. Madam Chair, I have studied subsidence by reading about it a lot in the literature. And I know that groundwater when removed causes the soils to compact. And I believe I mentioned in my testimony that Mexico City and other parts of the world, San Joaquin Basin in California, the surface has gone down as much as 40 feet.

That is a significant amount of compaction. And I know that—

Mrs. CUBIN. Is that due just to the water removal?

Mr. MERSCHAT. Yes, ma'am.

Mrs. CUBIN. Or due to the coal removal as well?

Mr. MERSCHAT. No, that is just from the removal of water from an aquifer.

Mrs. CUBIN. Okay.

Mr. MERSCHAT. And the aquifer is different. It is not the rigid coal. It is not the crystalline coal.

But the removal of water from an aquifer or any reservoir rock will cause compaction. And as I said, Mexico City, there are many articles about the surface going down 40 feet. The San Joaquin Valley of California, 25, 30, 40 feet lower, simply because they have watered so much, irrigation water for vegetables, et cetera. Saudi Arabia, across Europe.

And the point of all that is, is in the past, whenever I talked about the compaction and dewatering and subsidence, the argument was that the coal was confined and that since the coal was confined, only the water would be taken out of the coal and it had no effect on the surface. Well, now we know that the coal is not totally confined, that there are shallower sands and shields that will be dewatered because they are in communication with the coal.

Well, I will give a little bit on the argument that coal is crystalline and it won't compact that much. That is fine, and it depends on what model you want to use, you can predict how many inches you want the model to show.

But if we start dewatering the sands and shales, which are the stratographic units above the coal, compaction that can occur is more serious than in the coal itself. So I base the fact that compaction, we don't know enough about it, we don't know where it is going to occur, but we do know that it has occurred in the past. And the past is telling us what may happen in the future. So we have models. I think we are just not recognizing it.

Mrs. CUBIN. A half an inch to 40 feet, though; how could the Wyoming Geological Survey be so far off? I mean, that is not even—

Mr. MERSCHAT. In my opinion, it depends on what you want the answer to be. If you change a few of the parameters—the coal, the permeability, the crystalline structure of the coal. I have seen mod-

els of recharge, of the water going back into the coal that we have been talking about, anywhere between 20 and 100 and 30 or 140, 150 years to take the water to go back into the coal. I have heard 30 percent of the water goes back; I have heard 90 percent goes back. I have heard we are going to have 80,000 wells; I have heard we are going to have 136,000 wells. I heard 14 trillion cubic feet, and I heard 25 trillion cubic feet.

The answer is simple. A lot of times you can come up with answer with whatever numbers you want to put into the formula to have that answer to come up.

Mrs. CUBIN. So basically it is lack of information that you are afraid of, right? I mean, you are citing all of the different situations that you have heard about, but we really need a scientific model instead of just things that we have heard about.

A half an inch to 40 feet difference is pretty astounding, 960 times different. That is just pretty astounding. That is hard for me to see how there could be that much difference.

You concluded in your testimony, "The orderly development of coalbed methane resources is difficult if not impossible task."

Mr. MERSCHAT. Yes, ma'am.

Mrs. CUBIN. Tell me what your recommendations are.

Mr. MERSCHAT. Pardon me?

Mrs. CUBIN. What your recommendations are: stop producing, don't—

Mr. MERSCHAT. As far as the entire industry or in a particular area, I think—am I restricted to 5 minutes?

Mrs. CUBIN. Well, answer the best you can.

Mr. MERSCHAT. Let's just talk about—I think what we should do right away, immediately, is stop pumping the water out from underneath Gillette. I think that that is a major mistake occurring. I think we ought to have monitor wells around the City of Gillette and make sure that we maintain a hydrostatic level in the coal underneath Gillette to prevent any seepage or any possibility of explosion or evacuation of any buildings because of methane buildup.

I get into conversations, I go to meetings, and some of the friends that I have left—I have lost most of them in the Casper community because of my position on coalbed methane—but I believe that we should develop in a pattern where we shouldn't let the dollar bill drive the development. We should have an orderly development, which I think would be taking the coalbed methane out of certain areas. And with that water, putting that water back in the coal instead of dumping the water.

I know it is impossible because nobody wants to go first, nobody wants to try it, but an orderly development of the minerals, where you would develop one area and take the water and put it into another area that was already developed and sort of hopscotch would, I think, save a lot of water.

Mrs. CUBIN. Mr. George, your testimony was pretty clear that there are actually very few problems out there. In reality, there are very few problems in terms of landowners and working out the situation. Would you comment on the concerns that have been raised by Mr. Swartz and Mr. Merschat?

Mr. GEORGE. Yes. I have not been out to examine Mr. Swartz personally, his land and whatnot. I have read the same analysis

that Mr. Hemmer put forward on the white material, that it was not salt as in sodium chloride, and that it was salt that would be difficult to get from coalbed methane water.

I am involved in some permitting that is occurring upstream of Mr. Swartz, and the SAR values of that water are about 8, which is generally low enough to not be a problem, and that the permits that we are trying to issue at the moment, that are issued through DEQ, are total containment, so that the water is totally contained.

And it is contained off-channel, so that it does not catch the rainwater that Mr. Swartz is worried about with his water rights. He does have senior water rights. And that means, if we were to hold that rain water or storm runoff water upstream, he could make a call on that through the State Engineers Office.

And all of our permits, all of the wells and all of the reservoirs are permitted with the state engineer's office, who has jurisdiction over those calls.

And so there isn't an attempt to take Mr. Swartz's water or do anything else. We are trying to do it through legal and proper permitting.

As far as some of the other issues, a comment about the City of Gillette: There is an engineering report, and I have it with me. I have examined it.

They examined all of the water wells and all of the coal wells around the City of Gillette and underneath the City of Gillette. They did not find a single fault in any of the wells.

What they did is they statistically analyzed the dip or the change in the slope of the coalbeds within that, and they made an assumption that once the rate of slope passed a certain percentage, that that must be due to a fault.

The article that they refer to in that study, in the American Association of Petroleum Geologists, is a study that was done some considerable distance north of Gillette, about 25 miles, in which there is faulting on the surface and in which faulting has been seen in wells that penetrate the coal.

And so we are going from, again, assuming that there might be something there. And so until we know there is something there, it is difficult to know how to go about analyzing that or how to prevent something to happen when you are not even aware by the current scientific evidence that faulting does exist.

The subsidence issue that Mr. Merschat talks about and the examples that he cited are primarily sandstone aquifers in which huge amounts of water have been withdrawn. And there are cases throughout the world where we can show subsidence by withdrawal of oil from oil fields and water from aquifers. And those are very unique situations.

This is not the same situation that occurs in the coal in the Gillette area. We would not have under any circumstance subsidence that would reach 40 feet—there is no way geologically you could calculate that.

As far as the communication between the other intervals, the intervals, the shales and the sands that are above the coal, in which some people do have a water well, there are pairs of monitoring wells between the coal and between the aquifers to determine what that communication is. And in some places there is a moderate

communication. Where the coal may be drawn down, water level that rises in a well may be down 200 to 400 feet, the Bureau of Land Management EIS predicted that they would have about 18 feet of drawdown in some of the shallower aquifers. But that is a very tortuous connection. It is not a direct connection. And it would not increase subsidence.

If it did, the sands are generally thinner than the coals, and you would be looking at fractions probably less than the half an inch that I cited from the literature.

So although there may be some, again, we have that working model where the coalmines do take more of the water out of the coal than coalbed methane production does. In fact, when they wind up shipping it, they have something like a moisture content of between 25 and 30 percent. But that doesn't relate totally to water in pore space. But they take virtually all of the water out, and there isn't subsidence out in front of that.

And you would think that would also affect those shallower aquifers and sands and shales. And so, if it were going to occur, I think we would have already seen it on Highway 59, the power lines, the pipelines that run up and down there. And there are numerous homes out in that area also.

Mrs. CUBIN. I would appreciate it if you would supply a copy of the study that was done on the water wells in Gillette for the record.

Mr. GEORGE. I will.

Mrs. CUBIN. Thank you.

[The report submitted for the record by Mr. George entitled "Subsurface Investigation of the City of Gillette Planning Area District" has been retained in the Committee's official files.]

Mr. Dobkins, one of the things that, as you know, we continue to hear—we heard it a lot today and I hear it a lot—is how the split estate surface owner has very little say on how CBM operators treat his land. And I imagine that the complaints that I hear are from people that are bad operators. I imagine that there are some out there.

Could you elaborate on how the methane operators group was formed and provide us with an indication of what activities you pursue and how effective those activities have been?

Mr. DOBKINS. Yes, thank you, Madam Chairman.

The methane operators group was formed 2 years ago to create an educational and communicative process between operators and the public and regulatory agencies. It is comprised of all of the operators in the Powder River Basin. And we meet periodically. I am going to say monthly, but sometimes it is more frequent, sometimes less, depending on what the issue is at hand.

We have Subcommittees formed within that group to study various issues. Right now the main issues are safety, environmental issues, best practices. And those are meetings that are going on every month.

The intent of that is to find out what the best way is of developing this asset and encouraging all of us to use those best methods.

Let's turn this around. Another company that doesn't think I am doing the best job can't force me to do a better job or do things the way they think it ought to be done, but they can put some peer

pressure on me to do things differently. And that is part of what we do through the methane operators group. If we do have someone that we feel like is causing problems for the rest of us, it gives us a forum to go to them either privately or as a group and say, "This is creating some problems for the rest of us, and here are some suggestions." So it does give us a peer pressure mechanism. And we have used that on a few occasions.

The regulatory agencies also have that ability, whether it is through the Oil and Gas Commission or through the DEQ, to apply pressure to do things differently.

There are always going to be those that do things differently, whether it is on the landowner side or the developer side, and that can create some problems for the rest of us. But it gives us a mechanism to try to fix that.

Mrs. CUBIN. As you know, the Buffalo BLM field office has added new staff. And I think they have implemented some innovative processes for processing and approving drilling permits.

With your knowledge of those operations, and taking into consideration the planned increases in appropriations and staffing that will take place with the BLM, do you think that that is enough to meet the industry's need for processing these permits in the Powder River Basin?

Mr. DOBKINS. What we see on our side is that they are making movement toward that direction. Our hope is that they will have adequate people in place by the time the EIS is finished a year from now, so that those people are, first, hired; second, trained. I don't know the current situation in terms of whether they have hired all of the people that we need. But we currently see a really tough time of them keeping up with all of the process involved in permitting these wells.

There is a very extensive process. It is not just looking at a permit. It is multiple trips to the field and working out all of these issues. And we lose a lot of effectiveness when there is a new person who comes out one time and a different person comes out the next time. We end up redoing things.

And Mr. George is much more familiar than I am with that, because he is more involved in that piece of it.

But in answer to your question directly, I think they are headed the right direction. I don't think they are there. We need to see them go from the ability to process a thousand permits a year to probably 3,000 permits a year. They are aware of that in the Buffalo office. There are things that they can do still from a technological standpoint and a streamlining standpoint that they can do. And we are happy to work with them and want to work them so that they are not redoing the same things and that we, as an industry, are submitting better permits, more complete permits, in a way that is quicker to use. So that is a cooperative effort that we are doing.

But we need to stay with the increase in staff and technology.

Mrs. CUBIN. Could either you or Mr. George tell me some of the technological improvements you would like to see be made? What is possible out there? I have read some articles about what the State of Wyoming, how the Oil and Gas Conservation Commission processes permits, and it seems that it goes a little faster.

Mr. GEORGE. So you are speaking specifically to the BLM or the oil and gas permitting process.

Mrs. CUBIN. Right. Would that same sort of thing work here, I guess is what I am asking.

Mr. GEORGE. That is a difficult question. The BLM is bound by the NEPA policy. And each 32-well grouping of wells has to go through that NEPA analysis. They write an internal environmental assessment. And so that process is something that the State of Wyoming does not do.The implication from that could be that the State of Wyoming doesn't do as good a job. However, when you are dealing on private and you are dealing on state minerals, you are dealing directly with the owner of that surface or the lessee of that surface. And we have a couple of examples of ranchers today that aren't afraid to give you their opinion. And I think you will find that they are pretty good stewards. And we have not seen a big problem with how the Oil and Gas Commission permits wells versus how BLM permits wells. So they do require a lot more analysis, and they have to have a lot people. And these people have to be trained in wildlife, in cultural resources, in soils, in geology, and in a variety of facets that the Oil and Gas Commission doesn't go through that process.

The BLM will tell you, and we have to agree, they made great strides. Their greatest innovation was going from a single well APD to 32 wells per APD or for each development. That helped a great deal.

They went from processing approximately 180 permits per year to almost 1,200 permits per year. So it was a monumental increase. But the State of Wyoming approves permits at the rate of almost 700 per month. And so the comparison there is pretty difficult. And it does slow down what the operators are trying to do.

I think the biggest thing that Mr. Dobkins mentioned was that there are at least three trips to the field. The information is brought in all handled in paper. Some of the operators are not capable of delivering the material electronically, but a lot of them would be. The major operators certainly could. And that needs to be a technology that we could work a little better.

You can fill out applications and whatnot off of the Web site from the Oil and Gas Conservation Commission and submit them.

It would also be a value if we could ever arrive at a production form that the State of Wyoming Department of Environmental Quality and the State Engineers Office and the Bureau of Land Management would all agree upon, instead of sending an individual one to all of those agencies.

So it is the kind of thing where I have looked internally with the manager of the Buffalo field office of trying to find efficiencies. There are still some to be found. I think there needs to be less nitpicking excruciating detail on the process, because, I remind you, we do have reclamation bonds for everything we do, and they do have the ability to call on those bonds to reclaim the surface if the operator weren't willing to do it.

And virtually all the operators do that at any rate, reclaim the process. So even if there is some surface disturbance, it is going to get fixed in the end. Our activity is a temporary activity.

Mrs. CUBIN. I would like to just give anyone an opportunity to make any last statement.

Mr. Swartz, you are at a disadvantage when I ask you first and then they respond to what you said. If you have anything you would like to close with, that is fine.

Mr. SWARTZ. I remember pretty well. I have been on that ranch 61 years. I remember pretty well 50 of it. Never has that creek channel ever had that white residue.

They pick me apart and tore me apart when I said it was salt. That water came down that creek, the CBM water, the last two winters.

The first winter it came down, it started in October 1999 and ran through April of 2000. Then it started again January 8 of 2001 and ran to between the 20th and 25th of May. Our natural water has never caused a loss of vegetation in my creek channel all winter long. They say I have to prove damage? I lost grazing in that creek channel. I never lost it during my entire life, my dad never lost it, my grandpa never lost it from natural water. But two winters of CBM water, and that is what my creek channel looks like.We are in an absolute drought time. We have had a very minimal amount of water this spring. The natural water that has come over the years has never, never hurt that creek channel and I have always not been afraid to kick every bit of water out on my meadows using my water rights. I am afraid to kick the water out of that creek now because of that white residue.

Maybe it is not salt, but whatever it is, it isn't something that natural water caused because natural water has never caused since 1904, at least, when my grandpa started that place.

And I wanted a chance to respond to that. Maybe I don't use the terminology right, but I have lived there and I am not a scientist, but I have lived there and I have worked there every day of my life basically, and I know what will work and won't, and that CBM water won't work. And the only reason it can be is from two winters of CBM water.

Mrs. CUBIN. I thank you. And I thank all the witnesses for the answers to the questions and their testimony, and you are now excused.

And I would like to call the next panel forward: Mr. Josh Joswick, La Plata County Commissioner; Mr. Richard Griebling, director of the Colorado Oil and Gas Conservation Commission; Ms. Tweeti Blancett, San Juan Basin Livestock Association; Mr. Don Wallette, Manager of the Rocky Mountain Region of Phillips Petroleum; and Joanne M. Tweedy, Coalition for Responsible Development of Coalbed Methane.

I would like to welcome the panel.

Before recognizing any witnesses, I understand there is a very important person here. Ms. Blancett's granddaughter is with her today. And if she would like to move up to the table with her grandmother, that is fine, or she can stay where she is, whatever she wants to do.

And one other thing: This side of Mr. Wallette's card says "Ms. Wallette," and I don't know what that side says.

[Laughter.]

But we know the difference.

[Laughter.]

The Chair will now recognize Mr. Josh Joswick.

STATEMENT OF JOSH JOSWICK, LA PLATA COUNTY COMMISSIONER

Mr. JOSWICK. Thank you, Madam Chair.

You have that all taken care of, Mr. Wallette?

[Laughter.]

Thank you for giving me the opportunity to talk to you today, to address you today. I am Josh Joswick. I am a county commissioner from La Plata County, Colorado.

And the reason that we are here today is to talk about the orderly development of coalbed methane resources from public lands. But what I think you also need to consider are the consequences of Federal energy policy on affected communities—in this case, La Plata County—because the development on public lands cannot be separated or divorced from the impacts on private lands, on nonpublic lands.

A little history: La Plata County is at the northern edge of the San Juan Basin. It is in southwestern Colorado. We have a little different set of circumstances than they do in Wyoming. Approximately 44,000 very well-governed people call La Plata County their home. And if you have never been there, I would encourage you to come down for a visit, because it is one of the finer places on Earth.

In the late 1980's, coalbed methane development began in La Plata County because of one thing and that was the initiation of Federal tax credits. La Plata County was at ground zero when the coalbed methane experiment came out of laboratories and hit the real world. People didn't really know it was going to happen when they started doing it. And they found out in La Plata County.

In La Plata County, we get roughly $5 million a year from coalbed methane production, and that comes as 50 percent of our property tax base that comes into our budget. So it is a significant amount.

But in addition to that, there have been lawsuits, environmental degradation, people have been displaced from their homes because of it. If there is an upside to this, it is that myths such as self-regulation and the dominance of the mineral estate have been exposed for what they are, which are myths.

La Plata County has asserted its statutory rights as a county to exercise its land-use authority over the development of the mineral estate. And La Plata County maintains that land use is a matter of local control, and that the surface aspects of coalbed methane fall within its purview. And the result of that, of our taking that stance, is that one of the most powerful lobbies in not only the state, but the nation, the oil and gas lobby, as well as the State of Colorado, are now pitted against the residents of La Plata County.

In the late 1980's, coalbed methane came to town. And then in the early 1990's, people came to town. We were discovered by the outside world as a pretty nice place to be. Residential development and industrial development are by their very natures not very compatible, and the two have collided, because, first of all, the nature of the split estate, the surface estate and the mineral estate, and

that coalbed methane has a greater impact on a community than does sand gas production.

No one contests the fact that county government can and should manage and direct residential growth. We will continue to assert that county government does have a role to play in the development of the resource. And we will continue to do what is right for the surface owners of our county.

To get basic about this, the surface is where people live. And that is where the impacts are taking place, most of them. And La Plata County will see to it that development is done to minimize the impacts on those people. And that is about as important as it gets, in our view, is protecting our people.

I want you to remember the tax credit. We stand atop one of the largest coalbed methane reserves in the nation, and we realize that that resource will be extracted. What we ask is that the Federal Government not exacerbate our problems by spurring development of a resource that does not need any incentive to be developed. The marketplace has provided all the incentive that the industry needs in order to make a profit on this.

There was nothing unconventional about coalbed methane back in 1987, and it is less unconventional now, 14 years after having been developed, than it was back then. We are a county of 44,000 people in a nation of 280 million. Do our people matter to the Federal Government, because they matter to me and my fellow commissioners, and that is why we have fought the fights that we fought and that is why I am here today, to do what I can to make sure that our people are not run over roughshod by Federal policy.

What you recommend will affect us. As one of my fellow commissioners, Fred Klatt, has said, we will not be a national sacrifice area. We will not see our drinking water aquifers destroyed and our land torn apart by well pads. We will have a voice in what happens in our community.

I am here representing the residents of La Plata County, and my residents do not need to endure the onslaught that will come with the next wave of tax credits. The residents of La Plata County deserve better than to be under siege because the Federal Government has thrown an unnecessary bone to an already prospering industry.

I invite you, Madam Chair, and the rest of the Committee, who are not here today, but if you would convey it to them, take a trip down to La Plata County, come see firsthand what happens when the Federal Government acts without considering the consequences, come and talk to our people, hear their stories, they can tell it probably better than I can.

And I look forward to any questions that you might have of me. Thank you.

[The prepared statement of Mr. Joswick follows:]

Statement of Josh Joswick, County Commissioner, La Plata County, Colorado

THE STATE OF THE COUNTY:

THE NOT–SO–ORDERLY DEVELOPMENT

OF

COAL BED METHANE IN LA PLATA COUNTY

La Plata County is a county of 44,000 well-governed people, situated in southwest Colorado, approximately 330 miles from Denver. It sits atop the northern boundary of the Fruitland Formation, the largest repository for coal bed methane in the United States. These two facts are the basis for La Plata County's concerns and how it became involved in dealing with coal bed methane development.

Coal bed methane (cbm) drilling first began in the mid-late 1980's in La Plata County because of one simple act: the initiation of federal tax credits. At that time, coal bed methane was classified as an unconventional fuel. The consequences of this act would not be simple; in fact, the consequences of this act would be down right confusing. Although it was federal action that spurred development, development would not occur just on federal land. There were essentially three classes of land on which cbm development would occur: federal land, private land and the land on the sovereign nation of the Southern Ute Indian Tribe. This meant that oversight and regulation of exploration and drilling was split between the Bureau of Land Management (BLM) on federal and tribal land, and the Colorado Oil and Gas Conservation Commission (COGCC) on private land. Since the impacts of drilling do not recognize political boundaries, the bifurcation of regulatory authority would prove to be troubling. Also, on private land, the ownership of the surface and the mineral estates was quite often split; this meant that the surface owner might not own the minerals underlying his property. The "split estate" aspect of this project would prove to be one of the most complicating.

In 1991, due mainly to this split estate, La Plata County adopted regulations that addressed the orderly development of oil and gas as it pertained to the surface estate. These regulations dealt with the land use aspects of development, and applied to both major facilities such as compressor stations, and minor facilities such as individual well. The subsequent lawsuit, Bowen–Edwards v. La Plata County, went to the Colorado Supreme Court and in 1992, La Plata County prevailed; the legal basis for local control of oil and gas development was established. The Court found that counties can exercise their land use powers in this area, provided that county regulations do not create an "operational conflict" with COGCC regulations. To date, La Plata County regulations have not created an operational conflict. Roughly, 2000 wells have been permitted under the county system, and under that system, not one well has been denied.

It is important to understand that the state of Colorado is an industry-friendly state. Its governor is the former head of the Rocky Mountain Oil and Gas Association. Its COGCC is predominantly comprised of people with ties to the oil and gas industry. Their task is to promote the development of Colorado's oil and gas natural resources, and they take their charge very seriously and pursue it with great vigor.

It is also important to understand that La Plata County is a resident-friendly county. In the early 1990's, around the time when cbm development was beginning in earnest, La Plata County was discovered by the outside world, and the residential boom that is still with us began. By their very natures, industrial and residential development are not compatible, and much of this residential boom took place in the area where the drilling was occurring. Cbm development has a much greater impact on a community than does the production of tight sand gas and it did not take long for residents to feel that impact. County roads, designed as farm-to-market roads, were being blown apart by heavy truck traffic; because of this increased traffic on gravel roads, air quality suffered. Drinking water aquifers were being contaminated and depleted. There were vegetation die-offs because of gas seeps at the Fruitland Formation's outcrop. Pump jacks were put into neighborhoods and the county had no ability to deal with something as basic as regulating the noise levels coming from this equipment.

Then in 1993, it was discovered that residences in the Pine River Ranches were in danger because of these gas seeps. (This is explained more thoroughly on Page 2 in the "Environmental and social Impacts of Coal Bed Methane Development La Plata County, Colorado' section of this report). Subsequently, five families were relocated from their homes. While natural gas might be considered a relatively envi-

ronmentally friendly, clean-burning fuel on the consumption end, it is anything but that on the production end.

Because of the lack of any substantive response from either the BLM or the COGCC, people looked to county government to help them deal with these problems. Cbm development was affecting their lives; it was affecting their homes, their property values, their security. Cbm development does not occur in a bubble. It occurs where people live; it occurs in subdivisions. Most of the COGCC and BLM regulations deal with technical aspects of extraction; they do not address the problems people were facing. La Plata County regulations do address these problems.

In 1995, La Plata County began the process of revising and adding to our regulations. The question that was repeatedly asked by industry and the state was "Why are you doing this?" The answer was that we knew the next round of drilling at 160 acre spacing (down spacing) was inevitable, and we wanted to take what we had learned from the first round of drilling and adapt our regulations to fix the problems before they happened at 160 acre spacing. Over the next 18 months that it took the task force to draft regulations, the county was told repeatedly that this effort was unnecessary because there was nothing on the radar screen about down spacing. Less than six months after the regulations were adopted, the state of Colorado joined the Colorado Oil and Gas Association (COGA) in a lawsuit against La Plata County. Less than six months after the regulations were adopted, the first application for 160 acre spacing was processed by the COGCC. It is that kind of collusion and deception that has created the atmosphere of distrust and skepticism that currently exists in La Plata County toward both the industry and the state.

As has been stated previously, La Plata County is over 300 miles from Denver. While that generally works in our favor, when dealing with legislative matters it puts us at a disadvantage. The oil and gas industry has one of the strongest lobbies in the state, and is present on a daily basis to advance its position. Consequently, the range of legislative understanding of the oil and gas issue generally runs in the vein of: "gas clean; gas cheap; gas good." The myths that any regulation, and especially local regulation, is detrimental to the industry, that local regulation will drive the industry out of the state, that local regulation is driving up the cost of gas and will result in people starving to death in the dark are propagated daily, and like anything, if repeated often enough, become common knowledge. It is a constant source of amazement to listen to good solid conservative legislators, advocates for personal freedom, believers that government should be as close to the people as possible, not support the idea of local control when it comes to this issue. Having gotten little or no support from the COGCC, people have repeatedly turned to the Colorado Legislature for help. Efforts to reconfigure the composition of the COGCC to make it less a "puppet of the industry", efforts to bring the rights of surface owners up to the same level as those of the mineral estate, efforts to compensate surface owners for damages incurred by drilling operations have all been defeated. It is very difficult to fight the fight when you are 300 miles away from the battleground.

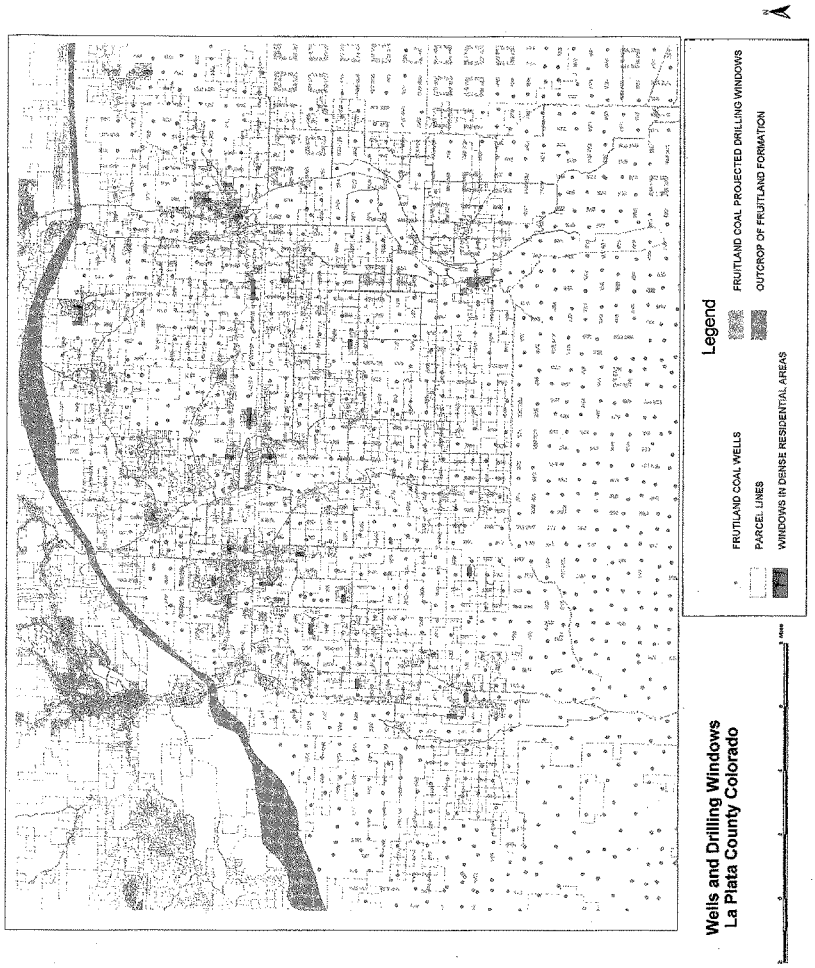
It is even more difficult to deal with changes that come from Washington. We have been fortunate in La Plata County in recent years in that we have cultivated a positive working relationship with the local BLM office. This was not always the case. In the early 1990's, regional BLM administrators viewed their mission to be one of getting the resource out of the ground. While it was our hope that the federal government would bring some accountability into the mix and establish "best practices" standards at least on its own land, the reality of the situation was that BLM policy did not acknowledge that it affected our community, nor was there acceptance of responsibility for the impacts of those policies. Roughly 49% of the wells in LPC are under BLM oversight. Our concern is that could happen again. It is not just development on federal land over which BLM has jurisdiction; BLM also has jurisdiction on Southern Ute Tribal lands, and dealing with a sovereign nation can be even more problematic. For example: if the BLM decides, for whatever reasons, that it wants to set well spacing at one well per 80 acres or one well per 40 acres, technically, the BLM can set that spacing. While there is an Memorandum of Understanding between the BLM and the COGCC which says that for such things as spacing orders on federal or tribal land, the BLM shall go through the COGCC's docketing and hearing process and that it shall concur with the proposal of the applicant, there is nothing that mandates the BLM to comply with the MOU. It can pull rank over the COGCC, as it has in one instance involving an application by the Southern Ute Indian Tribe, and proceed over the objections of the COGCC. It is that ability of the federal government to act unilaterally and spur development that has La Plata County most concerned.

If there is one thing La Plata County wants to make sure the members of this Committee understand, it is this: the development of the coal bed methane resource affects people's lives. That is something that Colorado's governor, the Colorado

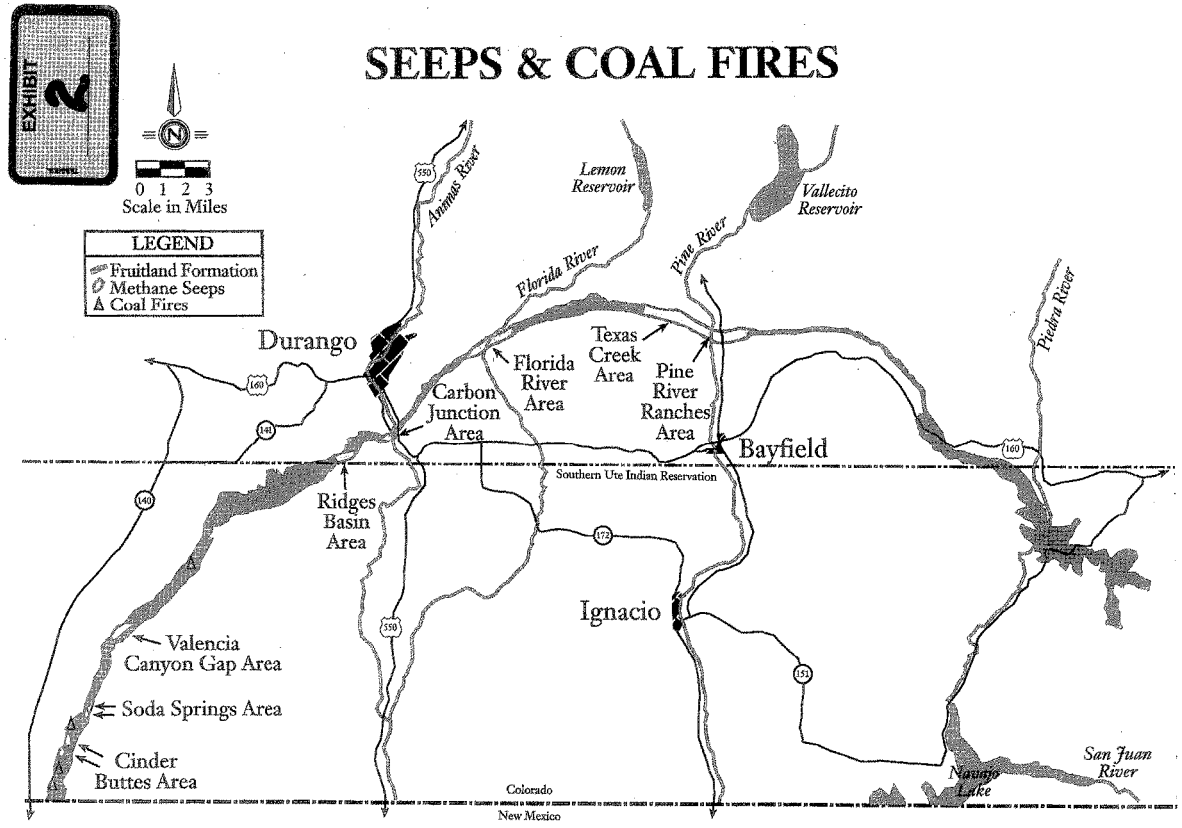
Legislature, and the Colorado Oil and Gas Conservation Commission have all turned a deaf ear to and hopefully you will not. This cannot be viewed strictly as an exercise in the profitable extraction of the resource. It cannot be strictly a matter of gas-in-place estimates, and hydraulic fracking gels, and production water disposal zones, and debates over which is more efficient—-progressive cavity or traditional pump jacks. If it has come to that, then we as a nation are in deep trouble. What we ask is that the federal government not exacerbate our problems by spurring development of a resource that does not need any incentive to be developed. The market place has already provided all the incentives that the natural gas industry needs in order to profit. There was nothing unconventional about coal bed methane back in 1987, and it is less unconventional in 2001 after fourteen years of development than it was back then.

We are a county of 44,000 in a nation of 280 million. Do our people matter to the federal government? They matter to me and my fellow commissioners. That is why we have fought the fights we have fought. That is why I am here today: to do what I can to make sure that our people are not run over roughshod by federal policy. What you will recommend will affect us. As my fellow commissioners have said, We will not be a national sacrifice area. We will not see our drinking water aquifers destroyed and our land torn apart by well pads. We will have a voice in what happens in our community.

[Two attachments to Mr. Joswick's statement follow. Additional attachments submitted for the record by Mr. Joswick have been retained in the Committee's official files.]


Wells and Drilling Windows
La Plata County Colorado
Legend
FRUITLAND COAL WELLS
PARCEL LINES
WINDOWS IN DENSE RESIDENTIAL AREAS
FRUITLAND COAL PROJECTED DRILLING WINDOWS
OUTCROP OF FRUITLAND FORMATION

SEEPS & COAL FIRES



Mrs. CUBIN. Thank you.

The Chair now recognizes Mr. Griebling.

STATEMENT OF RICHARD GRIEBLING, DIRECTOR, COLORADO OIL AND GAS CONSERVATION COMMISSIONER

Mr. GRIEBLING. Thank you, Madam Chairman.

I am the Director of the Colorado Oil and Gas Conservation Commission, and we are very similar to the agency that regulates Wyoming State oil and gas matters. But in addition to their responsibilities, we also have responsibility for groundwater in relation to oil and gas development; that is, groundwater quality.

I would like to draw your attention first to the last page of my testimony, which is a red bar chart, and it shows coalbed methane production in Colorado from 1990 to 2000. And it is a very constant increase and a dramatic one.

It started out at about 27 BCF per year of coalbed methane production in 1990 in Colorado, and grew very steadily, to the point now where it is over 400 BCF per year or over an order of magnitude increase.

In Colorado we have two CBM-producing basins.The San Juan Basin is where CBM production really started in a commercial scale in this country, and that was in the late 1980's. In that basin, production is still increasing, but it has leveled off to a slower rate. It is increasing about 3 percent per year there.

The Raton Basin, in the south central part of the state, started production in the mid-1990's, and it is growing very rapidly. We are seeing about 25 percent per year growth in production there.

Most of my testimony today will focus on San Juan Basin, because that is where we have the most experience and that is where we have dealt the most with some of the issues that you are faced with in the Powder River Basin.

Under the topic of methane gas and groundwater, our focus has been on monitoring. And I want to emphasize that there are numerous historic records of naturally occurring methane gas in both surface water and groundwater, dating back to the 1800's. And that was long before CBM development began, of course, and they are spread out through all of the San Juan Basin, in many parts of La Plata County.

Under the topic of biogenic and thermogenic methane gas, we have been able to analyze gas samples from groundwater and from coalbed methane wells. And we have determined that all the produced coalbed methane from the Fruitland Formation can be categorized as thermogenic in nature. And that is different from most of the methane gas in groundwater in La Plata County, water wells, which is of biogenic origin. So the methane gas in those water wells was established to be from naturally occurring processes entirely unrelated to CBM development.

We have implemented a Bradenhead testing program in the San Juan Basin, and we started that in the early 1990's. We did that to eliminate the potential migration of shallower Fruitland coalbed methane into deeper old conventional well bores and upward into groundwater.

As a result of this very successful program, the potential for groundwater contamination from CBM development has been es-

sentially eliminated in Colorado. Methane contamination from naturally occurring sources has been documented historically long before CBM development began and will continue long after CBM development is completed.

We started a $1 million-plus three-M project in the San Juan Basin a few years ago. The three M's stand for geologic mapping of the Fruitland Formation outcrop, computer simulation modeling of the Fruitland CBM reservoir, and monitoring of the Fruitland Formation outcrop for potential changes in hydrostatic level for methane seepage.

The three-M reservoir computer simulation model has proven to be a very valuable tool for us. In order to evaluate potential impacts of increased well density, the three-M model was run to calculate methane seepage at the outcrop for both 320- and 160-acre development schemes. The results showed a slight reduction in outcrop methane seepage as well density was increased from 320 to 160 acres. So the important point here is to realize that additional wells actually recovered gas themselves that would have otherwise seeped to the outcrop, and it reduces hazards, from that standpoint.

Finally, we have the three-M monitoring wells at the outcrop, and they will be completed in a few months. They are being drilled right now. And some of them are already completed.

While we don't expect any adverse impacts attributable to CBM development, these monitoring wells would allow us to detect the potential impacts at an early stage. And then we could use the reservoir computer simulation model to evaluate potential mitigation alternatives.

That is all I will comment on at this point. Thank you, Madam Chairman, for the opportunity to testify.

[The prepared statement of Mr. Griebling follows:]

Statement of Rich Griebling, Director, Colorado Oil & Gas Conservation Commission

History and Status of Coalbed Methane Development in Colorado

Coalbed Methane (CBM) was first successfully and economically developed in Southwest Colorado in the San Juan Basin in the late1980's and in South Central Colorado in the Raton Basin in the mid 1990's. Statewide CBM production steadily increased from 27 billion cubic feet per year (Bcf/Yr) in 1990 to 417 Bcf/yr in 2000 (see Figure 1).

After over a decade of continuous growth CBM production in the Colorado portion of the more mature San Juan Basin grew at 3% per year in the year 2000. In the more rapidly developing Colorado portion of the Raton Basin CBM production in the year 2000 increased at 25% per year.

In addition to its CBM production in the year 2000 Colorado also produced an additional 336 Bcf of conventional natural gas yielding a total of 753 Bcf of gas production in the year 2000. This is equivalent to a daily rate of over 2 Bcf of total gas production per day.

Coalbed methane in the Piceance Basin of Northwest Colorado remains in the exploration and demonstration project phases. While vast quantities of CBM have been documented to be present in the Piceance Basin, commercial CBM production has yet to be established there. (The Piceance Basin also holds very substantial reserves of conventional natural gas in the tight sands of the Williams Fork Formation which are currently being actively and successfully developed. Continued access to federal lands in the Piceance Basin will be essential to fully develop the enormous potential of conventional natural gas there.)

Since Colorado CBM production has been long established in the San Juan Basin, the remainder of my testimony will focus on some of the unique conditions existing there and the experience we have gained in regulating CBM development there.

Ownership of the Colorado portion of the San Juan Basin includes Southern Ute Tribal, private, BLM, Forest Service, and State lands.

Methane Gas in Groundwater in the Colorado portion of the San Juan Basin

The Colorado portion of the San Juan Basin includes portions of La Plata and Archuleta Counties. There are numerous historic records of naturally occurring methane gas in both surface water and groundwater in these counties dating back to the 1800's, long before CBM development began.

In the early and mid 1990s the Colorado Oil and Gas Conservation Commission (COGCC) and the Bureau of Land Management (BLM) worked together to acquire and analyze hundreds of water well samples from domestic water wells in the San Juan Basin portion of La Plata County.

Biogenic and Thermogenic Methane Gas

Methane gas can be classified as either biogenic (i.e., originating from the metabolism of organic material by certain types of organisms known as "methanogenic" bacteria) or thermogenic (i.e., originating from the thermal "cracking" of organic debris as it is buried deep below the earth's surface by geologic processes). Coalbed methane produced from the Fruitland Formation in the La Plata County was extensively sampled and analyzed and consistently shown to be of thermogenic origin. Since most of the methane gas in groundwater from La Plata County water wells tested to be of biogenic origin, the methane gas in those water wells was established to be from naturally occurring processes entirely unrelated to CBM development. An approximately 15 mile wide east-west trending region of La Plata County that begins about 5 miles east of Durango and includes the towns of Gem Village and Bayfield has substantial quantities of naturally-occurring biogenic gas in groundwater.

Ironically, many of the residents who regularly testify about the alleged impacts of coalbed methane to groundwater in La Plata County consistently fail to disclose that the methane in their water wells has been tested to be of biogenic origin. This water well methane is unrelated to the Fruitland Formation CBM which is of thermogenic origin. Their testimony sometimes also conveniently omits the fact that methane gas was documented to exist in the groundwater near their homes long before CBM development began.

Methane in groundwater also occurs naturally from thermogenic sources in other portions of La Plata County. We have extensively sampled and analyzed methane gas from groundwater and both CBM and deeper conventional gas wells in an approximately 10 mile long north-south trending region that begins about 9 miles south of Durango and includes the towns of Sunnyside and Bondad. This area corresponds with a major geologic feature along the Animas River which is expected to have allowed the upward migration of methane from deeper geologic formations over time.

Our groundwater sampling and analysis showed that methane in water wells from this area occurs over a broad range of thermogenic values, some of which are equivalent to gas from the Fruitland Formation, some of which are equivalent to gas from deeper conventional natural gas producing formations, and finally some of which were more thermally mature than any produced gas and is expected to originate from deeper formations that have not been developed for natural gas production.

Bradenhead Testing

While much of the methane in groundwater in the Sunnyside–Bondad area is probably naturally occurring, the COGCC implemented a "bradenhead testing program" in the early 1990's to eliminate the potential migration of shallower Fruitland CBM into deeper old conventional wellbores and upward into groundwater. In the early years of implementation bradenhead testing resulted in the repair or plugging of over 200 older conventional wellbores in the La Plata County. Bradenhead tests are repeated regularly, and any wells that fail the test are repaired or plugged.

In recent years we have experienced only a handful of bradenhead test failures each year which have been promptly addressed. The potential of groundwater contamination from CBM development has been essentially eliminated in Colorado. Methane contamination from naturally occurring sources has been documented historically before CBM development began and will continue long after CBM development is completed.

The "3M" Project

In the late 1990's we initiated the "3M Project" in the Colorado Portion of the San Juan Basin. The 3 M's stand for: geologic Mapping of the Fruitland Formation outcrop; reservoir computer simulation Modeling of the Fruitland CBM reservoir;

and Monitoring of the Fruitland Formation outcrop for potential changes in hydrostatic level or methane seepage. Geologic mapping of the outcrop and reservoir computer modeling have been completed. Some of the monitoring wells have been completed and the remainder are expected to be completed by yearend.

The "3M" Reservoir Computer Simulation Model

The "3M" reservoir computer simulation model covers the Fruitland Formation over the entire Colorado portion of the San Juan Basin and is the largest of its kind. The model established a good history match with CBM production and reservoir pressure to date and has been used to predict the effects of future CBM development. The "3M" model has demonstrated that a small portion of the San Juan Basin known as the "Fairway" near the eastern edge of the Colorado portion of the basin can be adequately developed at one well per 320 acres. It also showed that at least one well per 160 acres was needed to adequately develop CBM in the remainder of the Colorado portion of the San Juan Basin.

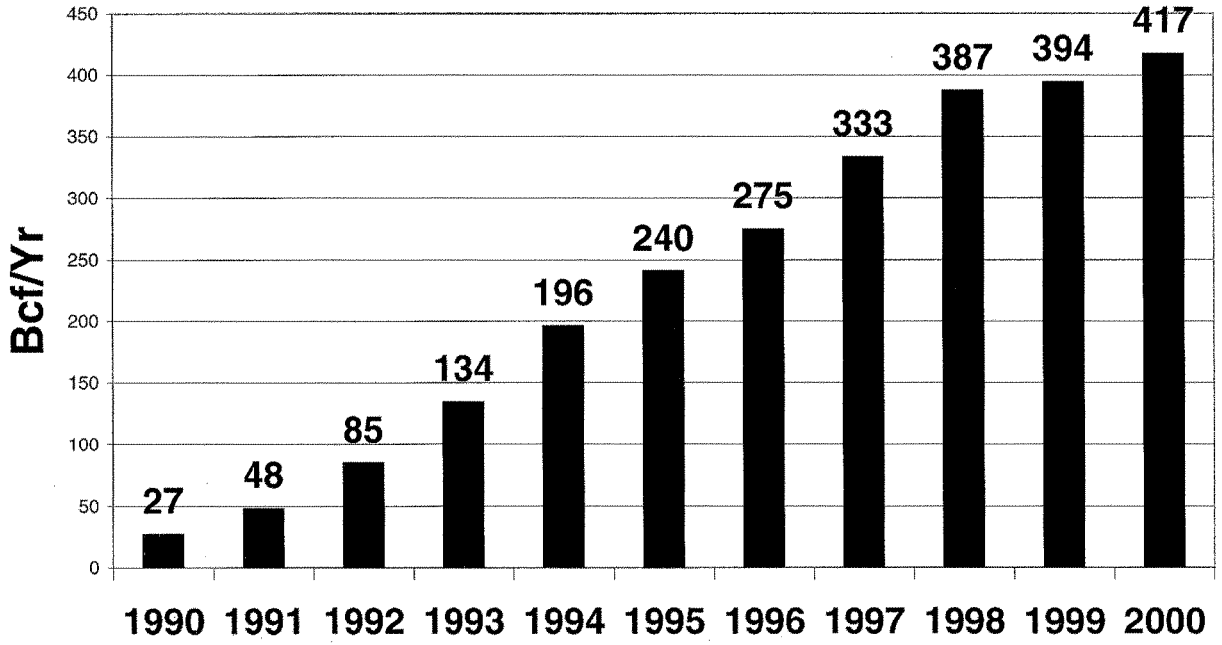
In order to evaluate potential impacts of increased well density, the "3M" model was run to calculate methane seepage at the outcrop for both 320 and 160 acre well density. The results showed a slight reduction in outcrop methane seepage as well density was increased to one well per 160 acres. The "3M" model can be used to evaluate a broad range of future alternatives and potential impacts.

The "3M" Outcrop Monitoring Wells

The "3M" outcrop monitoring wells allow monitoring of both hydrostatic pressure and methane seepage. These wells will be monitored for several years after they are completed later this year. While we don't expect any adverse impacts attributable to CBM development, these monitoring wells would allow potential impacts to be detected at an early stage. The reservoir computer simulation model described above could then be used to evaluate potential mitigation alternatives.

[Figure 1 follows:]

Colorado Annual Coalbed Methane Production
Figure 1 (8/31/01)



Mrs. CUBIN. Thank you.

I have a vote right now. I will go over there as quickly as I can and come back as quickly as I can. So if anybody has an emergency or an urge, you have time for that. But I will be right back. So if you would just stay here, that would be great.[Recess.]

Mrs. CUBIN. The Committee will please come to order.

The Chair will now recognize Ms. Blancett for 5 minutes of testimony.

STATEMENT OF TRECIAFAYE "TWEETI" W. BLANCETT, SAN JUAN BASIN LIVESTOCK ASSOCIATION

Ms. BLANCETT. Thank you, Madam Chairman. I am Treciafaye Blancett. I represent an eighth generation farming and ranching family in the Animas Valley of San Juan County, New Mexico. We have been there for over 100 years, and we farmed the same grazing land for all that period of time.

We definitely believe in multiuse. We definitely believe that oil and gas should have the right to exercise their leasehold rights.

What we are having a little bit of problem with is the surface damage that is occurring on both the grazing permit, which is Federal, the state permits, and the private permits. You go from one to the other, and you can't tell a bit of difference.

Also, I would add that we hold our minerals. We hold our surface rights, and we have received these tax credits. And probably my family for the next 10 years will not be paying Federal income tax as a result of it.

The industry in San Juan County has developed to the point where they can have the gas in the line in a 2-week period from the time they drill. I mean, we have this down to a science. We started it.

We have better than 25,000 wells in San Juan County. That is 25,000 wells. On my 75-section permit, Madam Chairman, I have 1,500-plus. And they are getting ready to double that.

Now, that doesn't sound like a lot if you think every well site is 220 feet by 295. Trust me, they aren't.

That isn't a lot of wells if you forget to add in the space that is taken for a road that is supposed to be 14 feet and always exceeds that.

Those aren't a lot of wells, if you eliminate the pipelines. There has to be at least one pipeline for every well to deliver the gas. In our county, there is two for most of the coalbed methane wells because we are delivering the water to be processed.

Madam Chairman, I don't know of a single well that is producing water in San Juan County that is potable. The BLM will not even allow us to use this water on the roads.

I will tell you, when we started out 10 years ago, our water wasn't that bad; 25,000 wells later, it isn't good.

Industry in our area runs the show. BLM is totally out of compliance on all the surface regulations. They have not reclaimed. They have not reseeded. They have not maintained the roads. They have not maintained the pipelines. That is not just on Federal; that is on private and that is on state.

I know those issues do not concern you, but 75 sections, 68 of those 75 sections, Madam Chairman, are Federal. BLM on

Tuesday, along with representatives, staff people from Senator Domenici's office, Senator Bingaman's office, and Representative Udall's office, were on our ranch. Every one of them said, "This is a travesty."

I don't need to say anymore. Come and see it. You have in your bulletin an open invitation. I will put you up at my hotel. I would like to show you what we are doing.

Trust me, you do not want happening in the rest of the Rocky Mountain States what happened in northwestern New Mexico. Thank you.

[The prepared statement of Ms. Blancett follows:]

GAS DRILLING
IN
NORTHWESTERN NEW MEXICO
SOUTHERN COLORADO

BACKGROUND: The Blancett Family has been in the San Juan Basin since the 1870's. We have farmed and ranched on the same land for over 100 years. We are good stewards of the land. We do not oppose gas drilling. We believe in multi-use of the Federal Land. We do not support the damage that is occurring on Federal lands by the Oil/Gas Industry. I am representing the surface owners in the Four Corners area.

DISCUSSION OF THE PROBLEMS: BLM and the Forest Service has put a priority on issuing APD's and the environmental and surface impacts are not being addressed.

1. Pipelines are not reseeded
2. Well sites are not reclaimed
3. Spillage of Salt Water and Oil or Oil/Gas By-products are not cleaned up
4. Roads and accesses are damaged and not repaired
5. Severe Erosion and noise pollution is occurring
6. Reserve pits are not properly maintained
7. Water sheds are not protected and developed
8. Forage is depleted and not replenished
9. Price differentials between companies for royalties paid are prevalent
10. No one is taking responsibility for the MESS

Attached are pictures and location throughout a 5 Section area of our permit. These pictures include Federal, State, and Private Lands. We have stewardship a 75 Section permit, larger than all of DC, the abuse is evident in all areas of the permit. These are examples of the abuse that is occurring throughout the Four Corners area.

SUGGESTIONS FOR REMEDY:

1. Come to Northwestern New Mexico and visit the sites personally.
2. Request BLM and Forest Service follow the established guidelines
3. Request BLM and Forest Service respond to surface users and/or grazing permittees concerns
4. Mandate BLM and Forest Service bring the well sites and pipelines into compliance
5. Do not allow increase spacing of gas and oil wells on Federal Lands until the damage to existing sites are mediated.
6. Recognize that Federal agencies have the RIGHT TO ACT and encourage them to do so
7. Ear mark funds for compliance and send Federal employees into the field to address the violations and establish remedies.

TESTIMONY

My position paper addresses the concerns of grazing permittees and surface owners of private, state, and federal lands.

I. See Attachment 1 (in the packet) San Juan County *ROADS* Maps and Large BLM *ROADS* Map

The small maps I have included show the *roads* that presently exist in San Juan County, Northwest New Mexico. The surface disturbance is in excess of thousands of acres. **Little of the disturbed land has been reclaimed to establish forage or protect the watershed**.

II. See the display of large BLM *WELLSITES*:

There are presently in excess of ***13,143 wells*** in San Juan County and another 10,000 plus in Rio Arriba County, New Mexico. Each well site is serviced with a road and pipeline. Most of the wells, roads, and pipelines, are out of compliance because **BLM has not had the manpower to enforce the existing regulations and emphasis has been on drilling not reclamation and compliance.**

See Attachments ***Photos*** of random surface damage:

1. Open contaminated pits and Dead Nesting Falcons (Red Tail)
2. Contaminated Reserve pits with Livestock and Wildlife Watering and Reserve Pits used as Trash Dumps
3. Oil and By Products going into surface
4. Standing Antifreeze and 5 year old salt water spills not reclaimed

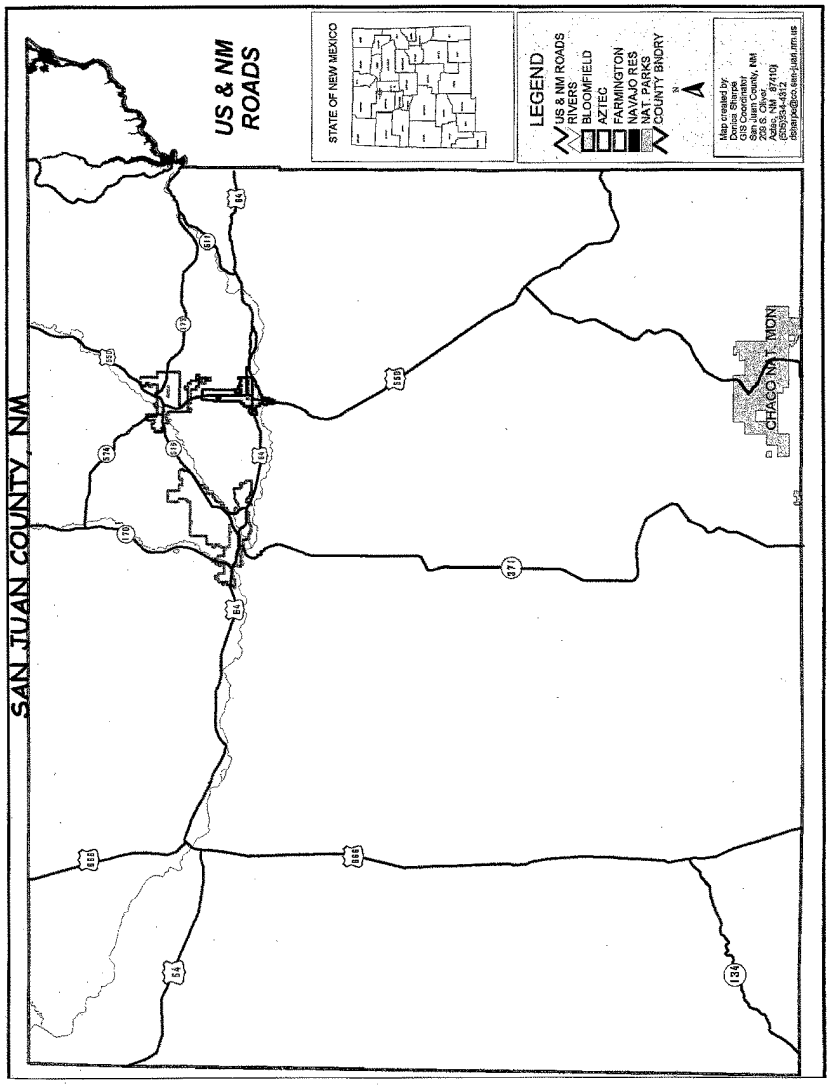
III. When we question the oil and gas companies about *royalty price differentials,* we can get **no response or explanation of the billing.**

See Attachments: Actual Receipts and Production Numbers

Summary:

Surface owners, ranchers, and farmers have the stewardship of millions of acres of Federal lands in the West. Many have been on the land for generations. We take our responsibilities seriously and we care. Northwestern New Mexico will take years to recover from industry abuse and BLM's inability to enforce the existing regulations.

Please be mindful that we are not opposed to oil and gas development but, as Congress moves the energy policy forward, please don't let the random surface destruction, that has happened the Four Corners, occur in the other Rocky Mountain States.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NAVAJO RES
NAT. PARKS
COUNTY BNDRY
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Map created by:
Dorcia Sharpe
GIS Coordinator
San Juan County, NM
224 S. Oak
Aztec, NM 87410
(505)334-6512
dsharpe@co.san-juan.nm.us
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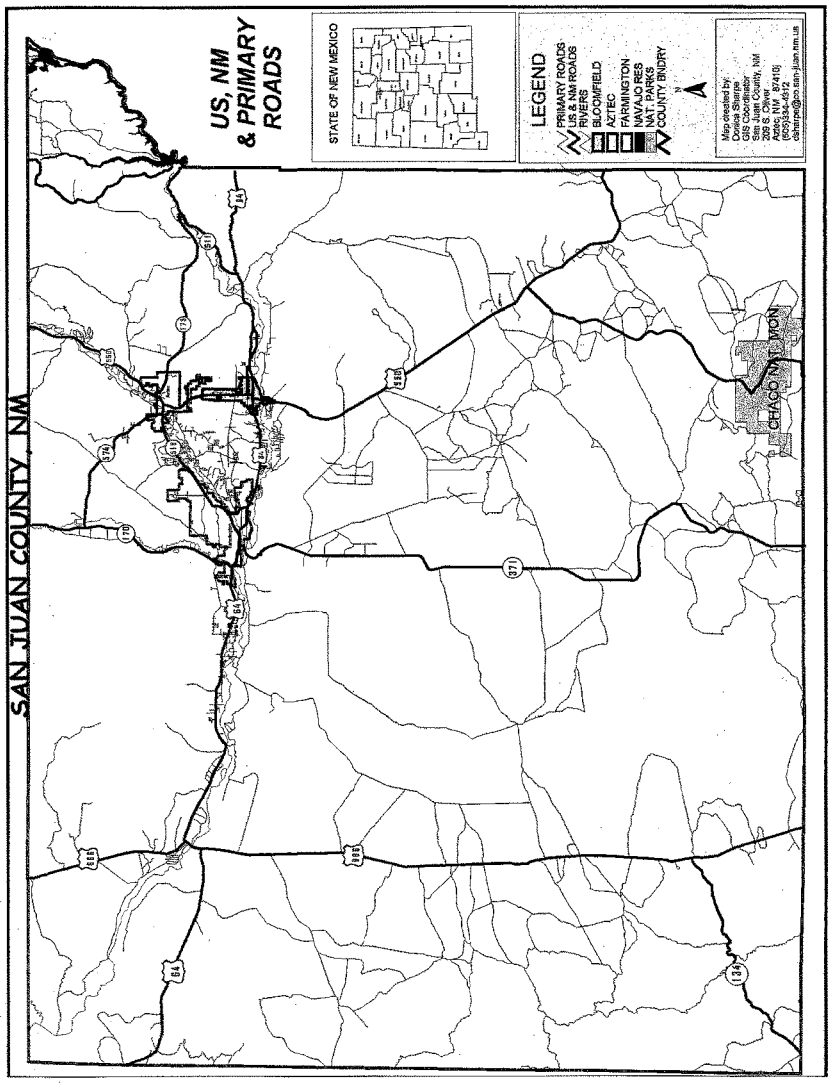
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Map created by:
Donald Stamps
GIS Coordinator
San Juan County, NM
209 S. Oak St.
Aztec, NM 87410
(505)334-4512
dstamps@co.san-juan.nm.us
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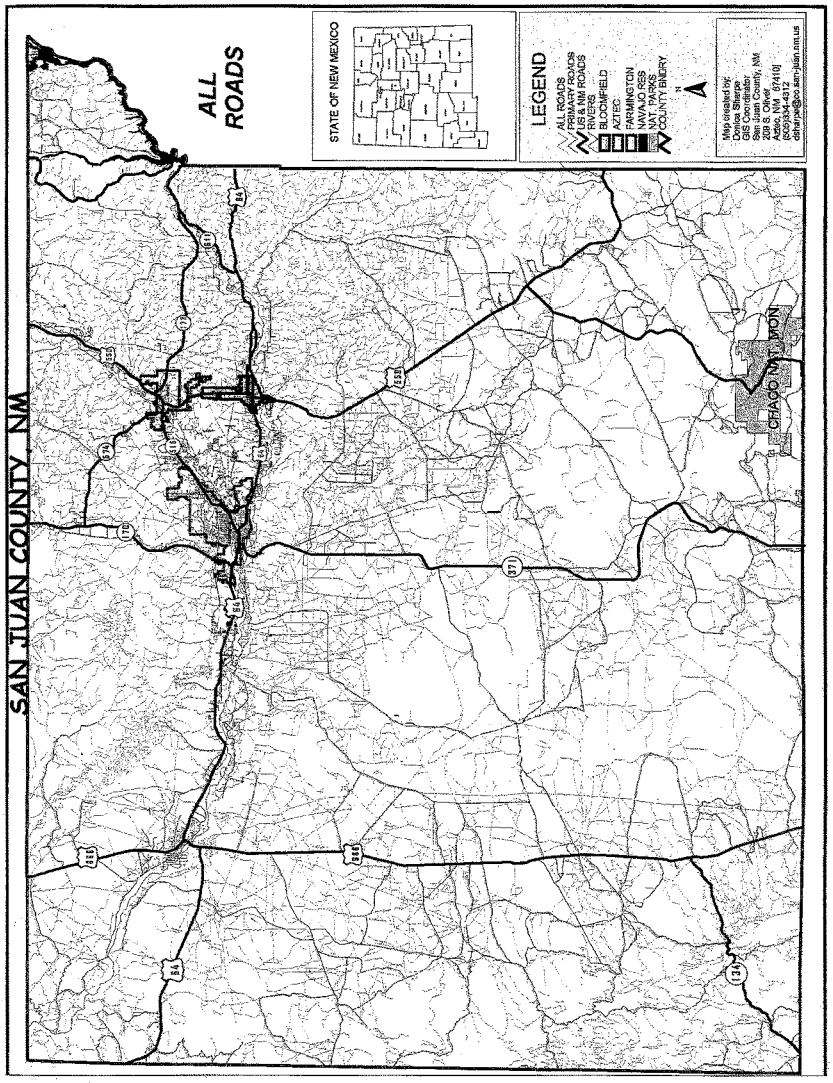
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Map created by:
Dorice Sharpe
GIS Coordinator
San Juan County, NM
209 S. Oliver
Aztec, NM 87410
505-334-9157
dsharpe@co.sanjuan.nm.us

Mrs. CUBIN. Thank you.

The Chair now recognizes Mr. Wallette.

STATEMENT OF DON WALLETTE, MANAGER, ROCKY MOUNTAIN REGION, PHILLIPS PETROLEUM

Mr. WALLETTE. Thank you, Madam Chairman. And thank you for the opportunity to come before you today to present the views of Phillips Petroleum Company with regard to the safe and orderly development of coalbed methane from this country's Federal lands and primarily from the Rocky Mountain region.

My name is Don Wallette, and I am the Rocky Mountain Region Manager of the Americas Division of Phillips Petroleum Company located in Denver, Colorado. I have with me today our Environment, Health, and Safety Manager from the Rocky Mountain Region, Mr. Steve d'Albuquerque.

In the interest of time, I will condense the biography of Phillips' interest in coalbed methane that is contained within the written testimony. Suffice it say that we do have a long history of CBM development and are currently active in most of the major producing basins in the U.S. and are involved in new CBM exploratory efforts, both domestically and abroad.

Coalbed methane is playing major role in meeting the domestic natural gas needs of this country and has the potential to play an even greater role. Phillips appreciates the work of this Committee and the House in your recent passage of H.R. 4. This proposal provides a good first step in addressing America's long-term energy needs.

According to a recently released report on the national energy policy, the shortfall between projected energy supply and demand in the year 2020 is expected to be nearly 50 percent. Electrical power generation is a key focus of this demand increase.

In this same time period, natural gas is projected to constitute about 90 percent of all added electrical generation, tripling today's gas contribution. To meet the year 2020 demand, total natural gas wells drilled annually will need double the 1999 level, requiring staggering investments by producers.

The contribution that coalbed methane will play in this supply and demand scenario will largely be determined by the future regulatory impediments it may face and by access related issues. Coalbed methane stands ready to be a major contributor, if it is allowed to do so.

Madam Chair, I appreciate the invitation to appear before the Committee to discuss the policy initiatives needed to achieve adequate CBM production from Federal lands and impediments to timely development of CBM.

Today I will highlight three areas of constraint to our development of CBM in the Rocky Mountain region: access, environmental considerations, and infrastructure development.

The first issue concerns timely access to Federal acreage under which much of the coal resource lies. The availability of government lands to oil and gas producers is critical to meet the nation's growing needs for abundant clean, efficient natural gas. Since 1983, access to Federal lands in the Western United States has declined by 60 percent.

In addition to lease withdrawals and often onerously restrictive lease stipulations, access to Federal lands is often significantly delayed while NEPA requirements are being completed. These delays often manifest themselves in drilling moratoria. An example of this type of moratoria on new drilling exists today in the Powder River Basin. We are concerned and impacted by continuing delays in completion of the Powder River Basin EIS.

The development of the coalbed methane in the Powder River Basin has been hampered by a drilling moratorium since early 2000 and will continue to be delayed until such time as the EIS is completed. Meanwhile, we wait for the results of the EIS, which will determine whether and how the industry will proceed with the some 50,000 CBM wells expected to be required to fully tap the gas resource.

Some of the expected impacts of lengthy Powder River Basin EIS delays would include continued drainage of Federal acres by nonfederal activity, reduction of Wyoming State revenues from Federal royalties, underutilized capacity by pipeline companies that are investing millions of dollars to meet the anticipated demand, and lost jobs throughout the service industry due to lack of activity.

Phillips believes that the country has benefited greatly from the NEPA process and will continue to as we move forward. As with most processes, it could stand improvement. We believe the consistency and predictability with respect to timing are two areas where focused attention is required.

Phillips works closely with the BLM field offices on a daily basis. We know them well and have a high regard for their professional competence and their commitment. Our sense is that the projected growth of natural gas activity in the West, particularly with respect to CBM, will soon outpace BLM's ability to respond in a timely manner.

Obviously, cycle times are critical in a capital-intensive industry such as ours. It is interesting to consider some statistics that would seem to validate the concerns that industry has related to the level of BLM staffing. From the 2002 budget justification from the BLM, we find that key workload metrics, such as drilling permits, process, and drainage cases reviewed are increasing at the rates of 50 to 90 percent, whereas staffing planned to increase a mere 4.7 percent. We support increased funding for the BLM.

The second area that I would like to address involves environmental considerations associated with CBM. In my testimony, I refer to two issues: hydraulic fracturing, which is not the focus of the Powder River, it is not an issue in the Powder River; the second is water. And I would like to move quickly to the second issue.

There has been much testimony and much discussion already with regard to water in the Powder River Basin today. There is probably little that I could add technically that would be insightful. I will say this, though, Phillips has benefited by being involved in many diverse CBM developments from Alabama to China. In the Rockies, we produce in the San Juan, the Uinta, and the Powder River Basin.

Our experiences lead us to certain conclusions as to the similarities and differences of CBM developments. The one common

element is that coal must be de-pressured through groundwater production and a plan must be developed to manage that water.

There is no unique singular management strategy applicable across all basins or sometimes even within the same basin, such as in the Powder.

I would like to move quickly to the last point, which relates to markets and infrastructure, and just to make the point that in the West, we do have world-class natural resources, energy resources, with vast amounts of proven and potential reserves, that the natural gas produced in the Powder River Basin commands the lowest price of any gas produced in the nation today, with significant discounts to NYMEX-type pricing. The reason for this is not due to the quality of the gas; it is due to bottlenecks in the transportation system which exist.

In Utah, our gas production has been curtailed significantly this summer, while we wait on needed expansions. It will do little good to resolve the issues associated with the development of CBM unless the impediments associated with the transportation of gas are simultaneously addressed.

Because my time is more than short, I won't review our recommendations, but point out that they are cited in the written testimony.

In conclusion, Madam Chair, Phillips is excited about the potential the gas from coalbed methane has to offer American consumers. As our nation's reliance on clean natural gas resources continues to grow, coalbed methane can and will play a major role. That role can be enhanced greatly if access and other development impediments are adequately addressed.

Again, I thank you and the Committee for this opportunity to present Phillips' views on this important resource and would like to extend an open offer to tour Phillips' CBM facilities. We are proud of our operations and welcome the opportunity to show you and the Committee and staff what we are doing. Thank you.

[The prepared statement of Mr. Wallette follows:]

Statement of Don E. Wallette, Jr., Rocky Mountain Region Manager, Americas Division, Phillips Petroleum Company

Madam Chairwoman and Members of the Subcommittee, thank you for the opportunity to come before you today to present the views of Phillips Petroleum Company with regard to the safe and orderly development of Coalbed Methane from this country's federal lands, and primarily in the Rocky Mountain Region.

My name is Don Wallette, Jr. I am Rocky Mountain Region Manager of the Americas Division of Phillips Petroleum Company located in Denver, Colorado. Phillips Petroleum is a major multinational integrated oil company headquartered in Bartlesville, Oklahoma, with just over 13,000 employees worldwide. Phillips is involved in every facet of the oil and gas business, including exploration, production, refining, marketing, and transportation as well as research and development. We are also major players in the chemicals and gas gathering and processing businesses through joint ventures with Chevron and Duke Energy, respectively.

In the Rocky Mountain Region of the United States, Phillips has a major operating unit which focuses on the exploration and production of non-conventional natural gas resources with a primary focus on coalbed methane (CBM) and other tight formation gas resources. We have been actively engaged in the development of coalbed methane since 1989. Today, we produce CBM from over 1660 wells in the San Juan, Uinta, Black Warrior and Powder River basins in New Mexico, Utah, Alabama, and Wyoming, respectively, and also have active ongoing CBM exploration in unexplored areas in Wyoming, Colorado and China. Phillips has close to one-half billion dollars invested in CBM activities in the West. Phillips has a significant

interest in federal lands in the American West that contain much of the country's known reserves of natural gas and oil.

When I joined Phillips many years ago, one of the key issues being debated in Washington was the need for a national energy policy. Phillips applauds the Committee and the House in your recent passage of H.R. 4. This proposal provides a good first step in addressing America's long-term energy needs.

Coalbed methane is playing a major role in meeting the domestic natural gas needs of this Country and has the potential to play an even greater role. According to the recently released report on a National Energy Policy, the shortfall between projected energy supply and demand in the year 2020 is expected to be nearly 50 percent. Electrical power generation is a key focus of this demand increase. Currently, about 16 percent of domestic electrical generation comes from natural gas. Between now and 2020, natural gas is projected to constitute about 90 percent of all added electrical generation, tripling today's gas contribution. This supply/demand scenario was also confirmed by a recent study on natural gas by the National Petroleum Council (NPC). An update of that study recently revealed that natural gas reserves in the United States are not being added at the pace anticipated in last year's original study. To meet 2020 demand, total natural gas wells drilled annually will need to double the 1999 level, requiring staggering investments of some $658 billion by producers in the 1999–2015 timeframe.

The National Energy Policy Report and many other industry experts point out that gas from non-conventional sources is the fastest growing resource base and is expected to make a major contribution to America's growing energy needs. While I cannot verify that it is true, many industry experts believe that non-conventional gas resources, primarily coalbed methane, has moved into the California electric generation market to the degree that it has been a key factor in helping to lessen that State's anticipated summer supply/demand problems.

The report also correctly points out that the contribution of this resource will, largely, be determined by the future regulatory impediments it may face and by access related issues. Regardless, natural gas is clean, safe, efficient and reliable and is destined to play a vital role in meeting our Nation's energy needs. Coalbed methane stands ready to be a major contributor, if allowed to do so. We commend the work of this subcommittee in acknowledging the potential for increased production from CBM and its efforts to recognize those areas that may hinder the development of this resource.

Impediments to CBM Development

Madam Chair, I appreciate the invitation to appear before the Committee today to discuss the policy initiatives needed to achieve adequate CBM production from federal lands and impediments to timely development of CBM resources in the United States. The first and foremost policy initiative necessary to achieve adequate CBM production from federal lands is, simply put, timely access to federal lands under which much of the coal resource lies.

Access to Federal Lands

The availability of government lands to oil and gas producers is critical to meet the nation's growing needs for abundant, clean, efficient natural gas. America has vast natural gas reserves to help it meet its future requirements (1,200 to 1,600 trillion cubic feet (Tcf) including resources in coal seams and tight sands formations). But we must have greater access to government lands to produce this energy in an environmentally responsible manner.

Many government lands that should be open for leasing are in fact, off limits, or severely restricted from responsible development. Since 1983, access to federal lands in the western United States—where an estimated 67 percent of conventional onshore oil reserves and 40 percent of our natural gas reserves are located—has declined by 60 percent. According to DOE's Energy Information Administration, an estimated 40 percent or 137 Tcf of potential natural gas resource in the Rockies is either closed to exploration (29 Tcf) or is open to development under restrictive provisions (108 Tcf).

Congress has directed the Bureau of Land Management (BLM) and the Forest Service (USFS) to allocate non-wilderness lands for resource use, identify areas that are available for oil and gas leasing and identify important wildlife habitat areas, and inventory wilderness candidate lands among other uses.

Each agency has completed land use plans for the lands they administer, including lands that are candidates for wilderness designation. Yet, many lands not selected for wilderness designation are managed as "wilderness study areas." In effect, these lands become de facto wilderness and are removed from all mineral entry for the unforeseen future. Further, these agencies often dictate lease stipulations as

conditions of approval for exploration and production. Stipulations are intended to protect resource values in conjunction with proposed projects, such as exploratory wells, yet many conditions required, such as "no surface occupancy," essentially preclude exploration and production from occurring. Often excessively restrictive surface use stipulations, most often associated with wildlife, are imposed on exploration prospects or within existing producing fields, causing improper management of resources, unnecessary drilling delays and lengthy seasonal closures. Phillips pays lease rentals for 12 months of access but often we are only granted access for one to three months of the year because of lease stipulations or no surface occupancy restrictions. Both agencies are required to manage lands they administer under the congressionally mandated concept of multiple use. Yet, BLM and USFS discretionary actions have withdrawn federal lands from leasing and long delayed other leasing decisions and project permitting.

Access to federal lands is also often significantly delayed while National Environmental Policy Act (NEPA) requirements and associated documentation is being completed. These delays often manifest themselves in drilling moratoria. An example of this type of moratoria on new drilling exists today in the Powder River Basin. We are gravely concerned and significantly impacted by continuing delays in completion of the Powder River Basin CBM Environmental Impact Statement (EIS). The development of the coalbed methane in the Powder River Basin has been hampered by a drilling moratorium since early 2000, and will continue to be delayed until such time as the EIS is completed.

In an effort to protect public resources which are being drained by non–Federal CBM wells, the BLM completed a Drainage Environmental Assessment (EA) in March of this year that authorized the drilling of up to 2,500 wells on public lands in the Powder River Basin. To date about one-third of the drainage permits have been issued and the remaining balance most likely will be permitted by year-end.

Meanwhile we wait for the results of the EIS, which will determine whether and how industry will proceed with the 50,000 CBM wells required to fully tap the gas resource. The BLM's 2002 Budget Justification document stated "A draft EIS will be submitted for public review by July 1, 2001 and a final EIS and Record of Decision (ROD) will be issued by March 1, 2002." Here we are fourteen months later and the draft document has still not been issued and according to the BLM, a ROD is not expected until late July 2002, at the earliest.

The expected impacts of lengthy Powder River Basin EIS delays include:

- Public resources will continue to be drained by non–Federal activity;
- Wyoming state revenues from federal royalties will be negatively impacted;
- Producer volumes will not materialize as expected, detrimentally impacting returns;
- Pipeline transmission companies, who are investing tens of millions of dollars to expand capacity, will realize under-utilized capacity; and
- The service industry, which has worked hard to respond to the needs of the industry, will have to adjust to the anticipated lull in activity and will likely be unable to retain employment at current levels.

What are the government agencies doing in response to these unexpected delays in order to mitigate the potential impacts? Are they crashing resources on critical path activities? Are they considering "bridging" solutions, such as a supplemental EA for another one or two thousand wells? Are they making the tough management decisions that are necessary to run a major project according to plan? I don't have the answers to these questions, but perhaps they should be asked.

Streamlined Permitting, Budget & Staffing

In the same study referenced earlier by the National Petroleum Council (NPC), it points out that vast reserves of natural gas in the form of coal bed methane (CBM) lie beneath federal lands, especially in Wyoming and Montana. However, BLM's inability to grant drilling permits or complete their required National Environmental Policy Act (NEPA) evaluations in a timely manner has greatly hindered CBM development, and may contribute to further shortfalls in necessary future gas production. These NEPA delays are often compounded by the fact that many agency land and resource plans are outdated and in need of revision.

Regional oil and gas permitting program inconsistencies exist between BLM offices throughout the West. Varying, inconsistent, and subjective approaches to NEPA analysis, or levels thereof (environmental assessment verses environmental impact statement), often cause confusion as well as inefficient use of time, personnel and funding. Redundant permitting efforts often exist between the state oil & gas permitting agency and the BLM. The State of Utah has recognized this redundancy and has worked well with the Utah BLM to streamline the process.

Phillips works closely with the BLM field offices on a daily basis. We know them well and have a high regard for their professional competence and their commitment. Through our day-to-day interaction with the BLM we can also draw conclusions about the scope of their activities and associated workloads. Our sense is that the growth of natural gas activity in the West, particularly with respect to CBM, has far outpaced the BLM's ability to respond in a timely manner. Obviously, cycle times are critical in a capital-intensive industry such as ours.

It is interesting to consider some statistics that would seem to validate the concerns that industry has related to the lack of appropriate BLM staffing. From the 2002 Budget Justification from the BLM, we find that activity in the Oil & Gas Management sector has increased significantly and is projected to continue. For example, in 2002, the BLM expects:

- APDs (application for permits to drill) processed are expected to increase 58% from 2001.
- Reservoir Drainage Cases are expected to increase 92% from 2000.

Meanwhile staffing, which should be activity-related, is expected to increase 4.7% from 2000 to 2002 - a total of 32 jobs focused on one BLM field office in Buffalo, Wyoming.

It is difficult to reconcile the nation's needs for energy, the billions of dollars and thousands of people the industry is devoting to developing the needed resources, with the government's response of adding 32 jobs. This seems to be either a lack of understanding of the scope of work or a disregard for the impact that governmental agencies have by continually residing on the critical path.

In terms of overall agency performance, opportunities exist to streamline the permitting process, improve inter-office and inter-agency coordination, and consistency. In some instances we recognize that individual BLM offices may be understaffed or not appropriately funded, and therefore, are simply unable to efficiently process permitting requests. We, therefore, support increased funding for BLM to adequately address these critical permitting backlogs and NEPA documentation efforts.

Environmental Considerations

Two separate environmental issues regarding the production of coalbed methane are currently the topics of discussion at the state and federal levels. The first pertains to the process of hydraulic fracturing of coalbed methane formations to stimulate production, and its potential effect on underground drinking water sources. The second issue relates to the water issues associated with producing coalbed methane in the Powder River Basin.

The Eleventh Circuit Court ruled in 1977, in Leaf v EPA, that the process of hydraulic fracturing to stimulate certain types of gas wells, constituted "underground injection" under the Safe Drinking Water Act (SDWA). This ruling apparently is based on a technical reading of the statute as the court did not identify any environmental concerns with the practice. The effect of this ruling was to require an onerous state program requiring the certification that fluids being injected meet SDWA standards for drinking water. There is currently a challenge to this ruling that seeks national regulation of the practice. States currently oversee this practice and have in place a superb regulatory process to protect state aquifers. The protection of our drinking water sources is Phillips highest priority when producing coalbed methane. We believe that the practice of hydraulic fracturing certain gas wells to stimulate production is an environmentally sound practice, as analysis demonstrates. Any review of the process as it relates to coalbed methane production should ensure that the states continue to have the lead role of protecting and ensuring the quality of their aquifers.

Access to Markets—Infrastructure Development

I'd like to speak for a moment about infrastructure—pipes and wires. We have, in the West, a world-class resource base with vast amounts of proven and potential reserves. In America, we are blessed with world-class markets—strong, efficient and growing. Unfortunately, large distances typically separate the two. At times it seems that our infrastructure is far closer to third-world rather than world-class.

The impediment to development of CBM resources in the West is, and will be, profitability. Today, natural gas produced in the Powder River Basin commands the lowest price of any gas produced in the nation, with discounts to NYMEX approaching $1/mmbtu. The reason for this is not because the quality of the gas is inferior, but because there are significant bottlenecks in the transportation system creating gas-on-gas competition. In Utah, our gas production has been curtailed significantly while we wait on needed expansions to be completed in the transmission system. It will do little good to resolve the issues associated with development of CBM unless the impediments associated with marketability are simultaneously addressed.

Infrastructure deficiencies not only impede commerce, but also introduce high levels of volatility in the price of the commodity. The impacts of this are obvious, and except, perhaps, for certain commodity traders and speculators, are un-welcomed. It leaves consumers angry, capital providers insecure, regulators and politicians perplexed and concerned, and producers frustrated that our products are unable to be delivered.

Our concerns are not limited to impediments affecting gas transmission. As large consumers of power and suppliers of fuel to electrical generators, we are also affected by impediments to efficient electricity generation and transmission.

Recommendations

Among the many constraints that confront the timely development of CBM resources, we believe an attempt to address the following areas would greatly enhance our ability to bring these resources to market.

- Increased funding for BLM to address critical permitting backlogs, NEPA documentation efforts, and to revise agency land and resource plans.
- Modernize and streamline permitting process and incorporate a 45-day Application for Permit To Drill, Right-of–Way, and expressions of interest to lease processing requirement.
- Complete a focused reevaluation of the effectiveness and present application of common wildlife lease stipulations and associated timing windows.
- Consider the Utah permitting approach in other western states.
- Expedite wilderness inventories, with an emphasis on Wilderness Study areas, and monument designation reviews with consideration and protection of prior valid existing rights.

We applaud this Committee's passage of legislation enacted in the last Congress directing the Departments of the Interior and Energy and the Forest Service to conduct an inventory of oil and gas resources on federal lands and the restrictions that prevent access to these critical resources. We urge Congress to fully fund this inventory in the fiscal year 2002 appropriations process so that adequate information will be available on resource availability.

In conclusion, Madam Chair and Members of the Committee, Phillips is excited about the potential that gas from coalbed methane has to offer America's consumers. As our nation's reliance on clean, natural gas resources continues to grow, coalbed methane can and will play a major role. That role can be enhanced greatly if access and other development impediments are adequately addressed.

Again, I thank the Committee for this opportunity to present Phillips" views on this important resource.

Mrs. CUBIN. Thank you very much.

The Chair now recognizes Joanne Tweedy from the Coalition for Responsible Development of Coalbed Methane. Joanne is from Gillette, Wyoming, and not only is she here on behalf of coalbed methane responsible development, but she contributes a lot to the State of Wyoming and to her community as a volunteer and is just an all-around good citizen. Joanne, welcome.

STATEMENT OF JOANNE M. TWEEDY, COALITION FOR RESPONSIBLE DEVELOPMENT OF COALBED METHANE

Ms. TWEEDY. Thank you, Madam Chairman, members of the Committee.

It is an honor for me to address this Committee concerning one of our nation's most promising new sources of clean, environmentally friendly energy, coalbed methane. My name is Joanne Tweedy. I am a Wyoming rancher, I am a mineral owner, and I am the Chair of the Coalition for Responsible Development of Coalbed Methane.

I am not here to advocate for or against methane development on public lands, but I do want to offer you my perspective on coalbed methane development as a private land and mineral owner.

First, let me stress that I am a working rancher. Our ranch is located in the heart of Wyoming's Powder River Basin and it is me-

dium-sized by Wyoming standards. It has been home to my family since my uncle homesteaded it in the early 1900's. And it is our pride and our joy.

Of all the groups involved in this development, those of us who actually make our living by the land are the most acutely aware that coalbed methane must not be allowed to destroy the grass, the croplands, the water, the wildlife, and, yes, the beauty of Wyoming.

From an economic standpoint, coalbed methane has been a godsend to much of the Wyoming ranching community. Like many other ranchers, my husband and I long ago began subsidizing our ranching operation with outside jobs. At many times, that had not barely been enough.

Coalbed methane has changed all of that for many of the ranchers in my coalition. Surface-use payments royalty on gas production has restored these ranches to self-sufficiency. In our neighborhood alone, two ranches have avoided economic extinction thanks to coalbed methane development. I doubt we would have to look very far to find others.

Water discharge has become the lightening rod issue of coalbed methane development, so let me speak to that question. I won't pretend to speak for everyone, however, most of the 125 members of our coalition are land and mineral owners, and I can speak for them. We see coalbed methane as a boom and benefit to ranching. Let me use our ranch just as an example.

Before coalbed methane development, our ranch had three pastures, which could only be used in the spring and the early summer before the water reservoirs went dry. Over the past 4 years, coalbed methane operators have built new reservoirs on our ranch, they have cleaned and enlarged others. They have worked with us to hold as much of the methane water runoff as possible in these reservoirs. We are capturing nearly all of our water, and we are filling our reservoirs and keeping them full. We now have reservoir water in every pasture and we can use every pasture to its fullest advantage.

I believe that the Wyoming Game and Fish Department will agree with me that water availability and dispersion are the controlling factors in wildlife production, just as they are for livestock. Obviously, increased water resources benefits waterfowl. Some ranches stock their methane water reservoirs with fish, deer and upland game birds, to name a few species that benefit from increased water supply.

One more point: My perspective on energy is based on more than just coalbed methane. Twenty-five years ago, environmentalist opponents of coal development spun out prophecies of devastation and ruin resulting from surface coalmines in the Powder River Basin. Come to Wyoming and judge the outcome of that scenario for yourself. You will see a coal industry which produces almost one-third of the United States' coal yet regularly wins awards for its outstanding land reclamation and its treatment of the environment. Today, we hear many of the same "sky is falling" prophesies about methane development. I respect the sincerely held views of my friends and neighbors who disagree with me on the coalbed methane water issue. I respect solid scientific evidence and rational discussion of the water issue. Above all, I respect policy decisions

which are based on good science and good intentions. But I do not respect attempts by special interest groups to distort the coalbed methane water issue and to exploit it for political advantage.

I hope that this Committee will make its decisions about coalbed methane development based on fact and not on political rhetoric. Coalbed methane offers us one way to secure our nation's energy future. We in Wyoming and especially our Department of Environmental Quality prove every day that we can develop our energy resources without destroying either our environment or our way of life.

As a state and as a nation, we must develop coalbed methane responsibly, with care for our people and for our environment, but without political exploitation.

Thank you, Madam Chairman.

[The prepared statement of Ms. Tweedy follows:]

View from a working Wyoming ranch:

Coal bed methane brings benefits

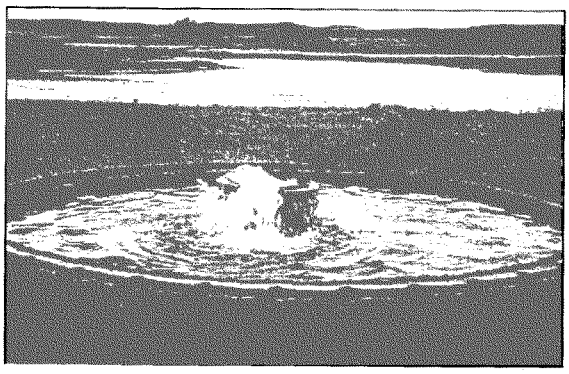
Joanne Tweedy, Chair–Coalition for Responsible Development of Coal Bed Methane

United States House of Representatives
Committee on Resources
Subcommittee on Energy and Mineral Resources
September 6, 2001

Good morning, Madam Chairman, members of the committee, distinguished guests, members of the media. It is an honor for me to address this committee concerning one of our nation's most promising new sources of clean, environmentally friendly energy....coal bed methane.

My name is Joanne Tweedy. I am a Wyoming rancher... I am a mineral owner.... and I am chair of the Coalition for Responsible Development of Coal Bed Methane. I am not here to advocate for or against methane development on public lands. I do want to offer you my perspective on coal bed methane development as a private land and mineral owner.

Water - Gold of the West



Three of the Tweedy Ranch's pastures were once usable only in spring and early summer – until their water reservoirs dried up. Now, tanks and reservoirs fed by methane wells provide water year round, allowing the ranch to fully utilize all its grazing areas.

"A godsend"

First, let me stress that I am a *working* rancher. Our ranch is located in the heart of Wyoming's Powder River Basin. It is medium sized by Wyoming standards. It has been home to my family since my uncle homesteaded the original land in 1912, and to this day, it is our pride and our joy.

Of all the groups involved in this development, those of us who actually make our living by the land are the most acutely aware that CBM development must not be allowed to destroy the grass, the croplands, the water, the wildlife ...and yes, the beauty...of Wyoming.

From an economic standpoint, CBM has been a godsend to much of the Wyoming ranching community. Like many other ranchers, my husband and I long ago began subsidizing our ranch

Coal bed methane generates water,

operations with outside jobs. At times, even that has not been enough.

Coal bed methane has changed all of that for many of us. Surface use payments and royalties on gas production have restored many ranches to self-sufficiency. In our neighborhood alone, two ranches have avoided economic extinction, thanks to coal bed bed methane development. I doubt that we would have to look very far to find others.

Methane's lightning rod

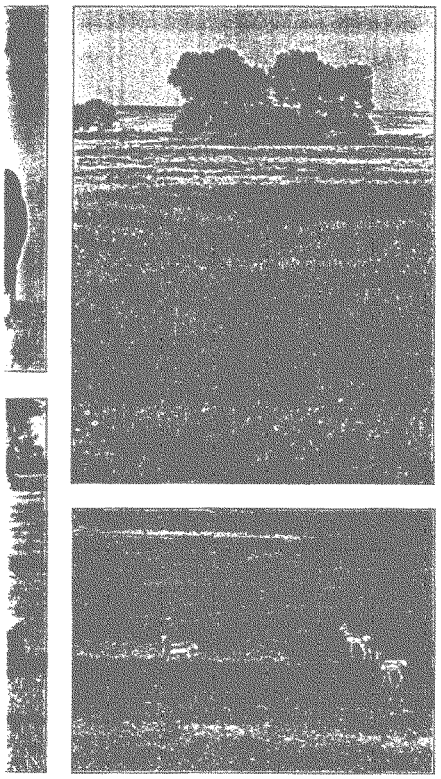
Water discharge has become the lightning rod issue of CBM development, so let me speak to that question. I won't pretend to speak for everyone. However, most of the 125 members of our Coalition are land and mineral owners, and I can speak for them. We see CBM water as a boon and a benefit to ranching. Let me use our ranch as an example.

Before CBM development, our ranch had three pastures which could only be used in the spring and early summer, until their water reservoirs went dry. Over the past four years, coal bed methane operators have built three new reservoirs on our ranch. They have cleaned and enlarged four others. They have worked with us to hold as much of the methane water runoff as possible in these reservoirs. We are capturing nearly all of the water; we are filling our reservoirs; we are keeping them full. We now have reservoir water in every pasture...and we can use every pasture to fullest advantage.

Caballo Creek on the Tweedy Ranch

Caballo Creek crosses much of the Tweedy Ranch. Opponents of coal bed methane development predicted that methane water discharges would effectively destroy the vegetation and the life it supports in the Caballo Creek area. In fact, no damage from methane water is apparent along Caballo Creek.

much needed revenue for ranchers



Pictured, clockwise from left top: Reservoirs provide water for cattle; vegetation and wildlife flourish along the creek bed; pronghorns are among the big game species and waterfowl which use methane water; a hay meadow continues to provide its bounty for the ranch.

I believe that the Wyoming Game and Fish Department will agree with me that water availability and dispersion are the controlling factors in wildlife production, just as they are for livestock. Obviously, increased water resources benefit waterfowl. Some ranches have stocked their methane water reservoirs with fish. Deer, antelope and upland game birds, to name a few species, benefit from increased water supplies.

Not a new challenge

One more point. My perspective on energy is based on more than just coal bed methane. Twenty-five years ago, environmentalist opponents of coal development spun out fearsome prophecies of devastation and ruin resulting from surface coal mines in the Powder River Basin.

Come to Wyoming and judge the outcome of their scenarios for yourselves. You will see a coal industry which produces almost one-third of all United States coal...yet regularly wins awards for its outstanding land reclamation...for its treatment of the environment...and for its health and safety records.

The Wyoming sky is not falling

Today, we hear many of the same sky-is-falling prophecies about methane development. I respect the sincerely held views of my friends and neighbors who disagree with me on the CBM water issue. I respect solid scientific evidence and rational discussion of the water issue. Above all, I respect policy decisions which are based on good science and good intentions.

What I do not respect are attempts by special interest groups to distort the coal bed methane water issue and to exploit it for political advantage. I hope that this committee will make its decisions about coal bed methane development based on facts, not on political rhetoric.

Coal bed methane offers us one way to secure our nation's energy future. We in Wyoming, and especially our Department of Environmental Quality, prove every day that we can develop our energy resources without destroying either our environment or our way of life. As a state...and as a nation... we must develop coal bed methane responsibly...with care for our people and for our environment...but without political exploitation.

Thank you, Madam Chairman.

Where is the coal bed methane well?

This is the site of a coal bed methane well along the banks of Caballo Creek. The Tweedy Ranch headquarters is visible in the background. This example demonstrates how little visual and environmental impact coal bed methane wells create when they are properly built and the land around them is reclaimed. The methane well in this picture is the small doghouse-like structure inside the cattle exclosure, just below the county roadway, at right center.

Joanne and husband Chuck Tweedy are third generation ranchers in Campbell County, Wyoming. Joanne is chair of the Coalition for Responsible Development of Coal Bed Methane, an organization of approximately 125 Powder River Basin land and mineral owners. CRDCBM paid Joanne Tweedy's travel expenses to appear before the House Subcommittee on Energy and Mineral Resources and paid for this publication.

Mrs. CUBIN. Thank you, Joanne.

One observation I have made since I have been in Congress, and particularly on this Committee, before I came to Congress, I toured the Powder River Basin open-pit coal mines. And truly, you can't tell where the reclamation begins and the virgin land ends. There is wildlife there, there is water, there is grass. It is beautiful. You can't tell the difference.

And then I saw some mines in Kentucky and they were older mines. We have an oil field in midwest Wyoming that was developed 100 years ago. And by today's standards, that field never could be developed like it is.

And so the point that I want to make is that I understand and accept the problem that you are dealing with in the San Juan Basin and think that Wyoming is probably the beneficiary of that problem, because we don't have to make the same mistakes, we don't have to follow the same path, just as we didn't with our coal development and just as we didn't with our other natural gas and oil development. That is the advantage of being the youngster on the block, I guess.

Because I have been up and I have looked at the fields in Wyoming, of the coalbed methane development. And it is hard to see big problems, although there definitely are some.

Mr. Joswick, I wanted to ask you, you made a statement that Federal policy runs over the citizens of La Plata County. When you are talking about that the U.S. Government has thrown an unnecessary bone to an industry that really doesn't need it, are you talking about the Section 29 tax credit?

Mr. JOSWICK. Yes, I was.

Mrs. CUBIN. Okay. I just wanted to make sure that everyone understood that that tax credit applies only to wells that were spudded by December 31, 1995. So if they weren't spudded by then, that tax credit does not apply. So I don't think that that is something that we will be dealing with in Wyoming. And I guess I wanted to ask you, is your recommendation, then, that—or all of you; Ms. Blancett as well—that we repeal that tax credit. I don't exactly understand what the problem is with the Federal Government.

Mr. JOSWICK. Okay, just to back up a little bit.

Mrs. CUBIN. Sure.

Mr. JOSWICK. What I did say that I wanted to make sure that our people were not run over roughshod by Federal policy. I didn't say that they were being run over.

Mrs. CUBIN. Okay, good.

Mr. JOSWICK. Okay.

In terms of the tax credits, I guess I need some more information about that. I had been told—and once again, I guess it is rumor—that they had been extended on those wells that were already in place, the wells you referenced, as well as they were going to be put on new production wells as well. And that was what I was referring to, was that I think that there would be no need to put them on new wells.

Now, if that's not happening, so much the better.

Mrs. CUBIN. Thank you.

And we need to look at—

Mr. JOSWICK. But I do have a question: So you are saying that is not going to be on new wells?

Mrs. CUBIN. Well, the law that is in place right now, the Section 29 tax credits, apply only to wells that were spudded by December 31, 1995. Now, in H.R. 4, the President's energy bill, I need to look and see if there are some tax credits for coalbed methane in there. I am not sure as I sit here right now, so I will check into that.

Mr. JOSWICK. Okay, if you would, because that is the information that I had.

Mrs. CUBIN. Okay.

La Plata County's efforts in dealing with surface owner issues involving oil and gas development on split estate lands is to be commended, I think. There has also been discussion of a surface owner's bill of rights to deal with the split estate lands. It appears that one of the concerns is that real estate is sold and the people who buy the real estate don't realize that they are not buying the mineral estate at the same time. Is that part of the problem?

Mr. JOSWICK. That is part of the problem.

Mrs. CUBIN. Then, again, trying to sift out between Federal, state, county jurisdiction, it seems to me that that should be either a state issue or a county issue, that there should be a requirement of a seller to disclose that or a buyer to ask.

Mr. JOSWICK. Yes, I believe the State Legislature addressed that, and there are now requirements legislatively. They went ahead and addressed just what you are talking about.

Mrs. CUBIN. Okay. You talked about the Federal regulations on CBM development being different than La Plata County regulations and state regulations. Could you tell me how they are different? Or what you would like this Committee to do, other than what we already talked about with the tax credit, if in fact that is the case? How can we help?

Mr. JOSWICK. Okay, I don't know if I said that, if I referenced that, as far as BLM and state. The biggest problem that we have now—and not to jump on Rich, because he and I have gone round and round and round about this for years, so we are old nemeses here—is with the state and the conflict between the state's perception of what we can regulate and our perception what we can regulate. So, you know, it is more of a conflict there. I think the biggest problem that we have had historically—I have been involved in this thing before I became a county commissioner, so it kind of goes back. I know a lot more about it than I ever thought I would care to know about it. And when we first started getting involved in this, the BLM was very reticent to get involved with anything that had to do with seeing what would happen because of doing EISs, seeing what would happen because of coalbed methane development. And that changed. We have a fairly decent working relationship with the BLM. Now that has changed over the years.

Mrs. CUBIN. Right.

Mr. JOSWICK. We have worked to cultivate that, and I think that we have done a pretty good job of that. You have to understand that in our county, we actually have three jurisdictions. We have Federal jurisdiction. Then, of course, we might have some, not very much, Federal mineral under private land. We have private land

development. And then we also have development on the Southern Ute Indian Tribe Reservation.

So it gets pretty maze-like, in terms of who is responsible for what. What we have tried to do is work with the BLM. And they have gotten better about doing best practice standards and being responsive to the needs of the community and to the concerns of the community.

So I don't think I was really trying to jump on the BLM about too much. I don't know if I answered your question or not.

Mrs. CUBIN. Yes, you did. Thinking about the surface owners' bill of rights that you referred to, the mineral owner has rights, too. And the mineral estate is just as valuable to that owner as the surface estate is to that owner. So how do you balance that out?

Mr. JOSWICK. Well, through local regulation; how about that? No, I was being facetious.

One of the things that has been promoted from the beginning is the dominance of the mineral estate. What we have tried to work at is equating the estates. And there was a case in Colorado where the Colorado Supreme Court said that neither is dominant and neither is subservient to the other, that they are equal and they must respect the rights of the other in developing. And that, I think, goes a long way toward doing what you are saying.

All we have been saying all along is please respect the fact that you are probably, because of the nature of the split estate, going on somebody's property who really isn't going to benefit from your being there. Now, you can work out a surface-owners agreement, whatever it is that you can work out with these people, but you can't just go on there and say, "Get out of the way. Here we come. Tough." You have to work with them.

Mrs. CUBIN. Although it seems to me that they should have known when they brought the property and access to private lands. And stranded land in Wyoming is a big deal.

But it is the purchaser's responsibility to know whether or not there is access to the land, to know whether or not the mineral estate is theirs, and what the rules are going in. It seems like you have to have a date and time, and everything that goes before has to follow the law before. Then if you want to change that, okay, for the future, so that everybody goes under the same set of rules.

But it seems like you shouldn't be changing the rules when the game is half over.

Mr. JOSWICK. Yes, that was kind of our perspective, too. Are you familiar with spacing?

Mrs. CUBIN. Yes.

Mr. JOSWICK. In La Plata County, spacing began at 320-acre spacing, so it was one well per 320. And that was the rule that most people bought their property under. Well, the rules changed. And then they went down to 160. And I will guarantee you that I was even told that that was not going to happen.

So you are right, rules shouldn't change, but they do. And you are also right that people do have a responsibility to find out what exactly is going to happen, but it is a changing field. And that is where we get some of the conflicts, is that, you know, perhaps it would go to 80 or perhaps it would go to 40-acre spacing. And that is an unknown. You know, the industry will say, "No, it is not

going to." The state will say, "No, it is not going to." And then it happens.

So, you know, how do you tell someone that? If you are a realtor, the best you can do, probably, would go on, if you are showing a piece of property, would be to go there and say, "Currently, you do not have development. Does that potential exist? Yes, it does."

I will guarantee you, most realtors aren't going to be saying that. And that is very difficult for us to monitor—for anybody, the state, the feds, or us—to monitor what a realtor is telling a client.

Mrs. CUBIN. How about on the title? How about on the title insurance? Couldn't that be mentioned on the title insurance?

Mr. JOSWICK. That the possibility for development exists?

Mrs. CUBIN. Yes. It seems like the state could require that through the insurance commission.

Mr. JOSWICK. Yes. I don't know. Did they put that in the new legislation? Yes, okay.

Mrs. CUBIN. Mr. Griebling, thank you for sharing your experience in dealing with the many aspects of CBM development in Colorado. You guys seem like you are about 5 years ahead of us, like I said.

I understand that the Colorado Oil and Gas Conservation Commission responded to concerns over the affect oil and gas well spacing has on surface issues by instituting public interest meetings. I would think, then, that you have met the needs of local governments, landowners, and special interests groups, since, seemingly, they all had the opportunity to participate. Do you feel that that process has been successful?

Mr. GRIEBLING. I think it has been very beneficial to get local input. And we have actually held the local forums that you referenced a number of times in the past. But more recently, we are trying to get our commission hearings held in the areas where the concerns are.

And as an example, this September hearing is going to be held in the San Juan Basin, in the neighboring county to La Plata County, because one of the matters that the commission is considering is spacing that area of the San Jan Basin at one well per 160. And when we get our commissioners down there and have them hear the comments directly, it is going to be very beneficial and the people appreciate that.

Mrs. CUBIN. Because of lower drilling costs in the Powder River Basin, it appears that some operators are small companies, which might not have been able to finance drilling deep wells in the Green River Basin, for example. Others like Phillips are quite large. Does your state regulate small companies differently than it does the large companies?

Mr. GRIEBLING. We regulate them all the same, but we do have a diverse makeup of small and large companies. We have about 600 operating companies in Colorado.

Mrs. CUBIN. In your opinion, is the CBM industry under-regulated and uncontrolled, as some people claim it is?

Mr. GRIEBLING. In Colorado, it is very appropriately regulated. And we often are basically compared to other states. And a recent study by a contractor that was funded by the state found that we are pretty strict in regulation in relation to other states, I guess.

Mrs. CUBIN. Do you have any idea on the relationship to Wyoming?

Mr. GRIEBLING. I don't specifically. I know that we are comparable in many ways. I work closely with my counterpart up there, and we have good communication. But I am not aware of any major differences in the level of regulation between the two states.

Mrs. CUBIN. Thank you.

Mr. Wallette, you mentioned in your testimony that you think that the BLM needs more people to process the APDs in the Powder River Basin. I asked Al Pearson, when we were in Wyoming over the August break, that question, do you need more people, what can we do speed it up? Either approve them or deny them, but get them out the window.

He said that he didn't think they needed more people. I take it that you disagree with that?

Mr. WALLETTE. Well, I can understand how it could be a source of frustration and a Committee such as this to have industry sitting here saying that BLM or Department or Interior needs more people, yet the people within the department say that, "No, we are fine. We can administrate this."

I was just really pointing to some of the workload activity statistics that were including within their own budget submission. And there seemed be a disconnect between their anticipation of growth in drilling permits and drainage cases to be reviewed and their staffing level increases, contrasting 50 to 90 percent increases with a 5 percent or 4.7 percent increase in staffing.

I think I share the same concerns that Mr. Dobkins expressed, that today we are concerned about the delays in the permitting, the backlog of permitting, the continuing delays on NEPA-type documents and the EIS. I think that is evidence as well.

But we are more concerned about when the next EIS is actually approved and the next wave of permits are being requested to be processed. Are they thinking ahead to the 2002, mid-2002 time period? I think that is the issue.

Mrs. CUBIN. Can they get the people trained so that they will be able to make decisions at that time, instead of hiring them at that time and then having to train them and the whole process, I guess.

Mr. WALLETTE. I would hope that they are anticipating that and are taking action. I don't see the evidence reflected in the budget submissions, though. And that is a little bit of a concern.

Mrs. CUBIN. And that is what I thought, too.

You heard the witness for the BLM say that he thought all of those 3,500 that are pending now would be done in 2 years. Is that time reasonable or does that cause too much expense? What is your opinion about the 2 years?

Mr. WALLETTE. Well, I am a little surprised by the 2-year estimate. I mean, we are talking about around 12 months from now having another approved EIS. And I would anticipate that there would be an awful lot of permits that would be issued as a result of that, not to mention the 3,500 or whatever permits that are backlogged today. So, yes, I would like to see them issued in a more timely manner. We are impacted by that.

Mrs. CUBIN. You stated in your testimony that the Utah BLM has been working with the state to eliminate the redundancies and streamline the permitting process. For instance, in Wyoming, the state approved over 7,6000 APDs for CBM, of which almost 1,900, or 25 percent, were on Federal land, during this last year. Doesn't it seem logical that if the BLM accepted the approvals done by the state, that it would free up staff so that they could devote their time and efforts to processing and approval of surface aspects of drilling permits and monitoring and compliance and things like that?

Mr. WALLETTE. Madam Chairman, I do believe that there are areas of synergy, although I haven't really looked at the processes, state and Federal, and compared them. We do know that there are redundancies. And I think that is what we were trying to express, relative to how Utah is handling the permits.They don't typically ask for duplicated material. They say, "Well, if the BLM is asking for this, then that is fine. Just send us that." I mean, that is the general approach.

But we do recognize that the BLM in Wyoming is taking steps to streamline their processes. They share the same interest, as we do in this regard.

I believe they are planning on moving toward an e-permitting type process, general permits. So we are not disappointed with that, but we do think that there are areas for improvement.

Mrs. CUBIN. Are they moving toward electronic filing at all?

Mr. WALLETTE. I believe that is what I heard at a meeting in Casper last week.

Mrs. CUBIN. Good.

Ms. Blancett, you made a statement that I didn't understand, that BLM was not in compliance with regulations for the environment, and I just don't understand what you meant by that. Would you elaborate? I think you said that the operators weren't in compliance and that nobody was in compliance on your land.

Ms. BLANCETT. It is not just my permit. It is that every permit in San Juan County is out of compliance.

The surface reclamation has not been done on the permit, as the APD calls for. And BLM has not enforced compliance, and they will admit that they haven't enforced compliance.

I would love to have you come look at your Phillips wells on my permit. I have Phillips wells on both deeded land and on Federal land and on state land, along with Burlington and Amoco and 17 other producers. They are not in compliance. They have not handled their reclamation like they should have.

That is wonderful they have that, and we had it 10 years ago. We were not out of compliance 10 years ago, before we have 25,000 wells, Madam Chairman.

What I am saying is that when things move too fast, the surface gets ignored, watershed gets ignored, wildlife gets ignored, and forage is diminished. And that is what has happened in northwestern New Mexico.

But don't take my word for it. Come and look at it. I truly mean that. You cannot understand the problem by me telling you. You can't understand the problems by looking at pictures. Please just

come and see it, because we don't want this in the rest of the Rocky Mountain states.

Mrs. CUBIN. And I appreciate that, because we certainly don't want what you have described in the rest of the Rocky Mountain states. And how to prevent that and still be able to produce the resources is the challenge, and I think it can be done.

Ms. BLANCETT. I do, too. If industry and BLM and the private landowner will work together, it can be done. There is no doubt in my mind.

Mrs. CUBIN. I know that there has to be bonds before the permits are issued. Have any of the bonds been called to remediate the damage?

Ms. BLANCETT. Until last month in the Farmington district, there had been no penalties issued in 5 years.

Mrs. CUBIN. That is no Federal, no state.

Ms. BLANCETT. No nothing. We have instances of salt spills that are 5 years old that everybody was informed about. The producer was informed about it. The pipeline company was informed about it. The BLM was informed about it. The reason I said the producer and the pipeline company is because they are one in the same people on this.

And I am not singling out anybody in the industry. Please understand, they are all marching to the same drum. And it is not surface reclamation, and it is not care of the environment, because they are extracting the minerals as their leasehold rights give them the right to do.And BLM is not enforcing their own regulations. And they will admit that they aren't. The oil and gas companies will tell you, "We are out of compliance." But we are moving way too fast to take care of it.

But, again, come and look.

Mrs. CUBIN. I don't even know that it is appropriate for this Committee to try to step in a situation like that, but certainly I think that it is appropriate that the congressman, Mr. Udall, who is on this Committee, it is appropriate for him to approach the BLM and demand and explanation of why that has not been required. I just cannot imagine that people would stand by and allow this to go on and on and on.

And so I will offer my help. Do you have any suggestions for this Committee to help you, how we should proceed. Obviously you said not too fast, and I think we all agree with that.

Ms. BLANCETT. Madam Chairman, it isn't what I can suggest to you, probably, because I am one person, and I am representing, you know, 1.5 million acres today, because we don't have a BLM person with us from our area. But I can assure you that if that BLM person was sitting here, and if I had my Phillips counterpart, or if I had my Burlington counterpart sitting over here, they would tell you that we have some problems, and that we haven't been working on them in a good, neighborly, stewardship manner.

Now, maybe it is Representative Udall's place to work on it. Maybe it is Senator Bingaman's and Senator Domenici's. I will tell you, they have sent people. They have done it. Things are not happening.

But that is not the reason I was trying to talk to you. I am trying to tell you that when coalbed methane came to San Juan County,

that was when we saw this tremendous surface damage across the board, because things moved so fast.

Surface reclamation wasn't done. Our science in New Mexico wasn't in play.

So don't make those same mistakes as you move into the West. Again, we are not opposed to drilling. We think it is wonderful. I want America to stand on its own and get away from the Mideast. I think everybody in this room agrees with that. But the environment is so important to families that use it as a sustainable resource. The farming and ranching will be there many years, we hope, after the other resources are depleted.

If it is not, then the wildlife, the fauna and the forage, the beauty of northwestern New Mexico will be there, as well as Wyoming and Montana and the Dakotas and southeastern Colorado and northeastern New Mexico, because we are getting ready to open fields there, too.

So, please, just don't make the mistakes we have made in northwestern New Mexico. That is all I am asking.

Mrs. CUBIN. I appreciate that very much. And I appreciate your passion about it. Eighth generation on the land, it shows and it shows well. Thank you.

Joanne Tweedy, I am delighted to hear about your positive experiences. And I know that a lot of ranches actually have been saved. With low prices for cattle and all of the problems that the agriculture industry has been facing, I know that coalbed methane has saved a lot of private ranches.

Let me ask, do you have any split estate lands on your Federal oil and gas lease operation?

Ms. TWEEDY. Yes, Madam Chairman. Very little, though. We do have some. Probably 16 percent of the total of our ranch would be a split estate. We have been into coalbed methane for approximate 4 years, and we just haven't experienced any of the negative, other than dust.

I mean, you know, when you have a development and it is dry—we have had a drought—we have extreme dust. And if you want to call that a negative. I mean, calves can get dust pneumonia, that sort of thing.

We have not seen the lack of reclamation. We have pipelines that are not reclaimed due to the fact that it is so dry that if you put in the grasses into the pipeline to reseed them, which the oil companies hire to be done, it wouldn't come up anyway. We have asked that they not do it. Why spend the money to do it when it has just been so dry, it won't come up. We are going to try to do, again, some this fall, providing we have rain. Once again, they can spend millions of dollars reclaiming that, and if there is no rainfall, I don't know how it is going to come up.

We have not experienced the lack of reclamation around the wells. In my testimony, you see a picture of our ranch with the small well. We don't have very much land that has not been reclaimed there. In other words, where they worked on the methane well, they didn't take out four acres and park their trucks and et cetera, et cetera.

Now, sure, there has been a time when someone has parked their truck on our land, versus the one acre they were supposed to have.

And yes, it is dry. Yes, it probably hurt the grass. Yes, it is development. And, yes, we were paid for it. And I believe that we need to work with the companies. And we have tried desperately to do that.

Now, I am accused that, of course, if we weren't getting compensation, that I wouldn't feel that way. Maybe not. But the truth is the truth. And our split estate, they have done just as well. Maybe we didn't have the clout with the split estate that we have with the private mineral estate, where we can say—and it was in our lease.But we have surface-use agreements. They were done by attorneys that knew how to set up a surface use. We worked with them. And we go back to that. They don't do what they are supposed to, we say, "Okay, we have a problem here. Let's sit down and talk about it."

Mrs. CUBIN. Would you have any advice for the PRBC members in dealing with coalbed methane operators, so that they could get a better outcome? You heard a rancher that you know, Mr. Swartz. Do you have any advice for how some of the people who feel they are not getting treated fairly by the companies?

Because what I hear from most all of the people there, it is more like your testimony, that they are fair, that they are compensating us for damages and for occupancy and so on.

Ms. TWEEDY. Madam Chairman, I have not seen Mr. Swartz's ranch and the condition that he is explaining. I grew up in the same town that Ed did, and I know that, what he has talked about, I have not seen, so I can't comment. I do not have a degree in hydrology. I don't know what the problem is.

As for who he could go to, I think probably the state people, and I think they have tried to help. I don't know what the bottom line is.

I know in some of the smaller 40-acre plots around town, that is a problem. They are getting no compensation. It is a half mile away, the well is producing dust maybe, they would like to have a new road built and have the oil company build them a road for maybe $1 million, and the wells are producing maybe $.5 million total. It may not be any good.

And so what their wants are from the oil company is kind of like an entitlement. And I don't work for an oil company, but I know that is the way they must feel. If an oil company came on my place and I said, "Would you please, Mr. Exxon or Mr. Phillips Petroleum, give me $10,000 per well surface damage," I would smile all the way to the bank. I suspect that they would never drill on my place, because it wouldn't be economic.

There is only so much you can do. I don't know what is wrong with the water up there. We have no problem with our water. Our cattle are drinking it. Our water is as good as the well that produces in our house. There is nothing wrong with it. There is no white. There is no salt.

Now, there may be. Where it has dried up and the water is gone, you can go in to the bottom of the creek bed and there is still no white, so it is a different kind of water, I guess. I don't know. It is clean, coal-purified water. That is what it is, Madam Chairman.

Mrs. CUBIN. Another complaint I have heard is about compressor noise. And you are right, those complaints have come from people

who have smaller parcels of land. But I can really sympathize with that.

Would any of you like to talk about the noise and what you do to mitigate it? How do you deal with people who can't take the noise? They thought they were buying a place out in the country and 100 yards from them is a compressor that makes noise 24 hrs a day.

Mr. WALLETTE. Madam Chair, I guess I am the only operator represented at this panel, so perhaps I should try to address it. But I am going to have difficulty because I believe—and the rest of the panelists can correct me if I am wrong—but I believe most of the noise complaints usually revolve around gas gathering and compression type sites, usually fairly large booster stations with multiple engines in place.

Typically, at least in the Powder River Basin, you don't have the pump jacks and pumping units, typically, so you don't have very much noise at all around the producing lease. So I don't believe that we had any gas gatherers present today, so I don't think that I can really address what is being done from their aspect.

Mr. BLANCETT. Madam Chairman, we have the royalties on wells that producing—they are on the 320 spacing, each one of them. And they all have huge compressors on them. And what the company has done—Amoco is one company; the other two belong to Burlington—is they have come in with huge panels to diffuse the noise either up, straight up, or they send it down an area that is not populated. In some areas, that just isn't acceptable.

Then in Colorado we have a wonderful, wonderful example of where they have taken the compressor unit and completely put it underground, so there is no noise, and they are irrigating on top of it. It is a wonderful example of how this problem can be solved if the landowner, the regulatory agency, and industry work together.

But we have, I would say, probably with very few exceptions, every well in our area, which is a boom area for producing this gas, has a compressor on it. It is very noisy.

Mrs. CUBIN. Thank you.

The Chair now recognizes the ranking member, Mr. Kind.

Mr. KIND. Thank you.

Mr. Joswick, did you have something you wanted to add?

Mr. JOSWICK. If I could, in terms of the noise. Thank you.

I guess that has been one of the major frustrations that we have had in La Plata County, because—and this is one of the areas where Rich and I have gone round and round about, who exactly is it that deals with noise regulations. The county decided that we did need to have a regulation, a local regulation, county reg, that dealt with noise because we deal with noise in other areas, whether it is a gravel pit or any other industrial sort of application.

What we found was, we were precluded by state law from dealing with that as it pertains to the oil and gas industry, so it is up to the state to set those noise levels and to deal with that.

What we have found, however, in La Plata County is that the gas industry is well aware that people are watching them, and that they are being observed as to how good an operator they are. And in those cases, like Tweedy said, if there is problem, we have got-

ten so that the operators are probably a little more amenable to dealing with us, in terms of voluntarily putting up sound baffles, sound walls, redirecting the noise somewhere. But it is not anything that we can regulate.

And that is a frustration, because it is one of those areas where we feel that that is well within our rights to do that, because we do it for other operations, but we can't do it for the oil and gas. So that is what our situation is with that.

Mrs. CUBIN. Thank you.

Mr. KIND. Thank you, Madam Chair.

I apologize for not being here in person. But due to the advent of modern technology, we have the luxury of having the testimony piped into our offices, so I have been able to catch a substantial portion of it, and I appreciate your testimony today.

And it has been a fascinating hearing, Madam Chair. It is amazing to listen the testimony and hear such completely contradictory or diametrically opposed views of what even the facts are in the area, which gets a little bit confusing for us. And we are trying to weed through it and sift through it.

But it is my understanding that there are some groups in Wyoming that have leveled allegations that Wyoming's Division of Water Quality hasn't been reviewing data or scientific information in regards to the permit-granting process and the discharge of water. Does anyone have information about that, or an opinion in regards to the substance of those allegations of what Wyoming's—I think it is the Division of Water Quality is doing and what they are reviewing?

Mrs. CUBIN. Mr. Kind, Dennis Hemmer with the Wyoming DEQ is here, if he wouldn't mind, and if you would like him to respond, that would be all right with the Chair.

Mr. KIND. That would be wonderful. He might be able to step up to the microphone.

Sir, if you can identify yourself for the record?

Mr. HEMMER. Pardon me?

Mr. KIND. If you could just identify yourself briefly for the record.

Mr. HEMMER. Yes, I am Dennis Hemmer. I am the director of the Wyoming Department of Environmental Quality.

You are correct that there has been a complaint filed with the Environmental Protection Agency regarding our issuance of the permits. I don't think that that complaint gets into issues that affect the scientific validity of the permit. Most of the portions of that complaint follow procedure and are complaints on procedure. I believe that we have been procedurally issuing those correctly. However, there is an independent evaluation by the Environmental Protection Agency. We will see what comes out of that.

Mr. KIND. I believe also one of the allegations is that the department is arbitrarily lowering the water quality standards that have been used. Is that part of the basis of the complaint?

Mr. HEMMER. Sir, I don't believe that there is a basis of the complaint that we have arbitrarily lowered any standards. We do not set standards arbitrarily. We have an administrative procedure process much like Federal agencies and most state agencies have, and water quality standards are only changed after notice and after public comment and after deliberation.

In our case, actually the agency doesn't set the standard. The standards are set by an independent board, by the Environmental Quality Council.

We did, when coalbed methane began, review some of our standards. We had some standards in terms of some of the receiving streams that were protections that exceeded the ambient quality of the exceeding streams. We did adjust those standards so that they were more inline with the quality of the receiving streams. That was done through an administrative procedure process. It was done through full rule-making and full public comment.

Mr. KIND. And that, I assume, is what the groups are identifying as the alleged lowering of the standards, the change in standards you just described?

Mr. HEMMER. I believe that if they are suggesting that there was a lowering, it would have been through that. It was a full public process. It was actually done by our citizen council.

Mr. KIND. Thank you for your testimony.

Does anyone else have anything to add, on the panel?

Let me just ask, in regards to some of the confusion after today's hearing, in regards to the commensurate level of mineral extraction rights versus private landowners' rights, is that a perceived problem right now with a lot of the landowners, that they are not on a level playing field when it comes to mineral extraction rights on their land?

Mr. Joswick, do you want to answer?

Mr. JOSWICK. I don't think that is a perceived problem; I think it is a real problem, because the playing field is not level. We have been working at leveling it, and it has gotten better. It is not there yet.

One of the biggest problems, I think, is that, say, if I own the surface and you own the minerals and you come and you want to extract it, you know, we can try to work out some sort of surface agreement. The problem is that the hammer that you have is that you can always say, "Look, I am just going to post a bond with Rich and go ahead and drill. Now let's come to an agreement."

Well, you know, that is perhaps not the negotiating position for me to be in.

Mr. KIND. Right.

Mr. JOSWICK. So I think that that is a very real concern that people have, that the playing field is not level. And once that well is there, I realize the some people have said that it is a temporary use. Well, temporary use being 40 or 50 years, 20 years, whatever it is. It is a long time. It is going to be there for a while.

Mr. KIND. So how does it get fixed, at what level?

Mr. JOSWICK. I am sorry; say again?

Mr. KIND. How does that get fixed?

Mr. JOSWICK. Well, we have tried to deal with that legislatively and haven't had much luck with that, you know, once again, within the statehouse of Colorado, to try to do that.

What we have done locally is we have adopted what we call a surface owner discretion regulation, and we have had to redo this, but what we are trying to do is say, if they are coming on my place, that I should have the option within a certain set of guidelines to determine where the well goes.

And then we work on mitigations, sound mitigation, if we can; visual mitigations; and in conjunction with neighbors as well. This is a neighborhood thing. It is not just you want to go on my place, because what we are having now is the wells going into subdivisions, so it is not just wells being putting on larger acreages.

Mr. KIND. Yes, go ahead.

Mr. GRIEBLING. Sir, I would like to add a little bit to that. In La Plata County, where Commissioner Joswick is from, the largest operator is BP Amoco. And they drill most wells in that county, and they have a good way of dealing with the issue that you raised, and that is that they try, almost at any cost, to negotiate a surface-use agreement, between them as the operator and the surface owner. And I think about 95 percent of the wells they have permitted with us, they permitted with agreements in place.

And we strongly encourage that. We see that as the best way to resolve those issues.

Mr. KIND. Anyone else on the panel have anything to add?

Mr. Wallette?

Mr. WALLETTE. Well, I can't speak for the San Juan Basin, because that is outside my area of responsibility, but as far as the Powder River Basin, we have reached surface-use agreements for every well that we drilled up there. Now, we recognize that we won't always be able to do that. We will run into unreasonable situations, but it is certainly the large exception to the rule of condemning, I guess, and going forward without an agreement with the surface owner.

Mr. KIND. Ms. Blancett?

Ms. BLANCETT. Yes, Madam Chairman, Mr. Kind. The thing that I would say about surface agreements is that they are wonderful on paper. The problem is that when you have a problem and you ask them to fix it, and it is part of the surface agreement, and they don't fix it, you go to court. You don't have any other alternatives, if the industry is not wanting to be a good neighbor.

And that is what is happening in San Juan Valley, because things, again, are moving too fast.

Mr. KIND. How realistic of an option is that, though, for the private landowners? I would imagine that is a very expensive litigation process they have to go through, with the discovery that has to take place and everything else.

Ms. BLANCETT. Again, I would speak from a personal thing on private land, it is a big problem. But where it is even greater, since 96 percent of the land of San Juan County is Federal, that it is the surface agreements that they have with the Federal Government are out of compliance, because there are certain things they are supposed to do according their APDs that are not being done.

And BLM, again, is not enforcing.

Mr. KIND. All right.

Anyone else? Anything to add?

Great. Well, thank you again. Those are all the questions I have, Madam Chairman.

Mrs. CUBIN. Thank you.

One point that I do want to finish with is that, yes, I agree, we don't want to go too fast and endanger the environment. But as I pointed out earlier, to the State of Wyoming alone, $750,000 a

month is being lost to the state treasury because of drainage from Federal minerals. And I think that speaks to the need to do the permitting, to do it correctly, to have the people in place to monitor for compliance, and so on.

But this will go on and on. We will keep losing Federal dollars and we will keep losing state dollars until we get the permits processed, because state lands and private lands are producing and they are draining the Federal mineral.

And I think that point can't be made too seriously.

The hearing record will be held open for 10 days for any additional information that you would to submit and for the purpose of answering questions that any members of the Committee may send to you in writing.

I do thank you very much for your testimony. I thank you for traveling all the way here, and the answers that you provided us with.

Mr. KIND. We should also mention, for the record, that a couple of our colleagues who serve on the Resources Committee, both Tom and Mark Udall, have a very strong interest in this, obviously affecting many of their constituents in both Colorado and New Mexico. I have noticed that some of their staff have been sitting in throughout the course of the hearing today, and they, too, want to be very engaged in regards to the deliberations of this Committee. And I just wanted to recognize the work and the involvement that they have shown on this very important issue.

So thank you again. Thank you all again. I yield back.

Mrs. CUBIN. The Subcommittee on Energy and Mineral Resources is now adjourned.

[Whereupon, at 3:13 p.m., the Subcommittee was adjourned.]

[Additional material submitted for the record follows:]

1. A letter submitted for the record by Richard E. Fraley, Vice President, San Juan Division, Burlington Resources, Farmington, New Mexico;

2. A letter submitted for the record by Robert M. Gallagher, President, New Mexico Oil and Gas Association; and

3. A statement submitted for the record by Dr. Rollin D. Sparrowe, President, Wildlife Management Institute.

4. A letter submitted for the record by The University of South Carolina, The University of Louisiana at Lafayette, and BP America, Inc.

BURLINGTON RESOURCES

Richard E. Fraley
Vice President
San Juan Division

September 12, 2001

The Honorable Barbara Cubin
Chair
Subcommittee on Energy and Mineral Resources
Committee on Resources
1626 Longworth House Office Building
Washington, DC 20515

Dear Ms. Cubin:

This letter is to briefly outline the progress being made in the San Juan Basin of New Mexico in meeting surface owner and user concerns with respect to natural gas exploration, development and production in this, one of the most important gas supply areas of the United States. As the largest natural gas producer in the Basin, Burlington Resources is especially interested in ensuring that there is good understanding of that progress.

Since several of the witnesses at your September 6 hearing on coalbed methane development raised such concerns, I would appreciate your making this letter part of the record of that hearing.

First, it is important to understand that the San Juan Basin of New Mexico and Colorado has been meeting gas supply needs since the 1950's. There have been more than 32,000 wells drilled in the Basin that now provides some 4-billion cubic feet of natural gas to the U.S. market each day, as much as 70% of it to California. These wells have all been drilled, completed and are being operated under the applicable BLM Resource Management Plan, and the rules and regulations of the New Mexico Oil Conservation Division or the Colorado Oil & Gas Conservation Commission. In addition, producers and operators comply with the rules of many other agencies including the United States Forest Service, the Bureau of Reclamation, Tribal governments, the Bureau of Indian Affairs and State Game and Fish agencies.

Second, it is important to understand that the coalbed methane production from the Basin appears to have peaked within the last several years, with current and future activity focused increasingly on other natural gas bearing formations. This is in contrast to other states and areas in which activity in other types of coalbed gas formations is increasing rather dramatically.

3401 East 30th Street, 87402-8807, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9880

Third, we are committed to our environmental obligations and to improving cooperation among Burlington Resources, federal agencies led by the Bureau of Land Management, and surface owners and users (including holders of grazing permits) to improve how we address all effects of our energy work. For instance:

- Burlington Resources has participated actively with many of our counterpart companies in joint efforts, in coordination with the BLM and other federal agencies, the State of New Mexico and surface users, to improve road construction and maintenance practices, mitigate noise effects of our operations and study areas of potential environmental concern.

- Burlington Resources, as part of industry efforts to address specific incidents of surface user concerns, has met with many of those users (most recently within the past three weeks) and has proactively taken concrete steps to address those concerns.

  For instance, and of perhaps specific concern to the Subcommittee, cases such as Treciafaye Blancett testified to should be addressed and are being remedied. In the month prior to Ms. Blancett's testimony before the Committee, Burlington Resources met with the Blancetts several times concerning areas where Burlington Resources operates wells and have initiated remedial actions on issues potentially affecting their ranching operations.

  Finally, we at Burlington Resources take surface owner and user concerns seriously. We recognize our ongoing obligation to address these concerns and how we communicate about them. We will be in touch directly with Ms. Blancett and others to again explore ways in which BR can continue to address concerns that the ranching community may have.

  We appreciate the opportunity to address these issues with you, your staff and members of the committee. Burlington Resources facilities, wells and operations are available for inspection by the appropriate regulatory agencies as well as members of Congress. If you or your staff desire to see our operations, please advise and we will coordinate an on site visit as your schedule allows.

Thank you.

Sincerely,

Richard E. Fraley
Vice President, San Juan Division

New Mexico Oil & Gas Association

2000 - 2001
Executive Committee

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President
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P.O. Box 1864
Santa Fe, NM 87504-1864

Phone 505-982-2568
Fax 505-986-1094

staff@nmoga.org
www.nmoga.org

September 12, 2001

Representative Barbara Cubin
Subcommittee on Energy and Mineral Resources
Committee on Resources
1626 Longworth House Office Building
Washington, DC 20515

Dear Chairman Cubin:

The New Mexico Oil and Gas Association (NMOGA) would appreciate having this letter included in the record of the hearing held on September 6 entitled "Oversight Hearing on the Orderly Development of Coalbed Methane Resources from Public Lands" so that we might respond to some of the comments made by at least one witness regarding coalbed methane operations in the San Juan Basin of New Mexico.

Our Association represents virtually every exploration and production company that operates in the San Juan Basin and we are intimately involved with our industry's efforts to ensure environmental compatibility of our operations, but also "good neighbor" relations with those who own the surface of lands from which we produce natural gas in the Basin – and those who use the surface for other purposes even though, by law and contract, they must provide access to the subsurface minerals.

Can we improve our current operations, and correct conditions that may have resulted from past practices that do not meet current and future standards and expectations? Yes, and we are committed to doing so. And we have had countless industry meetings and contacts with other surface owners and users to address such subjects, with real actions in the field as a result. But congressional witnesses do not help that process when they make blanket incorrect and misleading statements about the situation in the San Juan Basin.

The Basin currently produces some 7% of the nation's natural gas. Most of the wells that contribute to that supply are drilled on federal lands administered by the Bureau of Land Management. While we would agree that the BLM could use more resources, both human and financial, to fulfill its energy supply and environmental protection responsibilities,

the agency has done a remarkable job. Contrary to the impression that may have been left during your hearing, visits to random well and facility locations by objective visitors repeatedly elicit comments as to how little impact there is – in one of the most intensively developed natural gas basins in the country.

But that is not enough. Our industry will continue to work with federal, state and local governments to improve both our operations through the use of new technology and innovative practices that disturb less of the land. And we will increase our efforts to communicate about what we are doing to accomplish that goal.

As part of those efforts, please consider visiting New Mexico to see for yourself how we produce the energy America needs, and the progress we continue to make in ensuring environmental compatibility. We would be pleased to arrange such a visit anytime. In addition, we would also welcome the opportunity to provide testimony to your committee concerning this subject matter.

Thank you for considering these views, and do not hesitate to let NMOGA and me know how we may be of assistance to you and your staff in the future.

Sincerely,

Robert M. Gallagher
President

SEP 10 2001

Wildlife Management Institute
1101 14th Street, N.W. • Suite 801 • Washington, D.C. 20005
Phone (202) 371-1808 • FAX (202) 408-5059

ROLLIN D. SPARROWE
President
RICHARD E. McCABE
Vice-President

Written Testimony of Dr. Rollin D. Sparrowe, President
Wildlife Management Institute

on the

Orderly Development of Coalbed Methane on Public Lands

to the

U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Resources
Washington, D.C. 20515

September 7, 2001

Introduction

Ms. Chairman, I write to you on behalf of the Wildlife Management Institute (Institute) to express our concerns regarding the orderly development of coalbed methane (CBM) on public lands. Our Institute, established in 1911, is staffed by professional wildlife scientists and managers. Its purpose is to promote the restoration and improved management of wildlife and other natural resources in North America. We commend the Committee for initiating this dialog and for attempting to address the social, economic and environmental impacts of CBM development. We are concerned that the seriousness of the impacts CBM development may have on wildlife and other natural resources may be underestimated, and we urge the Committee to lay the groundwork that will lead to a plan for long-term and orderly development of CBM with the least amount of impact on wildlife and other natural resources. We request that our written testimony be included in the record of the hearing on coalbed methane on public lands held on September 6, 2001 by the Subcommittee on Energy and Mineral Resources of the House Resources Committee.

Our Institute believes coalbed methane extraction may strongly impact wildlife and other natural resources. Though some CBM site impacts are not fully understood, it is clear that these projects represent a major hazard to wildlife in some of the nation's most imperilled habitats. We believe that it is critical that other wildlife professionals, advocates, and organizations quickly focus on this issue and take action to influence its future.

It is estimated that coal beds already provide at least six percent of the nation's natural gas, and geologists predict that contribution could double as new fields are developed. There are thousands of proposed new CBM development projects across the United States. For instance, the Bureau of Land Management recently published a notice of intent to prepare a draft environmental impact statement to evaluate a proposed CBM project in Carbon County, Wyoming. This project proposes the development of up to 3,880 CBM wells within approximately 310,000 acres of federal, state, and private lands over the next 20-30 years. We are concerned over the lack of reliable estimates regarding the impacts these proposed developments will have on wildlife and other natural resources.

Experts estimate that the Powder River Basin of Wyoming holds potential for 70,000 CBM wells, with one-half of these being in production by 2010. Potential coalbed methane deposits also exist in widespread locations in Alabama, Arizona, Colorado, Indiana, Illinois, Iowa, Kansas, Kentucky, Michigan, Montana, New Mexico, Oklahoma, Ohio, Pennsylvania, Texas, Tennessee, Utah, and West Virginia.

Proponents of CBM development point to the nation's growing energy needs and argue that methane gas is a clean burning energy source. They also argue those impacts on water resources are not severe and that the wells produce needed revenues in local communities. It is estimated that America's coal beds contain so much methane that recovering just 15 percent would yield a trillion cubic-foot, enough to meet the entire country's natural gas needs for more than 11 years (*Los Angeles Time's* article March 2001).

The process of extracting methane gas from coal beds involves de-watering the saturated coal beds to reduce pressure that traps methane vapors. Once the pressure is released, well rigs extract the liberated gas. This process results in huge amounts of water of varying quality being brought to the surface at each well site. This massive amount of ground-water removal can negatively influence amount and quality of important underground aquifers.

It has been estimated that one Wyoming development with 5,000 coalbed methane wells will impact millions of gallons of ground water each day. Disposing of this water on the surface is a major concern. In most cases, the water simply is pumped into existing waterways to flow into wetlands, streams and lakes. Immediately, two problems are encountered: 1) the run-off of water often erodes natural waterways; and 2) depending on quality of the discharged water, existing water sources may be contaminated.

Other concerns associated with CBM production include: 1) methane jets venting above ground; 2) fires smoldering underground; 3) toxic hydrogen sulfide leaking into streams; 4) loss of natural vegetation; 5) depletion of important underground aquifers that support domestic and livestock wells, natural springs and seeps; 6) loss of important aquatic life within the waterways receiving the coalbed waters. In addition, infrastructure, including roads, pipelines, and electrical power to support CBM extraction also threaten wildlife habitats.

Our Institute is concerned about negative impacts of these developments on important wildlife and fish habitats on our nation's public lands. Some have suggested these developments are in violation of NEPA and FLPMA. At the very least, they are stretching agency authorization under existing Resource Management Plans (RMPs) and Forest Plans on public lands, because CBM production and its impacts were not contemplated in provisions for standard oil and gas wells.

We are concerned that the American public may be unaware of this growing threat. There is a need for responsible, environment-friendly management of these developments. Only through informed, collective, and persistent public input will the interests of wildlifeand other natural resources be protected. Our Institute also believes the state wildlife agencies must play an active role in the evaluation and development of CBM wells. Trust responsibility for most fish and wildlife resources lies with the states, and impacts of CBM exploration and development must be monitored and evaluated by these agencies. Coalbed methane development should proceed only at the rate, density, and conditions specified by the state wildlife management agency.

Ms. Chairman, we urge your subcommittee to provide leadership on this important nationwide issue. We also encourage you tp secure funds to enable state wildlife agencies to monitor and evaluate the impacts CBM development will have on wildlife and other natural resources.

UNIVERSITY OF LOUISIANA
Lafayette

Office of the
Vice President for Research

P.O. Box 43610
Lafayette, LA 70504-3610
337-482-5811
Fax: 337-482-5102

Université des Acadiens

September 27, 2001

The Honorable Barbara Cubin
Chairwoman
Subcommittee on Energy & Mineral Resources
1626 Longworth House Office Building
U. S. House of Representatives
Washington, D.C. 20515-6208

Madam Chairwoman and Members of the Committee:

The undersigned, representing the University of South Carolina, The University of Louisiana at Lafayette, and BP America, Inc., recognize and appreciate your interest in CBM resources as evidenced by the hearing you held on September 6, 2001, and in support of that interest submit the following information with respect to your investigation of "The Orderly Development of Coalbed Methane Resources from Public Lands." This is submitted to the committee for incorporation into your hearing record.

The importance of developing coalbed methane resources is not easily overstated. The United States currently consumes approximately 23 trillion cubic feet (TCF) of natural gas annually; a figure that is projected to increase to approximately 32 TCF by 2015. Natural gas provides 16 percent of the nation's electricity generation and is expected to account for about 90 percent of the projected expansion of electricity generation in the next twenty years. This growth is driven in part by the fact that natural gas is a clean burning fuel, and emphasizes the need to maintain adequate low-cost supplies. Improvements in the production of methane from coals can contribute significantly to meeting this demand.

Globally, between 2,980 TCF and 9,260 TCF of CBM resources have been identified; and much of it is in the Peoples Republic of China, Canada, and the United States. Resource numbers for the former Soviet Union are comparable and additive to these totals. Nevertheless, substantial CBM resources exist which cannot at present be economically developed.

Although many factors contribute to determining the economic viability of CBM resource development, coal permeability - the ability to move gas out of the coal - is one of the most important. For several years a team of researchers at BP, the University of Louisiana at Lafayette, and the University of South Carolina has been developing new techniques for enhancing coal permeability and has made remarkable discoveries about the composition and formation of coals and coalbeds. This team has applied new techniques to existing CBM wells in the field to increase coal permeability that have resulted in approximately **40 percent increases in recoverable methane reserves.**

If these results can be successfully duplicated in other coalbed methane wells and in other basins we could see a dramatic increase in natural gas production without additional costly drilling. Indeed, if these results bear out, new wells that were thought to have been uneconomic to drill may become so by the use of these new reservoir stimulation methods.

Unlike earlier production enhancement methods and research, these newly developed techniques rely on chemical rather than physical processes to enhance coal permeability. Work by this team has determined that cleats begin to form very early in a coal's life while it is still a very soft sediment and before it is capable of sustaining brittle failure, or being "broken". The team has also determined that oxidizing solutions passed through some coals act to promote cleat formation.

The naturally occurring processes which result in the formation and opening of cleats in coals are not well understood. These processes need to be deciphered if we are to replicate their effects for purposes of reservoir enhancement. In order to fully commercialize the early field test results, we must identify the full range of potential oxidizing agents and understand their usefulness across the spectrum of coal types and constituents. Such a wide investigation would likely take decades to accomplish in the field. This team, therefore, has developed a plan and techniques to move this testing into the laboratory. Using coals created in the laboratory from known constituents, the team will apply numerous oxidizing agents and use an atomic force microscope to find early evidence of cleats formation and alignment. Utilizing such laboratory techniques will drastically reduce the time required to arrive at the conclusions needed for the commercialization of these new techniques. As promising combinations of coals and oxidizing agents are discovered in the laboratory, the team will further test them in the field using full-scale production facilities.

Such a research effort is supported in principle by the President's National Energy Policy, as well as by the report of the House Democratic Caucus Energy Task Force. The program proposed by this team seeks to dramatically increase available natural gas reserves even without additional drilling. Indeed, if early indications hold true, new production will result in reservoirs which using current techniques were not economic to drill.

The President's National Energy Policy summarizes the case for this research most clearly:

> *The challenge for our nation is to use technology to maintain and enhance the diversity of our supplies, thus providing a reliable and affordable source of energy for Americans. These goals can and must be accomplished whale maintaining our commitment to environmental protection.* (National Energy Policy, May 2001, pg *5-3)*

BP America, Inc.

by _____
W.C. Riese

University of Louisiana at Lafayette

by _____
Alan M. Bailey
Professor of Geology and
Director of X-Ray Center

University of South Carolina

by _____
Arthur D. Cohen
Professor of Geological Sciences