APPENDIX B
COMPLETE SET OF SCOPING LETTERS

Casper Field Office RMP Revision Scoping Report
Comment Letter Index – By Author

Last Name	First Name	Organization	Comment Letter Number	Format
Baumann	Patrick J.	Kennecott Energy	CSL-0040	Letter
Birgenheier	Edward J.	Pathfinder Backcountry Horsemen of America	CSL-0019	Comment form
Bonds	James	N/A	CSL-0016	E-mail
Boomgaarden	Lynne	Office of State Lands and Investments	CSL-0009	Letter
Bruner	Archie	N/A	CSL-0033	Letter
Campbell	Robert, Rita and Jock	N/A	CSL-0043	Comment form
Clayson	Tom	Anadarko Petroleum Corporation	CSL-0002	Letter
Corra	John V.	The State of Wyoming Department of Environmental Quality	CSL-0010	Letter
Donovan	Billie	N/A	CSL-0022	Comment form
Etchepare	John	Wyoming Department of Agriculture	CSL-0005	Letter
Frankhauser	Mahlon and Joan	N/A	CSL-0015	E-mail
Grenier	Martin	Wyoming Game and Fish Department	CSL-0004	Letter
Hamilton	Ken	Wyoming Farm Bureau Federation	CSL-0045	Letter
Hardy	G. Eugene	Hardy Ranch	CSL-0031	Comment form
Hines	James	N/A	CSL-0034	E-mail
Johnson	Joe	N/A	CSL-0026	Comment form
Koepsel	Kirk	Sierra Club	CSL-0012	Letter
Kozlowski	Julie	The State of Wyoming Office of the Governor	CSL-0006	Letter
Leske	Jeanne	N/A	CSL-0038	Comment form
Lindley	Laura	Bjork, Lindley, Little, PC	CSL-0017	Letter
Markus	Michael J.	Natrona County Development Department	CSL-0035	Computer Comment Form
McCulloch	Clyce	JY Ranch	CSL-0024	Comment form
McCulloch	Clyce	JY Ranch	CSL-0025	Comment form
McCulloch	Clyce	JY Ranch	CSL-0029	Website
McGuire, Jr.	Bernard R.	N/A	CSL-0027	Comment form
Molvar	Erik	Biodiversity Conservation Alliance	CSL-0001	Letter
Parmely	Keith	Casper Dirt Riders	CSL-0037	Website

Last Name	First Name	Organization	Comment Letter Number	Format
Potter	Darla J.	The State of Wyoming Department of Environmental Quality	CSL-0013	Letter
Preuit	Tom	N/A	CSL-0028	Comment form
Raap	Kim	Wyoming Department of State Parks and Cultural Resources, Division of State Parks and Historic Sites	CSL-0008	Letter
Reddick	Joe D.	N/A	CSL-0030	Letter
Riggins	J.R.	Motorized Rec. Council of Wyoming / Casper Dirt Riders	CSL-0042	Comment form
Rodgers	Jess	Converse County Conservation District	CSL-0032	Comment form
Shepperson	Randy	KS Ranch	CSL-0041	Comment form
Small	Kenneth	Springfield Ranch	CSL-0039	Comment form
Smith	Michael	National Trust for Historic Preservation	CSL-0003	Letter
Straka	Daniel	Casper Dirt Riders, Wyoming Motorcycle Trails Association	CSL-0020	Comment form
Straka	Daniel	Wyoming Motorcycle Trails Association and Casper Dirt Riders	CSL-0036	Website
Taylor	Mike	Department of Energy	CSL-0018	Comment form
Unknown	Unknown	N/A	CSL-0021	Comment form
Unknown	Unknown	N/A	CSL-0023	Website
Wichers	Bill	Wyoming Game and Fish Department	CSL-0011	Letter
Wichers	Bill	Wyoming Game and Fish Department	CSL-0044	Letter
Williamson	Florenc L.	N/A	CSL-0014	E-mail
Wolf	Judy K.	Wyoming Department of State Parks and Cultural Resources, State Historic Preservation Office	CSL-0007	Letter

Biodiversity Conservation Alliance

Working *to* Protect Native Species and Their *Habitats*

P.O. Box 1512, Laramie, WY 82070 (307)742-7978 fax: 742-7989

August 8, 2003

Casper Field Office, BLM
2987 Prospector Drive
Casper, WY 82604

Re: Scoping Comments on the Casper Resource Management Plan Revision

Dear Planning Team:

The following are the comments of Biodiversity Conservation Alliance (BCA) on the proposed revision of the Casper RMP. Please address the issues raised in these comments in the forthcoming DEIS for the plan revision.

1. The new Casper RMP should require adequate protection for sage grouse.

Current BLM protections and mitigations for sage grouse are woefully inadequate. Currently, the Wyoming BLM typically requires NSO stipulations for the first ¼ mile radius of a sage grouse lek, and mere timing limitations from ¼ mile to two miles of the lek. Most sage grouse typically nest within 2 miles of a lek site, and scientists agree that the area within two miles of the lek site should be given full protection from disturbances. This includes road-building, oil and gas drilling, and vegetation manipulation projects such as sagebrush clearing and burning. If disturbance-related activities are allowed to occur at all within the two-mile radius of a lek site, the grouse will return the following spring to a lek site with heavily impacted nesting habitat, and likely human activity on roads and well sites well within the 2-mile radius. This will cause decreased reproduction and possibly lek abandonment. Given that the sage grouse has been petitioned for listing under the Endangered Species Act, and this listing will now become even likelier due to the impacts of West Nile Virus on sage grouse populations westwide, the absolute minimum measure that should be emplaced is a NSO (and no vegetation treatments) within 2 miles of a sage grouse lek.

2. The new Casper RMP should require adequate protection for prairie dogs.

Current BLM protective measures for prairie dogs seem essentially nonexistent. Both the white-tailed and black-tailed prairie dogs have been petitioned for listing under the Endangered Species Act, and also are keystone species that is vital to the viability of other

rare and declining species such as ferruginous hawk, swift fox, black-footed ferret, mountain plover, and burrowing owl. The new RMP should require NSO stipulations for all prairie dog colonies with a ½ mile buffer to prevent increased raptor predation that results from the construction of roosting structures such as condensate tanks. Prairie dog colonies should also be avoidance areas for power line rights-of-way. In addition, the BLM should make a current survey of prairie dog colonies throughout the Field Office, and prairie dog complexes larger than 3,000 acres should be designated as Areas of Critical Environmental Concern, with additional protections such as a moratorium on recreational shooting.

3. The Casper RMP should adequately protect big game crucial ranges.

The BLM has heretofore been woefully remiss in protection big game crucial winter, crucial winter yearlong, severe winter relief, and calving ranges. Seasonal stipulations have failed miserably to provide protection, as they have allowed roads and well sites to be built inside crucial winter ranges, and these seasonal stipulations are waived at the operator's convenience, nullifying the nominal protection that is afforded in the first place. The result is that roads and well sites are built inside big game crucial ranges, with the result that vehicular traffic and increased human activity occur inside these sensitive habitats during the crucial season. This is an unacceptable state of affairs. Instead, the new RMP should require NSO stipulations to be placed on all big game crucial ranges, with no opportunity for waiver.

4. The Casper RMP should adequately protect raptor nesting habitat.

Current BLM mitigation measures and protective stipulations regarding raptor nest sites are inadequate. These measures typically require No Surface Occupancy only within a few hundred feet of a raptor nest. The best available science suggests that 1/4-mile buffers are the minimum protection that can be afforded to prevent nest abandonment, and larger, 1-mile buffers are needed to account for particularly sensitive species like ferruginous hawks and for drought years and other periods of prey scarcity, when raptors range more widely and are more susceptible to disturbance. It is important to note that a disturbance that causes nesting raptors to abandon the nest for as little as 10 or 20 minutes can lead to the fatal cooling or overheating of eggs or the fatal dehydration or exposure of chicks, leading to the failure of that year's reproductive effort and consequently impacting the local raptor population. Bald eagle winter roost sites must also be identified and granted similar protections.

5. The Casper RMP should identify and protect big game migration corridors.

The Wyoming Game and Fish Department has identified migration routes for several big game species. These migration corridors should be protected from industrialization, lest habitat fragmentation or increased levels of human disturbance lead to interruption of annual migration patterns or even extirpation of migratory populations. An important lesson

from the Red Desert's Steamboat Mountain elk herd is that once a migratory population& lost, natural migration patterns are not reestablished by the reintroduction of that same species to the vacated area. In the case of the Steamboat Mountain herd, the native herd migrated between summer ranges in the Wind River Range and winter habitats in the Red Desert; following extirpation in the 1930s, the reintroduced population failed to take up the original migratory patterns of the native herd.

6. The Casper RMP should identify and protect mountain plover nesting habitat.

Mountain plovers are about to be listed as Threatened under the ESA. The Casper RMP should include a comprehensive survey of the field office for mountain plover, conducted during the short window in late spring when the birds are visible and according to scientifically accepted protocols. Nesting areas that are identified should be protected with No Surface Occupancy stipulations, with a minimum ½ mile NSO buffer.

7. The Casper RMP should protect populations of rare native warmwater fishes.

We are concerned about the potential impacts of water withdrawals (both from oil and gas projects and livestock operations), dams and diversions (small and large), coalbed methane wastewater discharge, and siltation from road and wellpad construction on BLM Sensitive fishes such as the hornyhead chub. Actions that interrupt the flow regime, temperature regime, chemical signature, or migration routes for these fishes must be prohibited through the new RMP.

8. The Casper RMP should minimize fences on public lands, remove unpermitted fences, and bring all fences into compliance with WGFD standards.

Fences emplaced to control livestock movements also interfere with the migrations and dispersal of wildlife, particularly pronghorns. WGFD require that all fences should have a bottom strand at least 16" above the ground and of smooth wire. Wire mesh fences of the type formerly used to control sheep should be eliminated. Experience with winter throughout central and southwestern Wyoming in the early 1970s demonstrates that fences can be a barrier to pronghorns and result in major losses.

. The Casper RMP should institute a natural fire policy in place of controlled burns.

Precious little is known about the frequency and severity of natural wildfires in the shortgrass prairies and sagebrush steppes of Wyoming. As a result, the BLM as a land manager is in a poor position to know how to manage a large-scale program of sagebrush manipulation and controlled burning. Thus, the appropriate approach is to let natural wildfires burn in order to reestablish the natural mosaic of sagebrush stands. This should be codified as a requirement in the new RMP.

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12. The Casper RMP should mandate directional drilling to reduce habitat impacts.

Directional drilling, using clustering of wells on a few sites and drilling outward, should be required for all full-field oil, gas, and CBM development projects under the new RMP. Doing so fulfills the operators' desire to extract resources while maintaining other multiple uses of the land to the greatest extent possible under full-field development, and also prevents undue degradation of lands and resources that occurs through the unnecessarily heavy impacts of vertical drilling programs. Please see the attached report, which details the feasibility of directional drilling both from an economic and technical standpoint; we incorporate this report into our comments by reference. Significantly, Wyoming experience also supports directional drilling:

> "There is, however, a benefit from pad drilling, and that is that the wellheads are all concentrated in a small area. That, as we mentioned in our comments, is very positive for the environment. It significantly reduces our footprint. But it also consolidates the wells so we can use centralized facilities, which will lower capital costs. And we think we'll gain back some of the slippage in cost for directional drilling by having consolidated service facilities. In fact, we're going to look at centralizing facilities to minimize the visual impact as well as the operating impact of having well-by-well production facilities out there. That should further reduce our operating cost. **And we believe that, overall, we should see net savings from pad drilling by the time we implement fully directional drilling plus the consolidation of service facilities.**"

-Chuck Stanley, Questar, regarding directional drilling experience in the Jonah Field. Questar First-Quarter 2003 Teleconference Question and Answer Session, www.questar.com/news/teleconference/teleQA503.htm. Emphasis added.

Thus, there is no excuse for BLM to fail to mandate this lower-impact technology for drilling in the Casper RMP.

13. The Casper RMP should prohibit surface disposal of CBM wastewater.

Coalbed methane wastewater is typified by high salinity and sodicity, as well as high concentrations of toxic heavy metals. This alone should be sufficient to preclude its surface disposal, which allows the wastewater to move into near-surface aquifers and surface streams and wetlands, where it could outright poison aquatic life and/or alter with the chemical signature of the waterway and thus impair the migrations of native fishes. But furthermore, even if the wastewater were to be purified, the massive influx of water, potential changes in temperature gradients, and changes to natural flow patterns would have substantial and lasting impacts on fish populations by altering the cues for migration

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and spawning to the point that reproduction could be jeopardized. For these reasons coalbed methane wastewater should either be reinjected into the ground in manner that allows for future retrieval, or treated and shunted into municipal water systems for domestic use. These measures should be required in the new RMP.

14. The Casper RMP should mandate the use of pitless drilling technology.

Pitless drilling entails the recycling and ultimate reinjection of drilling fluids through a closed-loop system, preventing the need for reserve pits filled with toxic compound, a possible deathtrap for livestock and wildlife. Its use also reduces the size needed for the drilling pad, thus reducing the wellpad footprint. This technology actually costs less to implement than the cost of digging, lining, and disposing of a reserve pit, and thus there is no reason not to mandate pitless drilling technology for all oil and gas projects. The new RMP should require the use of this technology unless its environmental impacts in a specific case are greater than those of a reserve pit. See attached report for details.

15. The new RMP should consider the forthcoming Heart of the West Wildland Network Design and be compatible with its recommendations.

The Wildlands Project is in the final stages of developing the Heart of the West Wildlands Network Design, a core-corridor model for maintaining wildlife habitat and important linkages for the entire Wyoming Basins Ecoregion. We incorporate the final document into these comments by reference; it is slated for release this fall. The BLM should carefully consider this plan, and implement its zoning recommendations to achieve an ecologically sound land management strategy on a regional scale.

16. The BLM should consult with the tribes indigenous to the Casper Field Office.

The BLM should consult with, and engage as cooperating agencies, the Native American tribes indigenous to the area, including but not limited to the Shoshone, Arapaho, Northern Cheyenne and Lakota peoples. Special protection should be granted to Native American Respected Places and Sacred Sites. It is important to note that merely notifying the tribes does not satisfy the BLM's legal requirements; the tribes must be actively engaged to achieve a meaningful dialogue.

17. The new RMP should forbid industrial development on floodplains.

Pursuant to Executive Orders currently in force, the new RMP must preclude construction activities on 25-year and 100-year floodplains, both for permanent streams and intermittent draws.

BUREAU OF LAND MANAGEMENT CASPER, WYOMING
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18. The new RMP should survey for, identify, and protect lands of wilderness quality.

The BLM should survey the Casper Field Office for lands that meet wilderness criteria, including but not limited to the South Fork of the Powder roadless area northeast of Notches Dome identified in the book, Wild Wyoming (see attached excerpt). These lands should be withdrawn from mineral leasing and other surface-disturbing activities through the new RMP.

Conclusion

We urge the BLM to draft a new RMP that maintains the wide-open spaces, visual resources, and wildlife habitats managed by the Casper Field Office. On lands where oil and gas development is appropriate, these development activities should be done right, with only secondary regard to the timeliness and profitability of doing so. All activities permitted under the new RMP should be approached within the context of maintaining or improving wildlife, water quality, recreation opportunities, visual resources, and wilderness qualities, in order to fulfill BLM's multiple-use mandate. We urge the agency to strike a balance between competing uses, rather than elevating oil and gas development to a preeminent status and ignoring other resources that are valuable to the public over the long term.

Thanks you for considering these comments, and please keep us informed of any future documentation relating to this RMP revision.

Sincerely yours,

Erik Molvar

Attachments: Drilling Smarter report, Wild Wyoming excerpt

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Drilling Smarter:

Using Directional Drilling to Reduce Oil and Gas Impacts in the Intermountain West

By Erik M. Molvar

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Acknowledgments
Persons who contributed materials, information, or edits to this report include Gwen Lachelt of the Oil and Gas Accountability Project, Mark Pearson, Tom Darin, Michele Barlow, The U.S. Department of Energy, Phillips Petroleum, Pacific Environment, Pete Morton, and many others.

FOREWORD
This study was compiled by researching technical and trade publications produced by the oil and gas industry. Conclusions and recommendations of this report rely heavily on the findings and conclusions of the industry experts who authored these studies. We recognize that success stories are more likely to be published than failures, and as a result great pains have been taken to present both the positive aspects and drawbacks of directional drilling, and to present data that reflects industry-wide averages (incorporating both successful and failed projects) wherever these data were available. As a result, a higher proportion of studies outlining the negative aspects of directional drilling are presented here than are found in the petroleum engineering literature, which almost universally provides glowing endorsements of the technical capabilities and economic feasibility of directional drilling. We chose this conservative approach in order to avoid overstating the capabilities of these technologies.

Report issued February 18,2003

Cite this report as follows:

Molvar, E.M. 2003. Drilling smarter: Using directional drilling to reduce oil and gas impacts in the Intermountain West. Laramie, WY: Biodiversity Conservation Alliance, 32 pp.

Drilling Smarter: Using Directional Drilling to Reduce Oil and Gas Impacts in the Intermountain West

ERIK M. MOLVAR, Biodiversity Conservation Alliance, Post Office Box 1512, Laramie, Wyoming 82073. www.voiceforthewild.org.

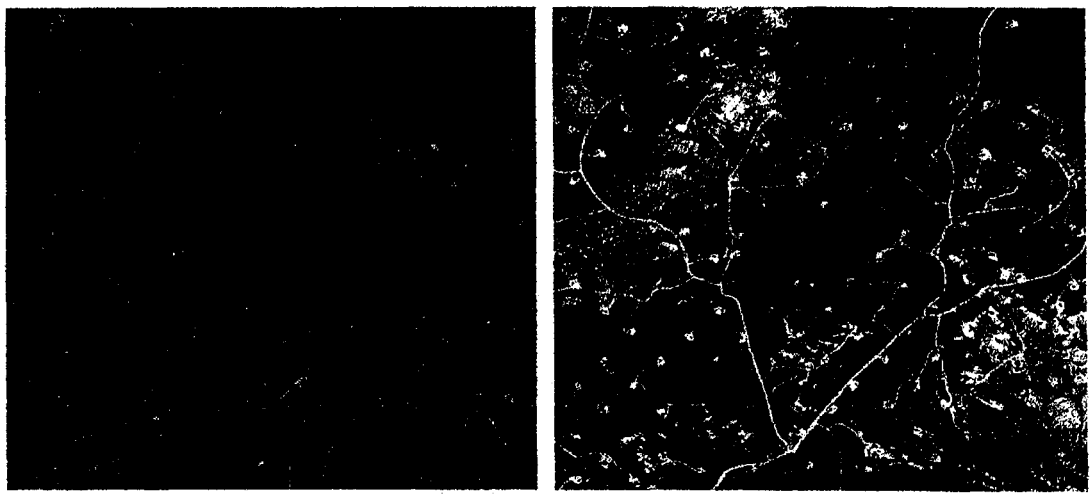
EXECUTIVE SUMMARY

Current practices in oil and gas exploration and development have produced massive environmental impacts across broad stretches of the Intermountain West. However, over the past several decades, the oil and gas industry has developed innovative technologies that can extract energy resources from the ground while reducing the impacts of that drilling on the natural environment. In particular, directional drilling technology has the potential to offer a less damaging alternative to conventional drilling methods in the Rocky Mountain West. Using directional drilling, energy firms can tap deposits of oil and gas at almost any depth from drilling sites up to 6½ miles away from the deposit.

Directional drilling has proven technically and economically feasible in a broad range of geologic settings, including tight gas, heavy oil, and coalbed methane. This method is proven to substantially increase producible reserves of oil and gas. Because the increased productivity of directional drilling compensates for additional costs, directional drilling is often more profitable than vertical drilling.

The Bush Administration's National Energy Policy calls for the use of directional drilling technology to reduce the environmental impacts of oil and gas exploration and development. However, federal agencies rarely even consider directional drilling as an alternative for oil and gas projects involving federal lands and minerals in the Intermountain West, and the oil and gas industry frequently balks when asked to use these technologies, On lands where oil and gas development is deemed appropriate and compatible with other uses in the Rocky Mountain West, federal agencies should consider whether they can reduce the damages from drilling activities through the implementation of directional drilling technologies, and if so, require their use.

Directional drilling does not prevent all environmental impacts of oil and gas exploration and development, and clustering operations lead to an intensification of impacts in the drilling area even while reducing the overall surface area across which those impacts occur. In addition, use of directional drilling technology does not address the numerous other impacts associated with oil and gas development and production, such as chemical spills and air pollution. As a result, some lands — including national wildlife refuges, parks, wilderness areas and monuments; roadless and wilderness-quality lands; and other sensitive lands — contain resources incompatible with oil and gas development and should remain withdrawn from all types of drilling. And appropriate buffers must be established to protect these lands from impacts in adjacent areas, Additionally, other lands such as important wildlife habitat, scenic landscapes, wetlands and other sensitive lands must be protected from the surface *impacts* of energy development.



Images provided by SkyTruth and the Upper Green River Valley Coalition

Recent full-field development in western Wyoming's Jonah Field as shown by aerial images. The photograph at left shows the landscape in 1994, before full-field development. By 1999 (at right), the landscape had become fragmented by roads and well pads.

AN ENVIRONMENTAL IMPERATIVE

A century of oil and gas development has left a heavy mark on many of our nation's public and private lands, particularly in the West. Oil and gas fields have become a vast spiderweb of pipelines and access roads, pockmarked with well pads, which fragment the landscape. Compressors, trucks, and pumpjacks generate noise, pollutants, and dust. Water and mud "produced" during the course of oil and gas development threatens local surface- and ground-water supplies used for residential and agricultural needs. Indeed, full-field development for oil and gas has often converted pristine wildlands and pastoral rural areas into industrial landscapes. In its conventional form, oil and gas production destroys the wild character of primitive areas, severely diminishes the recreational value of the landscape, creates long-term scarring across scenic viewsheds, and degrades or destroys habitat for native wildlife and fishes. As such, conventional oil and gas development is fundamentally incompatible with most other land uses, both public and private, particularly where dense well spacing is allowed.

The drilling activities associated with oil and gas production are just some of the sources of environmental damage associated with the production of oil and gas. While all of the potential impacts from oil and gas exploration, development and transportation must be considered before this activity is approved on federal lands, it is particularly important to consider alternatives to traditional drilling. The following sections describe a few examples of the impacts of drilling.

Oil and Gas Development Fragments Habitat

The sprawl of oil and gas fields can cause severe habitat fragmentation through the proliferation of roads, pipelines, and well pads across the landscape. The effects of forest fragmentation on bird densities are well-documented (e.g., Hansen and Rotelta *2000).* But fragmentation also impacts sagebrush bird species (Knick and Rotenberry 1995). In sagebrush habitats, major songbird declines have been found in areas with heavy oil and gas development (Inglefinger 2001). Lyon (2000) found that the construction of roads and wells within 2 miles of sage grouse strutting grounds had negative impacts on nesting. On a population scale, drilling has severe short-term impacts on sage grouse, while associated roads, pumping stations, and associated facilities have permanent negative impacts (Braun 1998, Braun et al. in press). Thus, oil and gas drilling can have serious effects even on relatively small, mobile wildlife.

Wells and Roads Displace Wildlife

Oil and gas development can also have a major impact on big game animals. Powell and Lindsey (2001) found that elk avoid lands within 1.5 kilometers of oilfield roads and well sites in

the sagebrush steppes of Wyoming. In mountainous habitats, the construction of a small number of oil or gas wells has caused elk to abandon substantial portions of their traditional winter range (Johnson and Wollrab 1987, Van Dyke and Klein 1996). Drilling in the mountains of western Wyoming displaced elk 'fiom their traditional calving range (Johnson and Lockman 1979, Johnson and Wollrab 1987). Migration corridors may in some cases be equally important to large mammals and are susceptible to impacts from oil and gas development (Sawyer et al., in press). A study by Nelleman and Cameron (1998) demonstrated that even where directional drilling is widespread, oil and gas development of the Kuparuk Field of Alaska's North Slope caused caribou of the Central Arctic Herd to abandon their traditional calving grounds and displaced concentrations of calving animals to areas with poorer habitat quality. Because winter ranges and calving areas are crucial to the survival of big game herds, these studies demonstrated the need to completely protect these sensitive habitats from surface development by the oil and gas industry.

A POLICY IMPERATIVE

President George W. Bush made the implementation of lower-impact directional drilling technologies the cornerstone of his energy policy. The President's National Energy Policy contains a section titled, "21st Century Technology: The Key to Environmental Protection and New Energy Production," which states:

> Producing oil and gas from geologically challenging areas while protecting the environment is important to Americans and to the future of our nation's energy security. New technology and management techniques will allow for sophisticated energy production as well as enhanced environmental protection... Smaller, lighter drilling rigs coupled with advances in directional and extended-reach drilling significantly increase protection of the environment...Modular drilling rigs, 'slimhole' drilling, directional drilling, and other advances enable: [...]
>
> • production of oil and gas with increased protection to wetlands and other sensitive environments;
>
> Other examples of advanced technology include: [...]
>
> • highly sophisticated directional drilling that enables wells to be drilled Iong horizontal distances fi-om the drilling site[.]"

National Energy Policy, May 2001, "Reliable, Affordable, and Environmentally Sound Energy for America's Future: Report of the National Energy Policy Development Group," p. 5.5.

Likewise, the Secretary of the Interior, who is responsible for implementing much of the National Energy Policy, has emphasized the need to begin utilizing directional drilling technology:

> We must also harness 21st Century technology to help our environment. Where we once needed scores of wells to tap underground reserves, today in some areas we can use one hole on the surface to drill for oil in a circle extending seven miles. We can use the resources below ground while we preserve the landscape and habitat above.

Presentation of Gale Norton, Secretary of Interior, to the National Newspaper Association (Washington, DC, March 23, 2001). These policy statements represent an unequivocal commitment on the part of the administration to implement less environmentally damaging directional drilling technologies.

A POLICY FAILURE BY THE BUSH ADMINISTRATION

But despite these commitments, the Bush Administration has failed to live up to its promises to implement technologies to reduce the impacts of oil and gas exploration and drilling on the environment. In fact, rather than pushing for more directional drilling, under the Bush Administration, the Interior Department's Bureau of Land Management (BLM) has actively avoided any effort to consider directional drilling as an alternative when energy production is being considered on public lands in the Intermountain West (see Table 3).

For example, federal agencies under the Bush Administration failed to even consider directional drilling as an alternative for at least, six western projects where the public specifically demanded the use of these techniques. The environmental consequences from ignoring the opportunity to reduce damages to these surface lands from drilling are staggering.

In western Wyoming's Vermillion Basin, the BLM refused to analyze a directional alternative to protect roadless lands even after a court order

Table 1. Approval documents for oil and gas developments that have been issued since George W. Bush became President in 2001.

Project	State	Document	Date(s)	Directional Requested?	Directional Analyzed?	Notes
Porcupine Tuit	WY	EA	8/02	Yes	No	Thunder Basin N.G. coalbed methane
Atlantic Rim (3Pods)	WY	DRs	12/01-8/02	Yes	No	winter range, grouse leks coalbed methane
Hanna Draw	WY	DR	6/02	Yes	No	coalbed methane
Vermillion Basin	WY	DR	8/02	Yes	No'	in proposed wilderness
WY Powder River Basin	WY	EIS	1/02	Yes	No	coalbed methane 50,000 wells
Southern Ute	CO	EIS	8/02	Yes	No	700 coalbed methane wells
Raton Basin	CO/NM	EA	9/01	No	No	206 wells
Macum/Klabzuba	MT	EA	5/02	NO	No	inside Missouri Breaks NM
Huber Six Well	CO	DR	4/02	No	No	6 wells
Pinon Mesa	NM	DR	4/02	No	No	high-profile recreation area
MT Powder River Basin	MT	EIS	2/02	Yes	Yes[2]	coalbed methane 30,000 wells
Otero Mesa	NM	EIS	10/00	Yes	Yes[3]	includes sensitive wildlife habitats
Farmington	NM	EIS	6/02	No	Yes[4]	10,000 wells

EA=Environmental Assessment (analyzing alternatives); EIS = Environmental Impact Statement (analyzing alternatives); DR = Decision Record (final decision).

1. Despite court ruling requiring the agency to take a harder look at directional drilling.
2. Not selected as the Proposed Action.
3. Proposed alternative under the Clinton administration, but withdrawn from proposed alternative status by the Bush administration.
4. Only 70 of 10,000 wells to be clustered on single well pads.

compelled them to undertake a detailed analysis of directional drilling. Big game habitat, declining sage grouse and prairie dog populations, and important recreational lands are all at risk.

In northern Wyoming's Powder River Basin, the Administration proposed to approve 50,000 new coalbed methane wells, without considering directional drilling as a means to reduce their massive impacts on ranchers and rural landowners who own property above the energy resource. This scale of development, without considering alternatives that could reduce the damage from drilling, could jeopardize the future of 16 species of plants and wildlife, according to the BLM's own report (BLM 2002a).

On New Mexico's Otero Mesa, directional drilling was the preferred method for producing energy after an analysis was completed under the Clinton Administration. However, the current the Bush Interior Department reversed course and changed the proposed action to conventional vertical drilling. A largely intact roadless area supporting a suite of rare wildlife and plant species is now at risk.

There is a stark contrast between what the Bush Administration has promised the public and the drilling policy it has been implementing throughout the Rocky Mountain West. If the Bush administration truly supports a responsible energy policy that reduces the environmental damage fiom oil and gas development, it will stop paying lip service to directional drilling while continuing to conduct business as usual.

WHAT IS DIRECTIONAL DRILLING?

Directional drilling is an advanced technology that allows oil and gas resources to be tapped a long horizontal distance away from the well site. For the purposes of this report, "directional drilling" will encompass all forms of drilling where the endpoint of the well is distant fiom the drill site, rather than directly beneath it. Under this defmition, slant-hole wells, S-turn wells, and horizontal wells are all considered forms of directional drilling, The term "directional drilling" can also be used to describe drilling to lay subsurface pipelines beneath rivers and other sensitive areas; this application of

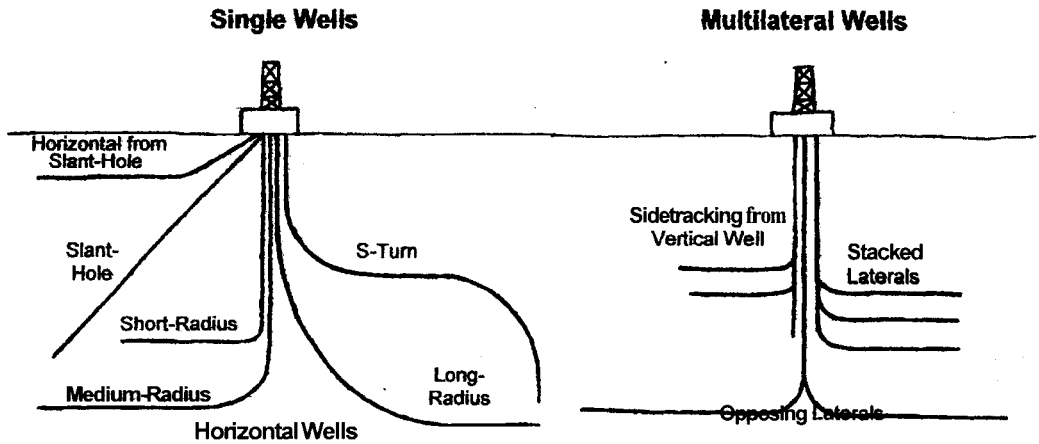


Figure 1. Different types of directional wells,

directional drilling is beyond the scope of this report. A brief synopsis of directional well types follows, and Figure 1 presents a schematic illustration of the various directional well types.

Slant-Hole Wells

Slant-hole wells are drilled at an angle from the vertical, using a tilting drilling rig. Slant-hole wells can be completed without making any bends at all, resulting in the equivalent of a conventional vertical well that is tilted on its axis. Alternately, slant-hole wells can be combined with a horizontal bend that is drilled in much the same way as traditional horizontal wells (see Figure 1), a configuration that is most commonly used for shallow target zones (Smith and Edwards 1992). Slant-holes can also be re-drilled at a later date to add a horizontal section (e.g., Myal and Frohne 1992).

S-Turn Wells

Sometimes known as "deviated wells," S-turn wells start out in a near-vertical orientation, have a long near-horizontal or diagonal section, and finish by approaching the vertical once again. This well type has been used in extended-reach applications. For example, the Sacate Sa-1, an offshore California well, achieved a horizontal distance of over 3% miles fiom the well site using this drilling technique (Elks and Masonheher 2002).

Horizontal Wells

Horizontal wells are defied as wells deviated more than 75 degrees from vertical (Lacy et al. 1992); they often depart from the horizontal in order to track the dip of the target formation. These wells have a characteristic "J" shape, with the horizontal section following the oil- or gas-bearing rock to maximize production.

Short-Radius

Short-radius wells feature a sharp, abrupt turn from the vertical to the horizontal plane. A comprehensive review of short-radius horizontal drilling found that "[r]eservoir management applications, water and gas coning, injection wells, irregular formations and coal degasification [coaibed methane production] are becoming more economically feasible" (Leazer and Marquez 1995). This study found that short radius horizontal wells make it easier to avoid problem formations above the pay zone. And with short-radius wells, submersible pumps can be placed deeper in the wellbore, improving pumping efficiency and extending pump life. The study concluded that "[s]hort radius technology has evolved to the point where it is a common occurrence to drill a 45-ft radius curve into a 10-ft target and achieve displacements in excess of 1,000 ft." These wells are not typically used to drill long horizontal distances from the well site.

Medium Radius

Medium-radius wells make their turn from the vertical to the horizontal at an intermediate rate, and the horizontal length is often longer. By the early 1990s in the United States, medium-radius wells were the most widely used and productive of horizontal wells (USDOE 1993). In 1990, the longest horizontal displacement for a medium-radius horizontal well reached 4,164 feet (Moritis 1990). This drilling style figures

prominently in the horizontal successes of the Austin chalk (Sheikholeslami et al. 1991), and also has been used for very shallow applications in coalbed methane drilling (USDOE 1993).

Long Radius

In a long-radius well, the wellbore shifts fkom the vertical to the horizontal very gradually, with only slight changes in the degree of slope over the course .of the bend. Extended-reach, long-radius horizontal wells were being successfully drilled from platforms off the coast of California as early as 1989 (Moritis 1990). Because this type of drilling requires a long transition between vertical and horizontal, it is best suited to deep wells and/or extended-reach drilling that accesses reservoirs far away from the drill site.

Multilateral

Multilateral wells entail drilling two or more horizuntal legs from a single vertical well in order to maximize exposure to the oil- or gas-bearing strata. Opposing laterals are most advantageous for deep wells or cases where drilling costs are high, because information gained in drilling the first lateral can be incorporated into the drilling of the second (Meehan 1995). Stacked laterals have been used for steam injection wells in Canadian heavy oil reservoirs (Sarma and Ono 1995), and to access multiple pay zones (Rixse and Johnson 2002). More complex "fishbone" configurations have been drilled in Venezuela's Orinoco Basin, in which even the laterals have laterals (Moritis 2000).

Chambers (2000) concluded that multilateral drilling was practical for all geologic situations: "There is no depth or specific reservoir type to which multi-lateral use is limited. Multi-laterals are being used for shallow reservoirs (800' TVD [True Vertical Depth]) to deep (15,000' TVD) formations, for completions in heavy oil, light oil, and gas." Meehan (1995) reported that by 1995, multilateral drilling had become "routine" at Union Pacific Resources. Meehan (1995) stated, "State of the art drilling includes as many as four, 4,000+ ft horizontal laterals, horizontal wells at TVDs [True Vertical Depths] greater than 16,000 R."

Multilateral drilling has now become an established practice within the oil and gas industry. Chambers (1998) summarized this growing role: "The implementation of multiple lateral wellbores, or multiple horizontal wells exiting a single wellbore, has gained wider acceptance in the oil industry, particularly from a reservoir management point of view. The deeper the junction, the more attractive multilaterals become. The more wells drilled, the cheaper the technology, the more laterals drilled from a well, the less the incremental cost for additional laterals. Open hole branches are very easy to create and fast to implement."

HISTORY OF DIRECTIONAL DRILLING

Directional drilling is not a new technology. In fact, all types of directional drilling have been around for years, but it is only in the last several decades that these techniques have gained broad acceptance and widespread application. The first horizontal well was drilled near Texon, Texas in 1929 (USDOE 1993). Chambers (1998) noted early horizontal activity dating from 1939. In the early 1940s, horizontal wells were drilled with horizontal distances of 100 to 500 feet (Anon. 1999). China attempted its first horizontal well in 1957 (USDOE 1993). The first coiled-tube and slimhole drilling was also done during this period (USDOE 1999a). The first multilateral well was drilled in the Soviet Union in 1953 (Chambers 1998), and between 1953 and 1980, the Soviet Union drilled 111 multi-branch horizontal wells including exploration wells, production wells, and injector wells (Maurer 1995). Nonetheless, during these early years, directional drilling was comparatively costly and failed to achieve broad acceptance within the industry.

Slant-hole drilling was the first directional technique to achieve widespread use. Between 1982 and 1992, over 1,000 slant or angle wells were drilled, primarily in Canada, Venezuela, and China (Smith and Edwards 1992).

But the big boom came with the widespread use of horizontal drilling. European offshore successes with directional drilling in the North Sea (e.g., Andersen et al. 1988, Jacobsen and Rushworth 1993) led to increasing application of directional technologies to land-based drilling. Horizontal drilling soon took off in North Dakota's Williston Basin, and as of 1990, some 70 horizontal wells were producing about 7% of North Dakota's oil from the Bakken Shale formation (Petzet 1990). For northern Alaska's Prudhoe Bay field, Standing (2000) noted, "Horizontal drilling started experimentally in 1986, and in the 1990s became routine for lengthening wellbores and avoiding gas-oil or water-oil contacts." Perhaps the largest application of horizontal drilling came in the Austin Chalk deposits in Texas, a formation

where production fiom vertical drilling had been declining. Union Pacific Resources drilled more than 1,100 new horizontal wells and 1,250 horizontal laterals from existing wells in the Austin Chalk between 1987 and 1995 (Meehan 1995). With success in the Texas Austin Chalk, 134 horizontal wells were soon drilled or permitted in the same formation in Louisiana (Maloy 1997). The first directional well in Wyoming was completed in 1987, and as of 1994, 80 producing wells were completed out of 117 attempts (Stewart 1995).

Directional drilling has caught on not only in North America but all around the world. Between 1990 and 1998, Petroleum Development Oman drilled 350 horizontal wells in 33 different Middle Eastern oil and gas fields (Ishak et al 1998). Horizontal wells have been drilled on every continent except Antarctica. Today, horizontal drilling technology is so efficient at extracting oil and gas that it has become the benchmark for the industry: Miller and Steiger (1999) boasted that their array of vertical and directional wells had production that equaled high benchmark projections from horizontal drilling. In the words of Pinney and Rodrigues (1999), "Over the past 20 years, horizontal drilling has progressed from an exotic technology to a standard industry tool."

DIRECTIONAL CAPABILITIES

Directional drilling in general, and horizontal drilling in particular, are extremely versatile and offer capabilities that make these technologies superior to vertical drilling for the recovery of oil and gas. Deskins et al. *(1995)* stated that horizontal wells can improve production and increase reserves through (1) intersecting natural fractures that can't be accessed with vertical wells; (2) delaying the onset of water or gas coning so that more oil is produced; (3) improving production from thin or tight reservoirs; and (4) improving waterflood sweep efficiency (for reservoirs injected with fluids to increase oil or gas production). Zammerilli (1989) compared the effectiveness of three drilling methods for the Devonian Shale of West Virginia and found that "new-lease horizontal drilling is the optimal method [for maximizing production] in West Virginia, and high-angle drilling results in a slight improvement over vertical drilling." An article in *Journal of Petroleum Technology* summarized *the* current role of horizontal drilling: "Most experts agree that horizontal wells have become a preferred method of recovering oil and gas from reservoirs in which these fluids occupy strata that are horizontal, or nearly so, because they offer greater contact area with the productive layer than vertical wells. While the cost factor may be as much as two or three times that of a vertical well, the production factor can be enhanced as much as 15 or 20 times, making it very attractive to producers" (Anon. 1999).

Each of the qualities of directional drilling that make it a viable alternative to vertical drilling in the Intermountain West have been thoroughly documented in the published literature, and are discussed in more detail below.

Directional Drilling Increases Production

Directional wells, and horizontal wells in particular, offer substantial increases in production over vertical wells, chiefly because in the words of Hall (1998), "[h]orizontal drilling exposes magnitudes more of the pay zone to the wellbore. Hutzler (2000) summarized the basis for this phenomenon as follows: "Drilling a horizontal, as opposed to a conventional vertical well, enables more of the reservoir to be exposed to the wellbore since most reservoirs are wider than they are deep." Table 2 displays the results of a number of studies worldwide that directly compared the productivity of horizontal wells with their vertical counterparts.

In one Utah project, for example, 143 laterals were drilled and completed as re-entries from 43 vertical wells. For those 43 wells, 180,000 feet af wellbore penetrated the pay zone, compared with only 26,000 feet for all 379 of the previous vertical wells in the field (Hall 1998). Iverson et al. *(1995)* found that even without hydraulic fracturing, a horizontal well in Wyoming produced as much gas as a comparable conventional well that used hydraulic fracturing (see Appendix for an explanation of hydraulic fracturing). In Texas, Sheikholeslami et al. (1991) found a linear increase in production with longer horizontal sections: "This relationship and the low cost of drilling incremental medium-radius horizontal lengths show the economic benefit of drilling the longest possible horizontal length."

But there are limits to the increases that horizontal wells can achieve over conventional vertical wells. Cho and Shah (2002) found that beyond 3,000 feet horizontal distance, wellbore friction and turbulence may reduce gains achieved through a longer exposure to the pay zone, to the point that a maximum output is achieved. These researchers pointed out that

Table 2. Horizontal/directional well production expressed as a percentage of vertical wells from the same field.

Location	Production Increase	Notes	Source
Alaska	200-300%	Prudhoe Bay	Broman and Schmor 1992
California	300%	Elk Hills	Gangle et al. 1991
California	700%	Elk Hills	Gangle and Ezekwe 1995
California	350-900%	Elk Hills	Anon. 1996
Colorado	500-1000%	Piceance Basin	Myal and Frohne 1992
Canada	250-800%	underbalanced, heavy oil	Teichrob 1994
Colombia	400400%	offshore	Huang et al. 1996
Germany	200-300%	deep gas	Graute et ai. 1994
Germany	500%	deep, sour gas	Schuler 1992
North Dakota	200-500%	Bakken shale	Lacy et al. 1992
North Sea	600%	offshore	Reynolds and Seymour 1991
Texas	250-700%	Austin chalk	Sheikholeslami et al. 1991, Lacy 1992
Venezuela	1300%	Orinoco heavy oil	Lacy 1992
West Virginia	700%	hydraulic fractured	Yost and Overbey 1989
West Virginia	400-2500%	Devonian shale	Lacy 1992

friction may be less important if the wellbore is subjected to low pressures. Thus, there may be an upper limit to production increases over vertical wells that can be realized by drilling with horizontal technologies. But in no case does wellbore friction reduce productivity of a horizontal well below that of a vertical well.

Because one might expect directional drilling attempts that produce successfully to be publicized more often than failures, it is useful to examine the overall technical success rate of horizontal wells over a broad area. Deskins et al. (1995) took a comprehensive survey of horizontal wells in North America, and found that horizontal wells enjoyed technical success in 95% of U.S. reservoirs where they were employed, compared to a success rate over 90% for Canadian horizontal wells. These figures were calculated by reservoir rather than by individual well, and the technical success figures are likely to underestimate the true success rate because reservoirs with a handful of failures were given the same weight as reservoirs with thousands of successful wells (Deskins, pers. comm.). Unfortunately, technical success rates for vertical wells were not presented for the sake of comparison.

Directional drilling has been shown to maximize oil and gas production in virtually any oil and gas recovery situation. As early as 1990, Stagg and Reilly proclaimed that "Industry is no longer constrained by the mechanical aspects of horizontal well completions. Equipment and techniques are available, or soon will be available, to meet all completion needs." These methods *are* feasible for both exploration and full-field development (French Oil and Gas Industry Association 1990). The effectiveness of horizontal drilling as an exploration tool was noted by Hawkings et al. (1990), who reported that a horizontal well was able to locate high permeability sands where conventional wells had failed. Aguilera et al. (1991) lauded the potential of horizontal drilling in infill situations. According to Thakur (1999), "As a general rule, readers are encouraged to consider horizontal wells as the primary option for a field." These studies and technical reports by the oil and gas industry illustrate that directional drilling is a versatile and viable alternative and should be considered where oil and gas is proposed for development because of its ability to meet or exceed the production ability of vertical wells.

Directional Drilling Can Tap Distant Resources

Directional drilling can now tap pockets of oil and gas that are miles away from the drilling site, Horizontal drilling can reach subsurface reservoirs up to 29,000 feet away from the drilling site in horizontal distance (Al-Blehed et al. 2000) and, in some cases, even farther. The Exxon-Mobil Sacate Sa-2 well is believed to hold the current North American record for horizontal displacement, reaching a final distance of 21,277 feet (just over 4 miles) fkom the drilling site; this feat was achieved offshore in over *650* feet of water (Elks and Masonheher 2002). Elks and Masonheher went on to state,

"Horizontal deviations [for wells in this project] could ultimately exceed 35,000 feet," a distance of over 6½ miles.

In 1997, China's Xijiang 24-3-A14 well achieved a horizontal displacement of 26,452 feet, or over 5 miles (Jiang and Nian 1998). Vighetto et al. (1999) reported on the successful drilling of extended-reach horizontal wells with horizontal displacements of up to 34,728 feet. This example shows the oil and gas industry's current ability to use horizontal drilling to produce from reservoirs more than 6½ miles away from the drilling rig. And according to industry, even greater gains in distance capabilities are likely in the offing. Ron Auflick of K and M Technologies even goes so far as to claim in the press that extended reach drilling rigs will be able to drill nearly 20 miles from the drilling site within the next 10 years (in Schneider 200 l).

These industry reports demonstrate the viability of extended-reach drilling technologies to tap oil and gas reserves across great distances. Such long-reach technologies provide the technical capability to extract oil and gas from lands where surface damage fiom conventional drilling is barred in order to protect the important surface values of sensitive landscapes.

New Steering Technologies Allow for Greater Drilling Accuracy

Advances in modern technology now allow operators to steer the drill bit through the Earth with pinpoint accuracy, unlocking the resources fiom distant pools of oil and gas. This "geo-steering" is aided by three-dimensional computer programs that allow modeling and visualization of the drill path through the Earth, enabling the operator to guide the drill bit in real-time; this technology has been tested and proven accurate in the Gulf of Mexico, North Sea, and onshore Latin American locations (Sanstrom and Longorio 2002).

The technology that allows this real-time steering of the drill bit is alternately known as "Measurement While Drilling" (MWD) or "Logging While Drilling" (LWD). These technologies gather information at the well bit and instantaneously send it back to the drill engineer, who controls the bit. Corrections can be made immediately if the drill bit strays from the target zone, or to avoid obstacles (Maurer 1995). Barry et al. (1998) reported a case history where Logging-While-Drilling techniques were used to geosteer horizontal wells in real-time along a 40-foot column of oil trapped between an aquifer and a gas cap. The authors of this study noted, "Excellent well performance supports the general validity of the geosteering approach and a static pressure survey in one of the wells verifies the steering accuracy." Geosteering has become so precise that a multilateral well off the coast of Nigeria was successfully completed within a target window of only +/– 2 feet (Aloko et al. 1998).

DIRECTIONAL DRILLING IS EFFECTIVE IN MANY GEOLOGIC SETTINGS

Directional drilling, in its several forms, has proven to be remarkably versatile as an alternative to conventional vertical drilling in recovery of all types of petroleum resources. In the United States, directional drilling has met with economic success in most of the major oil- and gas-bearing rock formations (see Table 3, following page). Aguilera et al. (1991) stated, "Theoretically, all reservoirs can benefit from horizontal wells." Al-Blehed et al. (2000) asserted that horizontal drilling is superior to vertical drilling for a variety of conditions including naturally frac-tured reservoirs, thin reservoirs, heterogeneous reservoirs, vertical permeability homogeneous reservoirs, reefs or isolated sand bodies, and faulted reservoirs. Joshi (1991) asserted that for natural gas production, horizontal wells improve drainage area per well for low-permeability geologic formations and reduced near-wellbore turbulence and increase delivery efficiency for high-permeability formations. Robertson et al. (1992) concluded, "Horizontal wells appear to improve the chances of attaining commercial gas production rates from heterogeneous formations."

Directional drilling offers superior production even when applied to most geologically difficult circumstances. In Germany, an 11,200-foot-deep sour gas well achieved a fivefold production increase over nearby vertical wells. Of this well, Schuler (1992) noted, "The drilling was in a geologically difficult environment with tight target tolerances." In Argentina, horizontal drilling was used to successfully explore a deep, fractured gas reservoir involving hanging wall anticline traps (Blangy 2002). In China's Shixi Field, 5 horizontal wells were drilled into deep volcanic formations with multiple fracture systems and high pore pressure. Of these wells, Xinzhong et al. (1998) observed, "It is very difficult to drill the horizontal well due to the specialty and complexity of its geological configuration, hole construction, and operational requirement. Now 5 horizontal wells with 5000m

Table 3 U. S. geologic formations where directional projects have successfully produced oil and gas.

Location	Formation	Source
Alabama	Pottsville coal	Swindell 1996
Alaska	Tarn formation	Phillips Petroleum 2002
	West Sak formation	Phillips Petroleum 2002
	Alpine formation	Phillips Petroleum 2002
California	Stevens sand	Gangle and Ezekwe 1995, Anon. 1996
	Veder sand	Chenot et al. 2002
	Monterey chert	Elks and Masonheimer 2002
Colorado	Niobrara sandstone	Petzet 1990, Stright and Robertson 1993
	Codell formation	Swindell 1996
	Mesa Verde sandstone	Myal and Frohne 1992
	Cameo coals	USDOE 1993
Kentucky	Devonian Shate	Bellinger 1991
Louisiana	Austin Chalk	Swindell 1996, Maloy 1997
	Miocene	Swindell 1996
	Cotton Valley	Swindell 1996
	Wilcox sandstone	Lacy et al. 1992
Michigan	Antrim	Swindell 1996
	Dundee limestone	Wood 1997
Montana	Red River	Swindell 1996
	Mission Canyon	Swindell 1996
New Mexico	Fruitland coal	USDOE 1993, Swindell 1996
	Mancos shale	Swindell 1996
North Dakota	Bakken shate	Swindell 1996
	Madison limestone	Swindell 1996
Ohio	Clinton sandstone	McCormac 1996
	Rose Run sandstone	McCormac 1996
Oklahoma	Bartlesville	Swindell 1996
	Mississippi	Swindell 1996
	Viola	Swindell 1996
	Hunton	Swindell 1996
South Dakota	Red River	Swindell 1996
Texas	San Andres dolomite	Leazer and Marquer 1995
	Montoya Limestone	Fletcher 2002
	Devonian fm.	Fletcher 2002
	Austin Chalk	Swindell 1996
	Buda	Swindell 1996
	Georgetown	Swindell 1996
	Ellenburger	Swindell 1996
	Wilcox fm.	Doughtie 1994
Utah	Desert Creek dolomite	Leazer and Marquez 1995, Swindell 1996, Chidsey et al. 2002
	Twin Creek	Swindell 1996
	Paradox shale	Morgan 1996
	Ismay limestone	Chidsey et al. 2002
West Virginia	Devonian Shale	Zammerilli 1989, Salamy et al. 1991
Wyoming	Nugget sandstone	Weatherl 1998
	Almond formation	Iverson et al. 1995
	Niobrara sandstone	Swindell 1996
	Minnelusa	Swindell 1996
	Frontier sandstone	Swindell 1996
	Hanna coals	Logan 1988

MD [Measured Depth, the overall length of the wellbore] have been drilled successfully." On Alaska's North Slope, the Schrader Bluff Pilot Project involved two stacked horizontal wells drilled into heavily faulted sandstone formations with target zones only 25 feet and 28 feet thick, respectively. Using geosteering technology, the paired wells successfully followed the narrow pay formation as it rose and dipped across numerous faults; both wells achieved economic success (Rixse and Johnson 2002).

Horizontal drilling has proven successful in a variety of geological settings, as discussed in numerous industry and government reports summarized on Table 3.

Shallow Reservoirs

Directional drilling has been employed to successfully access shallow reservoirs in a number of cases. Slant-hole drilling can be paired with horizontal techniques for shallow reservoirs; a well was drilled using this technique near the town of Brooks in southern Alberta, reaching a depth of 1,886 feet and a horizontal displacement of 4,200 feet (Smith and Edwards 1992). In the Black Warrior Basin, Mississippi Valley Gas Company successfully drilled a well 1,805 feet in depth with a horizontal leg of 1,650 feet. The well produced gas from a storage field at 6 times the rate of neighboring vertical wells (Butler and Skeen 1996). Multiple horizontal laterals have been drilled for formations as shallow as 800 feet (Chambers 2000). In Wyoming's Hanna Basin, three medium-radius horizontal wells successfully accessed coalbed methane at a depth of only 363 feet (Logan 1988). Thus, there appears to be no reservoir too shallow for horizontal drilling.

Deep Reservoirs

Directionally drilling has accessed some of the world's deepest oil and gas deposits. As of 1995, the Navasota #1 well was the deepest horizontal well in the Austin Chalk, at 14,172 feet (Pearce et al. 1995). In the Goodwyn gas/conglomerate field in Australia, the GWA-13 well was drilled to 24,620 feet total depth with a horizontal displacement of 9,400 feet (Dolan et al. 1998). Horizontal wells in the Permian Basin of west Texas now exceed depths of 14,000 feet (Fletcher 2002). Schuler and Santos (1996) reported success with hydraulic fracturing on what was then the world's deepest horizontal well (15,687 feet deep). In Alaska's Cook Inlet, the Forest Oil Redoubt #4 well was drilled

deeper than 18,872 feet from an offshore rig (Anon. 2002b).

Horizontal and directional technology has proven itself in ultra-deep settings where temperatures and pressures can be intense. In the Middle East, a short-radius sour gas well was successfully drilled to a depth of 14,115 feet in the deep, hot Thamama limestone fkom an offshore drilling rig (Simpson et al. 1993). Based on drilling deep horizontal wells in Germany, Graute et al. (1994) concluded, "Results of both wells proved that horizontal drilling into these deep reservoirs is technically feasible and economically attractive."

Deep horizontal wells have achieved substantial production successes. A well drilled into the ultra-tight, high pressure, high temperature Roetliegendes sandstone in Germany produced at a rate 3.5-9 times greater than hydraulically fractured vertical wells (Schuler and Santos 1996). According to Krystinik (2001), a horizontal well drilled in Wyoming's Green River Basin reached a depth greater than 15,000 feet in tight-gas sandstone, was drilled at a cost that was reduced to 50% of the industry average, and achieved economic production of greater than 14 million cubic feet of gas per day.

These reports illustrate that use of directional drilling in deep reservoirs is effective and productive. Reaching depths of over 15,000 feet in Wyoming and elsewhere in the world, this technology clearly is versatile enough to be considered in all reservoirs.

Tight Reservoirs

Tight reservoirs are formations of very low permeability, which impedes the flow of oil and gas to the well. Nonetheless, directional wells have proven both feasible and profitable in these geologically challenging settings. Mostafa (1993) reported #at horizontal drilling in tight carbonate reservoirs improved production and reduced oil and water coning. Horizontal drilling has proven profitable in the tight chalk reservoirs of the Danish North Sea (Andersen et al. 1988). In the Permian Basin of west Texas, EOG Resources reported successful completions in 14 of 15 horizontal wells of the tight Devonian formation (Fletcher 2002). Directional drilling has been shown to increase rate of gas production and overall recoverable quantity for tight gas sands (e.g., Cassetta 1998).

Kabir et al. (1997) linked horizontal drilling effectiveness in tight carbonate reservoirs with ability to intercept fractures. Because fractures tend to be oriented vertically, wellbores traveling horizontally through a formation have a far greater capability to successfully intercept fractures than vertical wells, which have a rather short passage through the target formation. For tight gas reservoirs that are naturally fractured, horizontal drilling compares favorably with massive hydraulic fracturing and is a sound alternative (van Kruysdijk and Niko 1988). For northwestern Colorado fractured sandstones, Stright and Robertson (1993) stated, "The advantage of a horizontal well over a vertical Niobrara well is higher probability of encountering well-developed fractures, a common problem with vertical Niobrara wells." Hydraulic fracturing can be used in conjunction with horizontal drilling to enhance the productivity of tight reservoirs lacking in natural fkactures (Soliman et al. 1996).

Based on these studies, it appears that directional drilling may have a distinct advantage over conventional vertical drilling in tight formations, particularly where fractures are intercepted to release the gas resource.

Heavy Oil

Directional drilling has proven effective in tapping heavy oil deposits in tar sands, Luhowy (1993) reported that "Horizontal wells proved economical for developing, under primary recovery, viscous heavy oil from the unconsolidated McLaren sand channels in Saskatchewan." On Alaska's North Slope, the West Sak heavy oil reservoir is being developed using multilateral horizontal technology (Phillips Petroleum 2002). For heavy oil recovery, Shirif (2000) noted that, "For a given pattern, there is a horizontal well configuration that maximizes the total production rate."

Coalbed Methane

Although vertical drilling currently dominates coalbed methane fields, directional drilling is increasingly being applied to the production of this unconventional resource. According to Moore and Moore (1999), directional drilling is applicable to coalbed methane production, but drilling rig placement may be constrained by rock jointing and fracture patterns. Horizontal wells have been drilled for coalbed methane in Colorado's Piceance Basin using short radius technique, and in Wyoming's Hanna Basin using medium-radius technique (Logan 1988). According to the West Virginia Geological and Economic Survey's coalbed methane database, CDX Gas drilled 13 horizontal wells in West Virginia's Welch Field, which produced 1.5

trillion cubic feet of coalbed methane between 1999 and 2000.

Furthermore, horizontal drilling for coalbed methane appears to be an effective method to increase production. In discussing Penn Virginia Corporation's coalbed methane program, company president A. James Dearlove has stated, "By using horizontal drilling on our coalbed methane and Devonian shale acreage, we expect to significantly accelerate gas production, which should increase the present value of our properties" (quoted in Anon. 2002a). One horizontal well drilled in New Mexico's San Juan Basin produced almost seven times the coalbed methane as the average vertical well in the area (USDOE 1993).

Horizontal methods can also yield substantial increases in coalbed methane producible reserves. In Colorado's San Juan Basin, multilateral drilling by CDX gas is expected to recover 50-75% of available coalbed methane reserves, compared to 10% for conventional methods (McWilliams 2002). According to Wayne Kelley, president of Texas-based Omega Oil Company, multilateral technology using coiled-tube drilling in coalbed methane fields "would replace 220 well pads on the surface with a single well pad" (as quoted in Bleizeffer 2002).

With the dramatic expansion of coalbed methane contemplated for the Intermountain West, directional drilling appears to be a viable alternative to the conventional wells that currently dominate the production of this resource. Conventional methods of coalbed methane production typically entail a high density of roads, well pads, pipelines and transmission lines that can be reduced to some extent by clustered directional drilling. But coalbed methane development also creates the additional problem of disposal of millions of gallons of wastewater, which must be removed from the coal seam before the gas can be extracted. This water is often highly saline or alkaline (e.g., Hulin 2001), and the dumping of such toxic wastewater into streams and groundwater can have disastrous ecological effects. Dumping coalbed methane wastewater onto the surface has unacceptable ecological, economic, and social impacts that are beyond the scope of this report but that should be addressed before this resource is developed.

Thin Reservoirs

Horizontal wells can travel along the pay zone of thin reservoirs for long distances, dramatically improving production over vertical wells that have only a short trip through the pay zone. In Trinidad's Immortelle Field, six "highly successful" horizontal wells were drilled to tap a 48-foot thick oil play (Thakur et al. 1996). In a remote area of Sumatra, a horizontal well was successfully drilled into a 33-foot-deep oil column (Curnutt et al. 1993). Horizontal drilling has been used to produce gas from a pay zone only 10 feet thick in Pleistocene sands in the Gulf of Mexico (Gidman et al. 1995). A dual-lateral horizontal well off the coast of Nigeria was successfully drilled along an 11-foot oil column trapped between a gas cap and an aquifer.

Horizontal drilling yields superior production for thin reservoirs. Production fiom horizontal drilling into a 130-foot thick oil rim off the coast of East Malaysia has yielded two to eight times the production of vertical wells in the area (van der Harst 1991). In its Pelican Lake project, CS Resources used horizontal wells to target pay zone that was a mere 13-20 feet thick. These horizontal wells achieved productivities that were five to thirty times greater than neighboring vertical wells, with longer horizontals yielding the higher productivities (Sarma and Ono 1995).

Depleted Reservoirs

Due to its higher efficiency in recovering oil and gas, horizontal drilling has proven to be an excellent method to revitalize depleted reservoirs. In Oklahoma's Caddo County, a well with a 4,000-foot horizontal displacement was drilled into a depleted sandstone reservoir, achieving a production of 1,800 barrels of oil per day with very little gas coning—the mixture of gas and oil that reduces production efficiency (Beardmore et al. 1994). In Michigan, horizontal laterals from old wellbores yielded more than a threefold increase in oil production over vertical wells, effectively revitalizing the depleted Niagaran fields (Lanier 1996). A more complete accounting of successes in depleted reservoirs is presented in the section of this report titled "Increasing Producible Reserves."

ECONOMIC ADVANTAGES OF DIRECTIONAL DRILLING

The oil and gas business has always been inherently risky, and profitability is based in large part on market prices of oil and gas products. No drilling method, whether vertical or directional, can insulate a drilling company from the possibility of individual economic failures. Nonetheless, the overwhelming majority of published studies on the subject demonstrate that

directional drilling is not only economically feasible but is in fact substantially more profitable than conventional, vertical drilling due to its superior cost-benefit ratio, even though the costs to drill a directional well may be higher in some cases.

Costs of Individual Wells

In 1991, Fritz et al. noted, "If the cost of drilling a horizontal well was equal to that of drilling a vertical well, most reservoirs would be candidates for horizontal drilling." These costs are in fact equalizing. Aalund and Rappold (1993) found that the cost of drilling two horizontal wells in Egypt was 1.4 times the cost of drilling conventional wells, and made the following prediction: "As horizontal drilling becomes more common, the cost of horizontal wells will decrease to near that of vertical wells in the Middle East." Under Elf Aquitaine's drilling program, horizontal well costs averaged 1.5 times the cost of vertical wells (Thakur 1999). On the basis of cost per foot of drilled wellbore, directional drilling is only slightly more expensive than vertical drilling. According to Sarma and Ono (1995), "The 1993 Joint Association Survey of drilling costs on 845 horizontal wells indicated that at $80.76/ft, a horizontal well was only 8% more expensive to drill per foot than a vertical well." Hawkings et al. (1990) reported that a horizontal gas well in the Roetliegendes Field in Germany cost roughly the same to complete as a fracture-stimulated Conventional well. Thus, compared to vertical wells, the costs for drilling a directional well can be higher than, or sometimes equal to, costs for drilling a vertical well. But horizontal wells often yield much higher oil and gas production than vertical well, offsetting cost increases (see following section).

For each new formation, there is a learning curve that progressively drives down the cost of horizontal drilling as more wells are completed. Lacy et al. (1992) summarized this effect as follows: "As drilling experience is gained in a certain area, horizontal well costs decrease. The first well usually costs two or three times more than a vertical well. The second well usually costs much less than the first one. After drilling a few wells, the horizontal/vertical well cost ratio is about 1.5. Therefore, a multi-horizontal well program has a better chance for economic success."

Technological advances are bringing down the cost of horizontal drilling. Slant-hole and coiled-tube drilling can be used to bring down the costs of horizontal drilling. According to Smith and Edwards (1992), "Slant hole drilling technology can result in considerable savings over conventionally drilled deviated holes because mud motors and deviation control with measurement while drilling tools are usually unnecessary." Slimhole and coiled-tube drilling offers further economic advantages in drilling horizontal laterals from existing boreholes. McCarty et al. (2002) reported that for 64 sidetracks drilled in 2002 on the North Slope with coiled-tube methods, costs averaged less than one-half that of conventional rotary sidetracks. This study concluded that "CTD [coiled-tube drilling] has matured into a highly efficient and economical means of sidetracking wells on the North Slope." According to the U.S. Department of Energy, "a typical 10,000-foot well drilled in southwest Wyoming costs about $700,000, but with coiled tubing and slimhole, the same well would cost $200,000 less" (USDOE 1999a).

Multilateral horizontal wells take the economic savings to an even higher level. According to Maurer (1995), "Multibranch horizontal wells can reduce horizontal drilling costs by 20 to 30% and the size and number of offshore platforms by 50%." In the same study, Maurer noted that "Unocal stated that its B-34 trilateral well [in the Dos Quadras offshore field] cost $2 million compared to $3 million for three conventional horizontal wells ($1 million each)." Just as with single horizontal wells, there is a learning curve associated with multilateral wells (Chambers 1998). Moritis (2000) found that for multilateral wells in Venezuela, the cost of drilling a single lateral leg decreased from $1 million to $700,000 during the course of the project, while the cost of drilling complex "fishbone" configurations decreased from $1.7 million per well to $1.2 million. For drilling horizontal laterals from existing wellbores, Lanier (1996) reported that costs decreased from $600,000 to $350,000 per well during the course of the 20-well program.

Higher Cost-Benefit Ratio of Directional Wells

It is important to recognize that well cost alone provides a poor comparison between conventional and horizontal technologies; it tells only half the story. For a true economic comparison, the difference in cost must be measured against difference in productivity. For the Seidenburg 2-17 well, a deep well in a German sour gas field, drilling and production costs were 1.2 times greater for a horizontal well, but production exceeded that of vertical wells by

a factor of 4.5 (Niggeman and Ehlers 1991). In a continent-wide survey of horizontal wells in 1995, Deskins et al. found that while U.S. horizontal wells were twice as expensive on average than vertical wells, their output of oil or gas averaged 3.2 times as much as vertical wells. With over three times the product for only twice the cost, it is easy to see that horizontal wells were in fact more economical on average than vertical wells. In the same study, Canadian horizontal wells produced 4.1 times as much product on average as vertical wells with only 2.2 times the investment, an even higher economic advantage for horizontal wells than in the U.S. For the Devonian shales of the Appalachian Basin, Salamy et al. (1991) stated, "Recent drilling and completion operations have demonstrated the technical and economic successes of horizontal wells over vertical wells." Thus, while costs are slightly higher to drill directional wells, the higher costs of individual wells are more than offset by dramatically increased production.

Economic Success of Individual Wells

As is the case with vertical wells, there are no guarantees that individual directional wells will turn a profit. For 20 horizontal wells in Colombia, Saavedra and Joshi (2002) reported that costs were 1.5-2.5 times the cost of comparable vertical wells. Of these wells, two of the four completed in carbonate formations became economic successes, while 88% of the horizontal wells drilled in sandstone achieved economic success. In a survey of horizontal drilling in U.S. fields (Deskins et al. 1995), economic success rates averaged 54% (59% for clastics, 45% for carbonates). Canadian economic success rates were 59% for light-oil clastics, 79% for carbonates, and 92% for heavy oil reservoirs. Once again, this survey likely underestimated economic success rates for individual wells by calculating economic success by reservoir rather than by individual well: Reservoirs with initial horizontal failures do not inspire repeat attempts, and this survey gave reservoirs with a few failed wells the same weighting as reservoirs with thousands of successful wells (Deskins, pers. comm.). No economic success data were provided for vertical wells over the same period for comparison purposes, and it is unknown how the market prices of the day may have influenced the profitability ratings of wells in this study.

It is useful to consider the factors behind the minority of horizontal wells that do not prove profitable. For Canadian horizontal wells that failed to achieve economic success, Sarma and Ono (1995) summarized the primary factors: (1) The wellbore missed the target zone or improperly placed within target zone; (2) Vertical permeability was low. Deviated wells with multiple laterals were found to be favorable for this situation; (3) In a fractured reservoir, the well failed to intersect fractures as anticipated; (4) Formation damage or excessive well undulation made cleaning difficult; (5) The well traversed unexpected variations in rock formations, leading to water coning; (6) The presence of flow barriers such as shale streaks inhibited production (but flow barriers can also augment production by inhibiting coning); (7) Feasibility studies were poor (e.g., based solely on simulations). Some of these problems can be overcome through improved planning and performance, while others are inherent and would likely affect vertical wells in much the same way.

Profitability for Large-Scale Projects

To evaluate a fundamental shift from vertical drilling to directional drilling, it is best to evaluate the economic advantages of implementing directional drilling on a large scale. Because each directional well drains a greater reservoir volume than a corresponding vertical well, fewer wells are required to drain a reservoir, reducing up-front project costs (Fritz et al. 1991). The technology continues to improve and efficiencies in using this technology will also likely increase. Al-Blehed et al. (2000) stated that their use of horizontal wells reduced drilling, flowline, and facilities costs by 20-25% over vertical drilling. Turaiki and Raza (1998) reviewed the track record of horizontal drilling in Saudi Arabia. They reached the conclusion that "Implementation of [3-D seismic, horizontal drilling, and multi-lateral drilling] has had a pronounced effect on reducing capital and operating costs. Development planning has become more cost-effective, oil production rate declines are being arrested, plateau oil rates are being sustained over longer duration, and oil recoveries are being improved."

These improved efficiencies in oil and gas recovery have translated into real economic successes when directional drilling technologies are applied on a large scale. Meehan (1995) evaluated Union Pacific Resources' horizontal drilling program in the Austin Chalk: "UPRC's first 1,000 horizontal wells have been an economic success," he reported, returning 19%

over their expenses. As of 1993, horizontal drilling was reducing total drilling, flowline, and facilities costs in the Middle East by 20-25% while improving well capacity by 150-400% (Aalund and Rappold 1993). Fritz et al. (1991) compared the costs of older-technology directional drilling with vertical drilling and found that oil production costs per barrel were lower for directional drilling in the Austin Chalk, but higher in the Williston Basin of North Dakota. According to Maloy (1992), "Horizontal drilling in Giddings field Austin Chalk has significantly improved well recoveries and more than offset drilling costs."

According to Harrison et al. (1994), techniques to control production unique to horizontal drilling make production from certain types of sandstone reservoirs profitable, which would be unprofitable with vertical drilling. Baker et al. (1984) performed an economic analysis on coalbed methane recovery via directional drilling and found it to be economically feasible. Based on BP's horizontal drilling experiences in the Gulf of Mexico, Sadgett et al. (1994) stated that "[t]he wells have provided access to reserves isolated by depositional features within the reservoir at a cost equal to or less than that of conventional drilling." According to Sarma and Ono (1995), "Most IOR [improved oil recovery] with horizontal wells has been successful, both in terms of oil productivity and economics. In most cases, project cost has been realized within months of production."

When horizontal drilling is applied broadly, the increases in oil and gas production more than compensate for higher costs per well. According to studies, directional drilling appears to yield economic advantages on a large scale. Even in individual cases where directional costs are higher, the overall cost-benefit of directional drilling appears to favor this technology over conventional vertical drilling.

INCREASING PRODUCIBLE RESERVES

Numerous reports have also found that directional drilling is also more effective at removing oil and gas from geologic formations than conventional vertical wells. Thakur (1999) reported that because horizontal drilling is a mare efficient extraction method, it increases the recoverable reserves for a given reservoir.

There are numerous cases where horizontal or other directional drilling has rejuvenated oil and gas reservoirs that previously were dormant. The Anglia gas field of the western North Sea was unproductive with vertical drilling, even with well stimulation and fracturing technologies. But "at a small cost premium, the [horizontal drilling] method enabled a marginal field to be developed successfully" (Guyatt and Allen. 1996). The Tyra Field of the Danish North Sea, which originally produced only gas, became a productive oil field due entirely to the success of horizontal drilling (Nykjaer 1994). In northern Alberta, horizontal wells are being used to tap "attic oil" missed by previously existing vertical wells (Morrissey 1996). In Canada, declining or shut-in fields such as the South Bodo, Edam West Sparky, Midale Bed Unit 5, Weyburn, and Cummings-Dina pools returned to strong production through horizontal drilling (Sarma and Ono 1995). In south Texas, the Pearsall Field had been abandoned as uneconomic until it was rejuvenated through horizontal drilling (Lichtenburger 1990). Based on initial successes, horizontal drilling is expected to yield an additional 80 million barrels of oil from the moribund Crystal Field in Michigan (Wood 1997).

Directional drilling can profitably tap new fields that are unprofitable to develop with conventional vertical methods. Jacobsen and Rushworth (1993) evaluated horizontal drilling in the Troll field of the Norwegian North Sea. They summarized their findings as follows: "Under the large gas accumulation of the Troll field lies a significant quantity of oil. However, this oil is contained in thin layers distributed over a wide area and therefore cannot be developed using conventional wells. In 1988 Norsk Hydro re-evaluated possible development schemes for the oil resource, and concluded that the application of horizontal well technology could provide an economically viable means of developing the resource." Following successful test wells, full-scale development followed. A five trillion cubic foot sweet gas play in northeastern British Columbia was rendered feasible by horizontal drilling; Oil and Gas Journal reported that "En Cana said Greater Sierra would be uneconomic without two technologies: horizontal drilling and underbalanced circulation" (Anon. 2002c).

Finally, horizontal drilling maximizes the amount of oil in place that can be extracted from underground reservoirs. Hawkings et al. (1990) reported that horizontal drilling would double the producible reserves from the Rotliegendes Field in Germany. According to Maloy (1992), horizontal drilling in the Austin Chalk "has conceivably increased recoverable reserves by 400 million BOE [barrels of oil equivalent, a measure

allowing comparison of gas and oil production]." In the Elk Hills field in California, Gangle and Ezekwe (1995) concluded, "The horizontal wells produce at higher rates, lower drawdowns, and lower gas-oil ratio which will extend the life of the project and result in higher recovery." Horizontal drilling has increased the recovery potential for this tilted reservoir to over 70% of the oil in place, an increase of 10 million barrels of producible oil per horizontal well (Gangle et al. 1991). For the Paradox formation of Utah, Arizona, and Colorado, Chidsey et al. (2002) reported, "Proper geological evaluation of the reservoirs may increase production by 20 to 50% by the application of horizontal, possibly multilateral drilling projects." Deskins et al. (1995) predicted that horizontal drilling would increase U.S. producible reserves by 38%.

Directional Drilling Exploratory Wells

Based on industry reports, directional drilling is feasible for both exploration and full field development (French Oil and Gas Industry Association 1990). The effectiveness of horizontal drilling in particular as an exploration tool was noted by Hawkings et al (1990) who reported that a horizontal well was able to locate high permeability sands where conventional wells had failed.

THE POTENTIAL TO REDUCE IMPACTS THROUGH DIRECTIONAL DRILLING

Directional drilling, coupled with new well spacing patterns, can reform the way that the oil and gas industry does business. This is particularly important on public lands and on private lands overlaying federal minerals in the Rocky Mountain West, which must be managed for multiple uses. These tools have great potential to reduce damages from exploration wells, infill projects, and new full-field development. As a result, directional drilling technology should be considered in all pending and future oil and gas projects, and if found to be more environmentally beneficial, it should be implemented.

However, directional drilling is by no means an environmental panacea. When properly employed, these techniques can reduce the quantity of roads, well pads, pipelines, and overall surface impacts, and also concentrate human activity and vehicle traffic in a smaller area. But directional techniques do not eliminate these impacts, nor do they necessarily reduce other environmental impacts such as noise, some types of air pollution, chemical spills, and in the case of coalbed methane, toxic wastewater. In order to truly minimize the environmental impacts when producing oil or gas, additional measures beyond the scope of this report will be required. In addition, directional drilling does not eliminate all impacts of oil and gas development, and in some cases merely shifts the impacts to other lands.

Consequently, directional drilling is not suitable for use in all instances. There are a number of sensitive lands and habitats that are fundamentally incompatible with industrial use, where oil and gas development of any kind is inappropriate. These lands include national wildlife refuges, parks, monuments, and wilderness areas; roadless and wilderness-quality lands; and other sensitive areas; as well as appropriate buffers around these lands.

Other sensitive lands, such as important wildlife habitat, areas of high archaeological and cultural interest, floodplains, and lands of critical importance to endangered and threatened species and other rare plants and wildlife, should be withdrawn fiom all surface developments to protect these sensitive lands from the surface impacts associated with energy development. Directional drilling has potential as a tool to access subsurface energy resources while protecting important surface values that would be damaged through conventional vertical drilling operations. It is directional drilling that allows for oil and gas to be extracted from federal lands with a "no surface occupancy" lease requirement.

However, environmental benefits can only be maximized if all surface activities, including exploration, are eliminated. The following paragraphs outline some of the potential environmental damage-reduction benefits of this technology.

Directional Drilling Requires Fewer Wells in Existing Fields

Because each horizontal well drains a much larger area than a vertical well does, fewer horizontal wells (and their associated roads, wellpads, pipelines, and in some cases, powerlines) are needed to drain a given oil or gas field. Maurer (1995) reported that Petro-Hunt used a single multibranch horizontal well to drain an entire lease; this dual wellbore produced at a rate that was 1.5 times greater than single-bore horizontal wells. For offshore drilling, Huang et al. (1996) reported, "In this application, the horizontal well can replace at least four vertical wells." According to Al-Blehed et al.

(2000), horizontal drilling has decreased the number of wells required to drain Middle Eastern reservoirs by 30%.

Because fewer directional wells are required to drain a subsurface reservoir, well spacing is greater for directional wells (Fritz et al. 1991). Joshi (1991) stated that "to achieve larger producible reserves, horizontal wells will have to be drilled with a larger well spacing than vertical wells." In one full-field horizontal drilling scenario, Stright and Kobertson (1993) noted "It is also concluded that horizontal well spacing in the fractured Niobrara should be greater than 640 acres." Indeed, horizontal wells that are spaced close together compete to draw the same oil or gas, reducing production efficiencies. In the Austin Chalk, Meehan (1995) found that "[i]nterference between [horizontal] wells more than *8,000* feet apart was not uncommon." Thus, it would be foolish from a technical perspective to implement a directional drilling program with an ultra-dense (20- to 80-acre) well spacing pattern.

In existing oil and gas fields, horizontal and multilateral drilling allows additional production to occur without an increase in well density, by drilling fiom existing wells or well pads. The U.S. Department of Energy agrees, stating that "new techniques for sidetrack drilling (drilling a lateral extending fkom an existing wellbore) and deeper drilling from existing wells can allow some of these resources to be developed without drilling new wells or disturbing previously undisturbed areas" (USDOE 1999a). Horizontal infill drilling can utilize existing wellpads to produce additional resources with few added impacts.

Directional Drilling Extends the Reach of Drilling Operations

Extended-reach drilling is both practical and economical. Based on experience in offshore California fields, Elks and Masonheimer (2002) concluded that "[a]lmost any rig can drill ERD [extended-reach drilling] wells, when the wells are designed and engineered within the rig's limitations." In 1994, emerging technological advances allowed extended-reach wells in Australia's Bass Strait field to be drilled "more economically and consistently" (Santostefano and Krepp 1994). The literature abounds with examples of technically and economically feasible "extended reach," or long-distance directional drilling, in a variety of settings, as summarized in this report. Such extended-reach drilling provides the possibility for extracting energy resources fkom under sensitive lands needing protection fiom surface disturbances. However, to date there are only a few examples where this has taken place. According to Deskins (1995), only 7% of the horizontal wells in a nationwide survey were drilled to avoid surface restrictions above the target formation. In Brazil, PetroBras has employed horizontal drilling in the Amazon to reduce the need to clear rainforest (Knott 1994). In this case, equipment was brought in by barge, and crews were helicoptered in, eliminating the construction of access roads to the wellpad. Slimhole drilling was used to access natural gas beneath the city of Howell, Michigan (Gredell and Benson 1995). In Texas, horizontal drilling was employed to access a large gas deposit beneath Falcon Reservoir, which was protected from surface drilling for ecological reasons (Doughtie 1994). These cases show that where surface resources require protection through lease stipulations or other measures, companies with a vested interest in a specific area may still be able to access the resource through directional drilling although this will displace impacts to other areas.

Cluster Drilling Reduces Surface Damage

Extended-reach drilling can be paired with cluster development to reduce the surface footprint associated with oil and gas drilling operations Slant and conventional directional drilling was used to drill 23 shallow wells (ranging from 1,716 feet to 1,860 feet deep) from a single pad near Wolf Lake in northeastern Alberta (Smith and Edwards 1992). In Venezuela's *Orinoco* Basin, Petrozuata has drilled up to 12 wells from a single pad (Moritis 2000). The Tabasco satellite field in the North Slope's Kuparuk area has been produced entirely from 9 wells drilled from a single pad (Phillips Petroleum 2002). Foregoing sentence reinstated. Elsewhere on Alaska's North Slope, a 25,000-acre reservoir was drained with 36 wells on two drilling pads (Redman 2002). The surface disturbance from the well pads, roads, and airstrip constructed during this project totaled 97 acres, compared to a total of 128 vertical well pads and 1,925 acres of surface disturbance for a comparable 25,000-acre part of Wyoming's Moxa Arch field (data fiom BLM 1995). But it is important to note that such cluster drilling has been shown to cause caribou to abandon the critically important calving grounds (Nelleman and Cameron 1998).

Cluster drilling from a single well pad not only reduces the overall footprint of oil and gas

development on the landscape by concentrating the activity and impacts of many wells at a few widely dispersed sites but also minimizes the capital investments of drilling companies (French Oil and Gas Industry Association 1990), and reduces costs for an expensive and ecologically damaging network of improved roadways. "By minimizing the number of production wells and usage of cluster locations," noted Graute et al. (1994), "a reduction of field investment and operating costs should be attained...." British Petroleum (2002) also has acknowledged the economic advantages of cluster development, stating that "limiting the size and number of new facilities also allows petroleum operations to be conducted more efficiently." Hub and cluster development is currently being used to develop the Tchibouela-Est field in Congo; this full-field production method is expected to improve production at reduced capital outlays (Energy Information Administration 2002).

By implementing cluster development in conjunction with directional drilling technology, there is the potential to simultaneously reduce environmental damages associated with full-field development using traditional vertical wells, as well as reduce industry costs. This provides an additional incentive for considering directional drilling, coupled with cluster development, when developing mineral resources in the Intermountain West.

CONCLUSIONS

This report demonstrates that directional drilling is a proven, feasible method to extract oil and gas resources in a variety of geologic settings throughout the Intermountain West and elsewhere across the globe. It is frequently economically superior to vertical drilling when the cost of drilling and the benefit from increased production associated with directional wells is taken into account

Where directional drilling is undertaken in a localized area by clustering wells, the surface disturbance associated with the drilling activity can be reduced, compared to vertical drilling. Directional wells generally need wider spacing within an area as well, which spreads out the amount of surface disturbance and may reduce the damage to any particular area. Thus, in a full-field development scenario, cluster drilling incurs a much more compact impact on the landscape when compared to the sprawl of roads, pipelines, and wellsites inherent to conventional vertical drilling. Directional drilling also enables oil and gas to be extracted from beneath lands where "No Surface Occupancy" restrictions have been place to protect sensitive resources valued by the public.

Directional drilling will not prevent all environmental impacts of oil and gas exploration and development. While clustering operations reduce the overall amount of land disturbance, they do intensify impacts in localized drilling areas. Directional drilling technologies also will not address other impacts associated with oil and gas development, such as air pollution and chemical spills. As a result, lands that contain resources incompatible with oil and gas development should remain withdrawn from all types of drilling, with buffers established to protect these lands. Still other sensitive lands must be protected from the surface impacts of energy development.

Given the availability and utility of this technology, it should be considered as an alternative wherever the federal government is examining oil and gas development of publicly owned minerals in the Intermountain West. When found to be the more environmentally protective alternative, this technology should be required in the development of federal mineral resources.

Although the Bush Administration has lauded directional drilling for its potential to reduce environmental impacts, so far it has failed to implement or even study the widespread use of directional drilling technology. Directional drilling should be factored into every decision about oil and gas activity affecting the minerals owned and managed by the federal government in the West. It could be a replacement for vertical drilling in a variety of circumstances, from exploration wells to infill projects to full-scale development of new fields.

APPENDIX A

Other Means to Reduce Surface Impacts

Pitless Drilling

One method that is universally applicable to reduce drilling impacts is "pitless drilling," entailing closed-loop systems that recycle drilling mud rather than dumping it into open pits. In addition to the elimination of toxic waste pits on the surface, this method reduces wellfield truck traffic by up to 75%, reduces water consumption by 80%, and is actually 8% less costly than constructing and maintaining a reserve pit (Longwell and Hertzler 1997). This method has proven successful in Alaska (Phillips Petroleum 2002) and Colorado (Longwell and Hertzler 1997), and is planned for the Sakhalin I project in Russia (Sumrow 2002). Due to its environmental advantage, pitless drilling should be mandated as a standard requirement for drilling operations.

The Need to Reduce the Impact of Seismic Exploration

Seismic oil and gas exploration can also have serious environmental impacts. There are two main methods: vibroseis, which relies on heavy equipment to send vibrations through the Earth, and shot-hole method, which required setting off underground explosive charges. The resulting shock waves are recorded by geophones to produce an underground map of oil and gas deposits. Desert soils, particularly those with biological soil crusts, are acutely susceptible to compaction and destruction when subjected to off-road vehicle driving of the type that accompanies heavy-impact types of seismic exploration; these soils and crusts can take 50-200 years to recover (Belnap 1995). Menkens and Anderson (1985) reported that prairie dog colonies subjected to vibroseis-method explor-

Photos by Scott Groene, Greater Yellowstone Coalition

Top: 26-ton vibroseis trucks used for heavy-impact seismic exploration.
Bottom: The aftermath of vibroseis truck use.

ation showed population declines while neighboring colonies experienced population increases. Seismic exploration projects can also have impacts on big game, particularly in sensitive habitats. Both shot-hole and vibroseis methods have been shown to disturb and displace elk on winter ranges (Ward 1986). Seismic exploration can also cause elk to abandon preferred calving habitats (Gillin 1989). Shot-hole seismic projects, while less damaging to the land, may also have negative impacts on wildlife. Explosions from shot-hole seismic testing may injure or kill fish when the shots are placed too close to aquatic habitats (Yukon Fish and Wildlife Management Board 2002). When performed in the winter, seismic shots can disturb and cause stress to hibernating bears (Reynolds et al. 1983). For these reasons, seismic exploration projects also deserve special planning to minimize their impacts on lands and wildlife.

The most prevalent method, 3-D seismic exploration, can be accomplished through two distinct techniques. In both types of seismic work, strings of receivers called "geophones" are strung out along set patterns across the landscape to pick up vibration signals from artificial sources. "Vibroseis" techniques employ 56,000-pound trucks that lower a 6,000-pound vibrating pad to create the vibration. "Shot-hole" methods employ drilling shallow holes and setting off explosive charges to set up the vibration signals. When properly conducted, this method can be a lower-impact alternative to vibroseis.

The vibroseis truck method is very heavy handed, requiring extensive off-road driving by massive machinery, which crushes vegetation and destroys fragile soils. According to the U.S. Bureau of Land Management, "Thumper trucks are obsolete technology that generate a greater shock wave through the ground and have the potential for greater impact to undiscovered cultural sites (due to the fact that they operated by dropping a 6,000 pound weight)" (BLM 2002b). Nonetheless, vibroseis trucks continue to be widely used throughout the American West.

The shot-hole method is much lighter on the land, particularly if it is performed without off-road vehicle travel. For environmentally sensitive areas, geophone cables can be laid by hand, and heliportable drills can be airlifted in to shot-hole sites (BLM 2001). This eliminates the need for damaging off-road truck and buggy traffic. Advances in shot-hole technology now allow 3-D seismic exploration to be conducted even in cities (Hansen 1993). Hansen later pointed out that exploration companies have a high degree of flexibility in locating shot points, increasing their ability to reduce impacts with this method (Hansen 1996). As in the case of drilling, some lands are so sensitive to disturbance that they are inappropriate for any type of seismic exploration.

APPENDIX B

Emerging Technologies Compatible with Directional Drilling

Virtually every technological advance developed for vertical drilling has also been successhlly applied to directional drilling. For directional wells, these technological advances further improve the technical capabilities, increase oil and gas recovery, and lower drilling and production costs. As more advances are made in drilling technology, these methods will be able to access oil and gas from deeper reservoirs, farther from the drilling pad, and at lower costs per barrel produced than ever before.

Hydraulic Fracturing

Hydraulic fracturing has been successfully implemented with horizontal wells on any number of occasions (Yost and Overbey 1989, Salamy et al. 1991, Iverson et al. 1995, Soliman et al. 1996). Multiple hydraulic fractures have been successfully employed with very deep horizontal wells (Schuler and Santos 1996). Guo and Evans (1993) developed algorithms to predict production for horizontal wells with any combination of fracturing and oil or gas viscosity. Thus, for low-permeability (tight) reservoirs, the option of hydraulic fracturing is

available to companies employing directional drilling technologies.

It is important to note that hydraulic fracturing is a controversial technique for gas extraction. Fracturing can have dramatic impacts on water supplies and nearby dwellings. These impacts, while outside the scope of this report, must be carefully considered before undertaking this approach.

Steam Injection

Steam injection can be used to improve heavy oil recovery from unconsolidated sand formations. Horizontal wells have been effectively employed in conjunction with steam injection from vertical wells (Chenot et al. 2002) and with paired horizontal injector wells (Sarma and Ono 1995). O'Rourke et al. (1997) found horizontal drilling of paired wells to be effective in gas production using steam injection techniques.

Underbalanced Drilling

In underbalanced drilling, drilling mud is infused with gas to make it lower-pressure than the producing formation. This prevents the drilling mud from being forced out from the wellbore into the reservoir formation, impairing the flow of gas into the wellbore (Teichrob 1994, Pinney and Rodrigues 1999). Brookey (1998) recently developed new drilling fluids using long-lasting "micro-bubbles," enabling balanced and underbalanced drilling fluids to be created at a fraction of the cost of injecting air or gas into drilling mud. Underbalanced drilling is particularly effective in producing oil and gas from low-pressure formations using horizontal drilling.

Well Casings

Originally, most horizontal wells were drilled as "open hole" completions, with no liner or casing of any type. Later, a number of different well casing types were developed for use with directional wells. Gomez et al. (2002) provide a useful synopsis of horizontal well casing types. According to this study, horizontal wellbores are most commonly completed in "open hole" fashion, or with slotted liners in unstable formations where wellbore collapse is a potential problem. Slotted-liner completions can be gravel packed to reduce sand production, which lowers efficiency. Gels can be used to isolate problem zones, even with slotted liners (Gomez et al. 2002). At the beginning of the 1990s, cased horizontal wells in Alaska were being completed with either cemented or slotted liners (Stagg and Reilly 1990). These researchers noted that cement casings were being used to isolate problematic rock formations outside the pay zone. Thus, many different well casing options are available to drillers of horizontal wells.

Coiled Tube and Slimhole Drilling

Coiled-tube drilling replaces the segmented drill pipe of conventional drilling with flexible tubing. The coiled tubing is run under compression in order to maintain the necessary pressure on the drill bit (Faure et al. 1994a). According to Faure et al. (1994b), coiled tubing allows re-drilling old wells and performing horizontal re-entries, even in offshore situations where there is no derrick in place. Graham et al. (1999) extolled the advantages of coiled-tube drilling for drilling horizontal lateral sections from existing vertical wellbores: "Due to economic, environmental, and surface logistics concerns, re-entry drilling from existing wellbores is often an extremely viable solution to horizontal development in existing reservoirs. By utilizing an existing wellbore, many of the costs can be avoided and often troublesome formations are already secured behind casing."

Coiled-tube methods have been paired with underbalanced drilling to achieve significant production improvements over vertical wells in a deep chalk reservoir in the Gorm Field of the Danish North Sea (Wodka et al. 1995) and also in the deep Elkton formation (McGregor et al. 1997). In addition, coiled-tube methods require a smaller wellpad and produce less toxic waste (Faure et al. 1994a) and are quieter than conventional drilling (USDOE 1999a).

Slimhole drilling, often accomplished through coiled-tube technology, entails the drilling of smaller-diameter wellbores, often from an existing vertical well. The new generation of smaller-diameter drilling bits developed for slimhole drilling are more durable, have increased penetration rates, and develop more power (McDonald et al. 1996). Slimhole drilling can also reduce wellpad footprint. According to the U.S. Department of Energy, "Operational footprints are also reduced, since equipment for slimhole drilling is smaller than that used in conventional operations. The area clewed for drilling locations and site access can be as little as 9,000 square feet with mud holding pits, as much as 75 percent less than that required for conventional drilling operations" (USDOE 1999a). Like coiled-tube drilling, slimhole

drilling is quieter than conventional methods, reducing disturbance to local people or wildlife (USDOE 1999a).

A technique known as "microdrilling" is currently under development with the U.S. Department of Energy. This technique uses coiled-tube drilling from a trailer that can be pulled by a pickup truck, and can drill new wells up to 500 feet deep with no site preparation. According to the U.S. Department of Energy (1999b), "When developed for deep drilling, the technology will replace traditional methods that use massive amounts of equipment, material, and manpower, all of which are extremely expensive." This technique may allow drilling to occur without additional well pad construction.

Waterfloods and Miscible Floods

Oil and gas producers may use waterfloods and miscible floods to increase reservoir production; these methods entail the injection of water or solvent to raise reservoir pressure and force oil or gas out through producing wells. These methods are typically employed in a coordinated fashion over entire reservoirs to maximize the production of oil or gas. Horizontal wells enhance the effectiveness of waterfloods through maximizing the "sweep efficiency," or ability to force more oil out of the reservoir (Aalund and Rappold 1993, Deskins et al. 1995).

Cases abound regarding the successful pairing of horizontal drilling with waterfloods and miscible flood. The combination of waterfloods and horizontal drilling has achieved success in Utah (Hall 1998). With miscible floods, horizontal wells in Canada's Rainbow Keg River G Pool achieved 3.5 times the hydrocarbon production of the best vertical well in the pool (Sarma and Ono 1995). In addition, the drilling of horizontal wells actually improved the productivity of offset vertical wells for miscible floods in the Rainbow Keg River E Pool (Fong et al. 1996). The cost of these horizontal wells in this pool as well as similar miscible flood horizontal projects in the Brazeau River field were recovered within the first year of production (Sarma and Ono 1995). Miscible floods have also been effectively employed in conjunction with cluster drilling on Alaska's North Slope (Redman 2002).

Rotary Steerable Drill Bits

Rotary steerable drill bits can change direction on a dime and offer faster drilling through the rock than older directional systems. In the Norwegian North Sea, a rotary steerable system drilled through 8,586 feet of horizontal reservoir section in only 8.9 days, saving the rig operator $1 million in rig time (Gaddy 1999). Similarly, rotary drilling systems saved 100 days of rig time (and the associated costs) in Norway's North Sea Jotun Field (Grini et al. 2002). Grini et al. noted that "Rotary-steerable systems provided greater directional-steering accuracy and drilling efficiency in extended-reach drilling applications." Most importantly, rotary steerable technology holds the promise of increasing extended reach distances by 25% over current achievements (Sumrow 2002).

But there are limitations to rotary-steerable technology. Chenot et al. (2002) reported that unconsolidated sands were poor candidates for rotary steerable drilling after a well failed in this formation where a conventional horizontal well was successful. Rotary-steerable systems remain an expensive option at the current time. Sumrow (2002) noted, "Anecdotally, only about 15% of the rigs in the North Sea can afford to run rotary steerable systems, limiting rotary steerable technology to only the more expensive wells." But if rotary-steerable technologies follow the trends of other advances in petroleum engineering, costs may soon decrease to the point where this technology is economically feasible for a broad range of applications.

Other Emerging Technologies

A host of other technologies have arisen to increase the productivity or economic efficiency of directional drilling. Ali et al. (1996) developed an acid foam treatment to repair "skin damage" problems for open-hole wells in unconsolidated sands. Miller and Geehan (1998) also found that acid stimulation improved production in under-producing horizontal wells in carbonate formations. A plunger lift has bean developed specifically for use in removing liquids from horizontal wellbores (Pullin and Porter 2001). Mathematical algorithms to predict bit walk in diagonal, directional, and horizontal wells have been developed to achieve even greater accuracy in drilling (Liu and Zaihong 2002). All of these technologies improve the performance of directional wells and increase their cost effectiveness.

LITERATURE CITED

Aalund, L., and K. Rappold. 1993. Horizontal drilling taps more oil in the Middle East. Oil and Gas J. 91(25):47-51.

Aguilera, R, J.S. Artindale, G.M. Cordell, M.C. Ng, G.W. Nicholl, and G.A. Runions. 1991. Horizontal wells. Houston, TX: Gulf Publishing, 401 pp.

Al-Blehed, M.S., C.M. Hamada, M.N.J. Al-Awad, and M.A. Al-Saddique. 2000. Horizontal wells find varied applications in Saudi fields. Oil and Gas J. 98.19:47-52.

Ali, S.A., H.N. Bui, and M.B. Edwards. 1996. Acid diversion is critical in horizontal gas well treatments. Petr. Engr. Intl. 69(4):32-34.

Aloko, J.A.A., S.P. Fischer, J. Osselbum, and D. Lee. 1998. Africa's first dual horizontal/dual completion multilateral well. Pp. 151-163 in Proc. 1998 6th Intl. Oil & Gas Conf. and Exh., Part 1, Nov. 2-6 1998, Beijing, China. Richardson, TX: SPE.

Andersen, S.A., S.A. Hansen, and K. Fjeldgaard. 1988. Horizontal drilling and completion: Denmark. Pp. 155-165 in Proc. Euro. Petrol. Conf., Oct 17-19, London. Richardson, TX: SPE.

Anonymous. 1996. Horizontal well taps Elk Hills shallow zone. Oil and Gas J. 94(4):59.

Anonymous. 1999. Horizontal and multilateral wells: Increasing production and reducing overall drilling and completion costs. J. Petrol. Tech. 51(7):20-24.

Anonymous. 2002a. Penn Virginia announces Appalachian coalbed methane drilling venture with CDX Gas, L.L.C. and revises third quarter 2002 exploration expense guidance. PR Newswire Philadelphia, August 2, 2002.

Anonymous. 2002c. EnCana pursues Northeast BC Devonian reef margin play. Oil and Gas J. 100(25):39-40.

Badgett, K.L., P.L. Mills, S.P. Mitchell, G.S. Vinsort, and K.L. Wilkins. 1994. Team combines technologies to target horizontal wells in Gulf of Mexico oil field. Oil and Gas J. 92(11):44-49.

Baker, E.C., D.C. Oyler, J.H. Perry, and G.L. Finfinger. 1984. Economic evaluation of directional drilling for methane drainage from coalbeds. U.S. Bureau of Mines Report of Investigations RI-8842, 11 pp.

Barry, A., P. Burnett, and C. Meakin. 1998. Geosteering horizontal wells in a thin oil column. Proc. 1998 Asia Pacific Oil & Gas Conf., Oct. 12-14, 1998, Perth, Aust. pp.221-233. Richardson, TX: SPE.

Beardmore, D.H., J.L. Gent, and R.A. Esbaugh. 1994. Drilling a blind-entry 4,000-ft. horizontal well in a depleted sandstone reservoir. Pp. 311-322 in Proc. Drilling Conf., Feb. 15-18 1994, Dallas, TX. Richardson, TX: SPE.

Bellinger, C.E. 1991. Horizontal well in the Devonian Shale, Martin County, Kentucky. Pp. 315-322 in Proceedings, SPE Eastern Regional Conference and Exhibition, Oct. 23-25, Lexington, KY. Richardson, TX: Society of Petroleum Engineers.

Belnap, J. 1995. Surface disturbances: Their role in accelerating desertification. Environmental Monitoring and Assessment 37:39-57.

Blangy, J.-P. 2002. Target-oriented, wide-patch, 3-D seismic yields trap definition and exploration success in the sub-Andean thrust belt Devonian gas play, Tarija Basin, Argentina. Leading Edge 21(2): 142-151.

Bleizeffer, D. 2002. Omega takes a bottom-up approach. Casper Star-Tribune, May 6,2002.

BLM. 2001. Haystacks 3-D Geophysical Exploration Project, Environmental Assessment. EA #WY-040-01-108. Rock Springs, WY: Bureau of Land Management, July 26, 2001, 21 pp.

BLM. 2002a. Draft Environmental Impact Statement and Draft Planning Amendment for the Powder River Basin Oil and Gas Project. Buffalo, WY: Bureau of Land Management, January 2002, 860 pp.

BLM. 2002b. Finding of No Significant Impact and Decision Record for North Mail Trail 3D Seismic Survey, Canyons of the Ancients National Monument, EA# CO-SJFO-01-081EA.U.S. Bureau of Land Management, 12 pp.

Braun, C.E. 1998. Current issues in sage grouse management. Proc. West. Assoc. Fish and Wildl. Agencies 67:134-144.

Braun, C.E., O.O. Oedekoven, and C.L. Aldridge. In press. Oil and gas development in western North America: Effects on sagebrush steppe avifauna with particular emphasis on sage-grouse. Trans. N. Am. Wildl. Nat. Res. Conf, Dallas TX, 2002.

British Petroleum. 2002. Technical brief: Alaska's North Slope oilfields. Anchorage, AK: British Petroleum, 4 pp.

Broman, W.H., and D.R. Schmor. 1992. Horizontal well operations at Prudhoe Bay. Pp. 541-545 in Proc. SPE Intl. Mtg. Petrol. Eng., Mar 24-27, Beijing, China. SPE Paper No. 22383. Richardson, TX: SPE.

Brookey, T. 1998. 'Micro-bubbles': New aphron drill-in fluid technique reduces formation damage in horizontal wells. Pp. 645-656 in Proc. 1998 Intl. Symp. on Formation Damage Control, Feb 18-19, Lafayette, LA. Richardson, TX: SPE.

Butler, J.R., and B. Skeen. 1996. Horizontal well successfully drilled in Black Warrior basin. Oil and Gas J. 94(30):33-36.

Cassetta, D. 1998. The 3D seismic rejuvenation of Roleta Field, Zapata County, TX. AAPG Bull. 82(9): 1778.

Chambers, M.R 1998. Multilateral technology gains broader acceptance. Oil and Gas J. 96(47):47-52.

Chambers, M.R. 2000. Making multi-lateral wells cost effective. SPE Reprint Series, no. 53, pp.44-56. Richardson, TX: SPE.

Chenot, D., J. Ford, and M. Pearse. 2002. Reservoir simulation/horizontal drilling, Round Mountain Unit thermal development project. U.S. Dept. of Energy Office of Fossil Energy Fact Sheet, Contract No. DE-FG26-00BC 15258.

Chidsey, T.C. Jr., G.D. Walker, and F.J. Garrett. 2002. Heterogeneous shallow-shelf carbonate buildups in the Blanding sub-basin of the Paradox Basin, Utah and Colorado: Targets for increased oil production and reserves using horizontal drilling. U.S. Dept. of Energy Office of Fossil Energy Fact Sheet, Contract No. DE-FC26-00BC15128.

Cho, H., and S.N. Shah. 2002. Optimization of well length for horizontal drilling. J. Can. Petrol. Tech. 41(5):54-62.

Curnutt, R.C., J.M. Benesch, K.M. Prikel, D. Indrarto, and F.G.H. Sumblang. 1993. Reservoir engineering aspects of horizontal drilling in an 'ultra-thin' oil column: A case study. Pp. 147-157 in Proc. Asia Pacific Oil and Gas Conf., Feb. 8-10, Singapore, Richardson, TX: SPE.

Deskins, W.G., W.J. McDonald, and T.B. Reid. 1995. Survey shows successes, failures of horizontal wells. Oil and Gas J. 93(25):39-45.

Deskins, G., Maurer Technology, telephone interview of August 9,2002.

Dolan, S.P., R.C. Crabtree, R.F. Drury, R. Gogan, G. Hattersley, D. Hindle, B. Neufeld, and R. Scaife. 1998. Planning, execution, and lessons learned from the GWA 13 extended reach drilling well - Goodwyn gas/conglomerate field, NSW, Australia. Pp. 271-279 in Proc. 1998 Asia Pacific Oil & Gas Conf., Oct. 12-14, Perth, Aust. Richardson, TX: SPE.

Doughtie, D. 1994. South Texas yields huge gas discovery. World Oil 215(8):87-91.

Elks, William C., Jr, and R.A. Masonheimer. 2002. Extended-reach drilling develops Sacate field, offshore California. Oil and Gas J. 100(10):45-55.

Energy Information Administration- 2002. Congo-Brazzaville Country Analysis Brief. Washington: USDOE, March 2002.

Faure, A.M., J.R. Simmons, J. Miller, and I.A. Davidson. 1994a. Coiled tubing drilling: A means to minimize environmental impact. Pp. 513-523 in Proc. 2nd Intl. Conf. on Health, Safety, and the Environment in Oil and Gas Exploration and Production, Jakarta, Indonesia, January 25-27 1994. SPE Paper No. 27156.

Faure, A., B.V. Herman, H. Van Elst, P.M. Burge, R. Jurgens, and B. Hughes. 1994b. Slim-hole and coiled-tubing window cutting systems. Pp. 373-380 in Proc. Permian Basin Oil & Gas Recovery Conf., Mar. 16-18 1994, Midland TX. Richardson, TX: SPE.

Fletcher, S. 2002. Horizontal drilling taps tight gas plays in Permian basin. Oil and Gas J. 100(6):40-42.

French Oil and Gas Industry Association. 1990. Directional drilling and deviation control technology. Houston, TX: Gulf Publishing Co., 142 pp.

Fritz, R.D., M.K. Horn, and S.D. Joshi. 1991. Geological aspects of horizontal drilling. Tulsa, OK: AAPG, 563 pp.

Fong, D.K., F.Y. Fong, and F.J. McIntyre. 1996. Unexpected benefit of horizontal wells on offset vertical well productivity in vertical miscible floods. Can. J. Petrol. Tech. 35(9):70-79.

Gaddy, D.E. 1999. Rotary-steerable system drills 300,000 ft. of hole. Oil and Gas J. 97(20):57.

Gangle, F.J., K.L. Schultz, and G.S. McJannet. 1991. Horizontal wells in a thick steeply dipping reservoir at NPR-1, Elk Hills, Kern County, California. Pp. 389-393 in Proc. SPE Western Regional Mtg., Mar 20-22 1991, Long Beach CA. SPE Paper No. 21792. Richardson, TX: SPE.

Gangle, F.J., and J.N. Ezekwe. 1995. Improved oil recovery using horizontal wells at Elk Hills, California. Pp. 363-367 in Proc. SPE Western Regional Mtg., Mar 23-25 1995, Long Beach CA. SPE Paper No. 27884. Richardson, TX: SPE.

Gidman, B., L.R.B. Hammons, and M.D. Paulk. 1995. Horizontal wells enhance development of thin offshore gas reservoirs. Petrol. Engr. Int'l 67(3).

Gillin, C. 1989. Response of elk to seismograph exploration in the Wyoming Range. M.S. Thesis, Univ. of Wyoming, 110 pp.

Graham, R.A., R.J. Cox, J.A. Stadlwleser, and R. Stinn. 1999. Horizontal re-entry drilling with coiled tubing: A viable technology. J. Can. Pet. Tech. 38(10):28-36.

Graute, J., E. Eide, and G. Wenninger. 1994. Record horizontal wells for deep gas reservoir improve productivity and recovery. Pp. 419-431 in Proc. Euro. Petrol. Conf. Richardson, TX: Society of Petroleum Engineers.

Gredell, M.E., and M.A. Benson. 1995. Slimhole horizontal well application in a gas storage reservoir: A case study. Proc. 1995 Operating Section, May 7-10, Las Vegas, NV, pp 732-742.

Grini, M., W.V. Rice, and S. Stromberg. 2002. Rotary-steerable technology lowers drilling time, well costs. Oil and Gas J. 100(20):39-43.

Gomez, J.A., D.D. Mamora, and L.O. Lilledal. 2002. Full-scale well-model tests of a new chemical plug system for zone isolation in horizontal wells. SPE Drilling & Completion 17(2):82-86.

Guo, G., and R.D. Evans. 1993. Inflow performance and production forecasting of horizontal wells with multiple hydraulic fractures in low-permeability gas reservoirs. Pp. 307-317 in Proc. Gas Tech. Symp., June 28-30 1993, Calgary, Alta. Richardson, TX: SPE.

Guyatt, R.C.P., and J.P. Allen. 1996. Application of horizontal wells to a tight-gas sandstone reservoir: A Case history. SPE Reservoir Engineering 11(3):203-209.

Hall, S.D. 1998. Multilaterals convert 5 spot to line drive waterflood in SE Utah. Pp.383-386 in Proc. 1998 6th Intl. Oil and Gas Conf Exhib., Nov. 2-6 1998, Beijing, China. Richardson, TX: SPE.

Hansen, W. 1993. Environmentally compatible seismic prospecting is feasible. Erdoel Erdgas Kohle 109(6):254-258.

Hansen, W. 1996. Reducing the environmental impact of 3D seismic. Pp. 425-432 in Proc. 1996 Intl. Conf on Health, Safety, and the Environment in Oil and Gas Exploration and Production, Part 1 (of 2), Jun 9-12 1996, New Orleans LA. SPE Paper No. 35812.

Hansen, A.J., and J.J. Rotella. 2000. Bird responses to forest fragmentation. In: Forest fragmentation in the southern Rocky Mountains, R.L. Knight, F.W. Smith, S.W. Buskirk, W.H. Romme, and W.L. Baker, eds. Pp. 201-219. Boulder: University Press of Colorado.

Harrison, R.D. Jr., H. Restarick, and T.F. Grigsby. 1994. Case histories: New horizontal completion designs facilitate development and increase production capabilities in sandstone reservoirs. Pp. 431-439 in Proc. 64th Ann SPE Western Regional Mtg., Mar 23-25, Long Beach, CA. Richardson, TX: SPE.

Hawkings, N., C. Ramsey, J. Rapach, and M. Kristof. 1990. Results fiom a horizontal well in a Roetliegendes gas field. Pp. 441-451 in Proc. Euro. Petrol. Conf., Oct. 21-24 1990, The Hague, Neth. London: European Offshore Petroleum Conference.

Howell, E.C., and E.C. Stacey. 1994. 3D seismic and horizontal drilling - A case history, Bodo, Alberta. Pp. 1299-1313 in Proc. Latin Am./Caribbean Petrol. Eng. Conf, Apr 27-29, Buenos Aires, Argentina. SPE Paper No. 27065.

Huang, W.S., M.R. French, and B.N. Markitell. 1996. Design and performance of Chuchupa 16 - First horizontal gas well, offshore Colombia. Pp. 11-20 in Proc. - SPE Int'l Conf. on Horiz. Well Tech., Nov. 18-20, Calgary, Alta. Richardson, TX: SPE.

Hulin, B.K. 2001. Water quality of Wyoming stream channel sediments and coalbed methane product water. M.S. Thesis, Univ. of Wyoming, 63 pp.

Hutzler, M.J. 2000. Statement of Mary J. Hutzler, Director, Office of Integrated Analysis and Forecasting, Energy Information Administration, before the Committee on Energy and Natural Resources, US Senate, July 26,2000.

Ingelfinger, F.M. 2001. The effects of natural gas development on sagebrush steppe passerines in Sublette County, Wyoming. M.S. Thesis, Univ. of Wyoming, 110 pp.

Ishak, I.B., R.P. Steele, R.C. Macaulay, P.M. Stephenson, and S.M. Al Mantheri. 1998. Review of horizontal drilling. SPE Reprint Series no. 47,1998, pp. 190-203.

Iverson, W.P., T.L. Dunn, and R.C. Surdam. 1995. Improvements to formation evaluation, Almond Formation, Green River Basin, Wyoming. Wyo. Geol. Assoc. Guidebook 46:271-280.

Jacobsen, RI., and P. Rushworth. 1993. Application of horizontal wells to the Troll oil development: An operational overview. Pp. 117-128 in Construction & Installation/Field Drilling and Development Systems, Proc. 25th *Ann.* Offshore Tech. Conf.. Part 3 (of 4), May 3-6 1993, Houston TX.

Jiang, Z.M., and Z.W. Nian. 1998. Critical aspects experienced in drilling a world record extended reach well in South China Sea. Pp. 35-43 in Proc. 1998 6th Intl. Oil and Gas Conf. Exh., Nov 2-6 1998, Beijing, China. Richardson, TX: SPE.

Johnson, B.K., and D. Lockman. 1979. Response of elk during calving to oil/gas drilling activity in Snider Basin, Wyoming. WDGF report, 14 pp.

Johnson, B., and L. Wollrab. 1987. Response of elk to development of a natural gas field in western Wyoming 1979-1987. WDGF Report, 28 pp.

Joshi, S.D. 1991. Horizontal well technology. Tulsa, OK: PennWell Books, 535 pp.

Kabir, C.S., A.G. Del Signore, and A.A. AI-Fares. 1997. Performance evaluation of horizontal wells in a tight carbonate reservoir. Pp. 643-654 in Proc. 1997 SPE *Ann.* Tech. Conf. and Exh. Part Sigma, Oct 5-8, San Antonio, TX. Richardson, TX: SPE.

Knick, S.T., and J.T. Rotenberry. 1995. Landscape characteristics of fragmented shrubsteppe habitats and breeding passerine birds. Conserv. Biol. 9:1059-1071.

Knott, T. 1994. Jungle juice - tapping the Amazon's petroleum reserves. Petroleum Review 48:554-556.

Krystinik, L.F. 2001. Big bucks or money disposal project?. ..New perspectives on basin-centered gas from horizontal drilling, deep Frontier fm., Green River Basin, SW Wyoming. *AAPG* Bull. 85(13) supplement.

Lacy, S., W. Ding, and S.D. Joshi. 1992. Horizontal well applications and parameters for economic success. Pp. 257-265 in Proc. 2nd *Ann.* Latin Am. Petrol. Eng. Conf., Mar.8-11 1991, Caracas Venezuela. SPE Paper No. 23676. Richardson, TX: SPE.

Lanier, G.H. 1996. Low-cost short-radius re-entry horizontal drilling program revitalizes aging northern Michigan Niagaran oil fields. Pp. 681-694 in Drilling and Completion, Proc. 1996 *Ann.* Tech. Conf. Exh., Part Delta, Oct. 6-9 1996, Denver CO.

Leazer, C., and M.R. Marquez. 1995. Short-radius drilling expands horizontal well applications. Petrol. Engr. Intl. 67(4): 21-26.

Lichtenburger, G.J. 1990. Pressure buildup test results fiom horizontal wells in the Pearsall Field of the Austin Chalk. Pp.835-850 in Proc. 65th Am. SPE Tech. Conf. Exhib., Sept 23-25 1990, New Orelans LA. SPE Pager No. 20609. Richardson, TX: SPE.

Liu, X., and S. Zaihong. 2002. Technique yields exact solution for planning bit-walk paths. Oil and Gas J. 100(5):45-50.

Logan, T.L. 1988. Horizontal drainhole drilling techniques used in Rocky Mountain coal seams. Proc. Rocky Mtn. Assoc. Geol. Conf., Coalbed Methane, San Juan Basin.

Longwell, J., and G. Hertzler. 1997. Closed-loop system as a cost effective alternative to reserve pits. Pp. 186-196 in Advances in drilling technologies for the North American Rockies: Proc. Consortium for Emerging Gas Resources in the Greater Green River Basin, Apr 28 1997, Denver CO.

Luhowy, Victor M. 1993. Horizontal wells prove effective in Canadian heavy-oil field. Oil and Gas J. 91(26): 47-50.

Lyon, A.G. 2000. The potential effects of natural gas development on sage grouse (*Centrocercus urophasianus*) near Pinedale, Wyoming. M.S. Thesis, Univ. of Wyoming, 121 pp.

Maloy, W.T. 1992. Horizontal wells up odds for profit in Giddings Austin Chalk. Oil and Gas J. 90(7):67-74.

Maloy, W.T. 1997. A geological assessment: What's ahead for Louisiana Austin chalk. Oil and Gas J. 95(22): 149-153.

Maurer, W. C. 1995. Recent advances in horizontal drilling. Can. J. Pet. Tech. 34(9):25-33.

McCarty, T.M., M.J. Stanley, and L.L. Gantt. 2002. Coiled-tube drilling: Continued performance improvement in Alaska. SPE Drilling & Completion 17(1):45-49.

McCormac, M.P. 1996. Ohio 1995 oil and gas activity and exploration highlights. Oil and Gas J. 94(16):77-80.

McDonald, S., F. Felderhoff, and K. Fisher. 1996. New bits, motors improve economics of slimhole horizontal wells. Oil and Gas J. 94(11):66-70.

McGregor, B., R. Cox, and J. Best. 1997. Application of coiled-tubing-drilling technology on a deep underpressured gas reservoir. J. Petrol. Tech. 49(6):606-608.

McWilliams, C. 2002. The hope: Fewer wells, more gas. Pine River (Colorado) Times, June 6,2002.

Meehan, D.N. 1995. Technology vital for horizontal well success. Oil and Gas J. 93(50):39-46.

Menkens, G.E., and S.H. Anderson. 1985. The effects of vibroseis on white-tailed prairie dog populations on the Laramie Plains of Wyoming. Report to the U.S. Bureau of Land Management, Interagency Agreement #WY9 10-IA2-1187, 15 pp.

Miller, M.J., and T. Geehan. 1998. Stimulation optimization for horizontal wells in carbonate formations. Pp. 329-333 in Proc. Rocky Mtn. Regional/Low Permeability Reservoirs Symp. and Exh., Apr. 5-8 1998, Denver, CO. Richardson, TX: SPE.

Miller, K.A., and R.A. Steiger. 1999. Pikes Peak Project; successful without horizontal wells. J. Can. Pet, Tech. 38(4):2 1-26.

Moore, B.R., and P.R. Moore. 1999. Low altitude airborne multispectral microfracture analysis in the control of oil and gas production, coalbed methane and site location of directional drilling. AAPG Bull. 83(8):1371.

Morgan, C.D. 1996. Horizontal drilling potential of the Cane Creek Shale, Paradox Formation, Utah. SPE Reprint Series No. 45, pp. 30-38.

Moritis, G. 1990. Horizontal drilling scores more successes. Oil and Gas J. 88(9):53-64.

Moritis, G. 2000. Complex well geometries boost Orinoco heavy oil producing rates. Oil and Gas J. 98(9):42-46.

Morrissey, F. 1996. Horizontal well strategy taps attic oil. Oil and Gas J. 94(3):38-42.

Mostafa, I. 1993. Evaluation of water and gas pattern flooding using horizontal wells in tight carbonate reservoirs. Pp. 29-42 in Proc. 8th Middle East Oil Show and Conf., Apr. 3-6 1993, Manama, Bahrain, Richardson, TX SPE.

Myal, F.R., and F.-K. Frohne. 1992. Drilling and early testing of a sidetrack to the slant-hole completion test well: A case study of gas recovery research in Colorado's Piceance Basin. Pp. 631-639 in Proc. SPE Rocky Mtn. Regional Mtg. Exhib., May 18-21, Casper, WY. SPE Paper No. 24382. Richardson, TX: SPE.

Nelleman, C., and R.D. Cameron. 1998. Cumulative impacts of an evolving oil-field complex on the distribution of calving caribou. Can. J. Zool. 76:1425-1430.

Niggeman, L., and R. Ehlers. 1991. Horizontal drilling in a depleted sour gas reservoir: A new application. Pp. 749-757 in Proc. 1991 SPE/IADC Drilling Conf., Mar 11-14, Amsterdam, Neth. SPE Paper No. 21987. Richardson, TX: SPE.

Nykjaer, O. 1994. Development of a thin oil rim with horizontal wells in a low relief chalk gas field, Tyra Field, Danish North Sea. Euro. Petrl. Conf - Proc. pp299-305. Richardson, TX: SPE.

O'Rourke, J.C., A.G. Begley, H.A. Boyle, C.T. Yee, J.I. Chambers, and R.W. Luhning. 1999. UTF Project status update, May 1997. J. Can. Pet. Tech. 38(9):44-53.

Pearce, D., M. Johnson, and B. Godfrey. 1995. Horizontal well drilled into deep, hot Austin Chalk. Oil and Gas J. 93(14):59-61.

Petzet, G.A. 1990. Development eclipsing exploration onshore. Oil and Gas J. 88(23):58-62.

Phillips Petroleum. 2002. Phillips Petroleum Company Worldwide..North America...Alaska. www.phillips66.com/locations/alaska.html.

Pinney, M., and S. Rodrigues. 1999. Drilling technology increasing Western Canada gas supply. Oil and Gas J. 97(24): 106-108.

Powell, J.H., and F.G. Lindzey. 2001.2000 progress report: Habitat use patterns and the effects of human disturbance on the Steamboat elk herd. Unpublished report, Wyoming Cooperative Fish and Wildlife Research Unit, 21 pp.

Pullin, R., and P. Porter. 2001. Plunger lift for horizontal wells. Pp. 102-103 in Proc. 48th Ann. Southw. Petrol. Short Course, Apr. 25-26, Lubbock, TX.

Redman, R.S. 2002. Horizontal miscible water alternating gas development of the Alpine Field, Alaska. In Proc. SPE Western Regional/AAPG Pacific Section Joint Meeting, May 20-22, Anchorage AK. SPE Paper No. 76819, 8 pp.

Reynolds, P.E., H.V. Reynolds III, and E.H. Follman. 1983. Responses of grizzly bears to seismic surveys in northern Alaska. Proc. Int. Conf. Bear Res. And Manage. 6:169-175.

Reynolds, D.A., and K.P. Seymour. 1991. Horizontal well replaces hydraulic fracturing in North Sea gas well. Oil and Gas J. 89(47):71-74.

Rixse, M., and M.O. Johnson. 2002. High-performance coil-tubing drilling develops shallow North Slope heavy oil. Oil and Gas J. 100(27):58-63.

Robertson, C.J., J.M. Rapach, N.T. Grant, and M.H. Smith. 1992. History of horizontal wells in the V Fields. Pp. 291-302 in Proc. Euro. Petrol. Conf., Nov 16-18 1992, Cannes, FR. Richardson, TX: SPE.

Saavedra, N.F., and S.D. Joshi. 2002. Application of horizontal well technology in Colombia. J. Can. Petrol. Tech. 41(3):33-39.

Salarny, S.P., K. Aminian, G.J. Koperna, and C.D. Locke. 1991. Pre- and post-stimulation well test data analysis from horizontal wells in the Devonian shale. Pp. 337-352 in Proc. SPE Eastern Regional Conf. Exhib. ,Oct 23-25 1991, Lexington KY. SPE Paper No. 23449. Richardson, TX: SPE.

Sanstrom, B., and P. Longorio. 2002. Innovative 3D visualization tool promotes development-drilling efficiency. Oil and Gas J. 100(8):79-84.

Santostefano, V., and A.N. Krepp. 1994. Extended reach drilling advancements dramatically improve performance on Bass Strait wells. Pp. 349-359 in Proc. Asia Pacific oil & Gas Conf., Nov 7-10 1994, Melbourne, Aust. SPE Paper No. 28777. Richardson, TX: SPE.

Sarma, H.K, and K. Ono. 1995. Horizontal wells prove versatile for improved oil recovery. Oil and Gas J. 93(50):47-56.

Sawyer, H. H., F.W. Lindzey, D. McWhirter, and K. Andrews. In press. Potential effects of oil and gas development on mule deer and pronghorn populations in Wyoming. Proc. N. Am. Wildl. Nat. Res. Conf., Dallas TX, 2002.

Schneider, Z. 2001. Drilling technique could boost output. Casper (Wyoming) Star-Tribune, October 20, 2001.

Schuler, S.K. 1992. Horizontal well improves recovery in deep sour gas field. Oil and Gas J. 90(12):93-97.

Schuler, S., and R Santos 1996. Fraced horizontal well shows potential of deep tight gas. Oil and Gas J. 94(2).

Sheikholeslami, B.A., B.W. Schlottman, F.A. Seidel, and D.M. Button. 1991. Drilling and production aspects of horizontal wells in the Austin Chalk. J. Petrol. Tech. 43(7):773-779.

Shirif, E. 2000. How new horizontal wells affect the performance of existing vertical wells. AAPG Bull. 84(6):894.

Simpson, W.A.F, P. Spilsbury, E. Teleco, and C. Hargreaves. 1993. Applying short-radius horizontal drilling to a deep, hot reservoir in the Mubarek field. Pp. 669-678 in Proc. 1993 SPE/IADC Drilling Conf., Feb 23-25 1993, Amsterdam, Neth. Richardson, TX: SPE.

Smith, J., and B. Edwards. 1992. Slant rigs offer big payoffs in shallow drilling. Oil and Gas J. 90(13):64-66.

Soliman, M.Y., J.L. Hunt, and M. Azari. 1996. Fracturing horizontal wells in gas reservoirs. Pp. 27-40 in Proc. 1996 SPE Eastern Regional Conf., Oct 23-25, Columbus, OH. Richardson, TX: SPE.

Stagg, T.O., and R.H. Reilly. 1990. Horizontal well completions in Alaska. World Oil 210(3):37-44.

Standing, T.H. 2000. Data shows steep Prudhoe Bay production decline. Oil and Gas J. 98(40):86-96.

Stewart, W.W. 1995. Horizontal wells in Wyoming through 1994. Wyo. Geol. Assoc. Guidebook 46:283-295.

Stright, D.H. Jr., and R.D. Robertson. 1993. Integrated approach to evaluation of horizontal well prospects in the Niobrara shale. Pp. 755-766 in Proc. Rocky Mtn. Mtg./Low Permeability Reservoirs Symp. Exh., Apr 26-28 1993, Denver *CO*. Richardson, TX: SPE.

Sumrow, M. 2002. Extreme conditions, extended-reach wells govern land-rig design for Sakhalin. Oil and Gas J. 100(24):4 1-51.

Swindell, G.S. 1996. U.S. horizontal wells show varied production performance. Oil and Gas J. 94(13):66-69.

Teichrob, R.R. 1994. Low-pressure reservoir drilled with air/N2 in a closed system. Oil and Gas J. 92(12):80-90.

Thakur, S.C., K. Bally, D. Therry, and L. Simon. 1996. Performance of horizontal wells in a thin oil zone between a gas cap and an aquifer, Immortelle Field, Trinidad. Pp. 715-726 in Proc. SPE *Ann.* Tech. Conf. Exh., Qct. 6-9 1996, Denver, CO.

Thakur, G.C. 1999. Horizontal well technology--A key to improving reserves. J. Can. Pet. Tech. 38(10):55-*60.*

Turaiki, S.A., and S.H. Raza. 1998. Successful applications of the latest technology for improved oil recovery in Saudi Arabia. Proc. 1998 11th Symp. on Improved Oil Recovery, Part 1, Apr. 19-22 1998, Tulsa, OK, pp. 415-422. Richardson, TX: SPE.

USDOE. 1993. Drilling sideways – A review of horizontal well technology and its domestic application. Washington, DC: Energy Information Administration, Office of Oil and Gas, U.S. Department of Energy, Report No. DOE/EIA-TR-0565, 23 pp.

USDOE. 1999a. Environmental benefits of advanced oil and gas exploration and production technology, Publication of the U.S. Department of Energy, Office of Fossil Energy, 163 pp.

USDOE. 1999b. Microdrilling technology advances in Los Alamos field test. U.S. Dept. of Energy Fossil Energy Techline, October 20, 1999.

van der Harst, A.C. 1991. Erb West: An oil rim development with horizontal wells. Pp. 447-458 in Proc. SPE Asia Pacific Conf., Nov 4-7 1991, Perth, Aust. Richardson, TX: SPE.

Van Dyke, F., and W.C. Klein, 1996. Response of elk to installation of oil wells. J. Mamm. 77(4):1028-1041.

van Kruysdijk, C.P.J.W., and H. Niko. 1988. Alternatives for draining tight naturally fractured gas reservoirs: Horizontal hole drilling vs. massive hydraulic fracturing. Pp. 47-57 in Proc. Euro. Petrol. Conf., Oct 17-19, London. Richardson, TX: SPE.

Vighetto, R., M. Naegel, and E. Pradie. 1999. Teamwork, downhole technology expedites Tierra del Fuego operations. Oil and Gas J. 97(23):60-65.

Ward, L.A. 1986. Displacement of elk related to seismograph activity in south-central Wyoming. Pp. 246-254 in Issues and technology in the management of impacted western wildlife: Proceedings of a national symposium, Glenwood Springs, CO. Boulder, CO: Thorne Ecol. Inst.

Weatherl, M.H. 1998. Horizontal drilling success in the East Painter Field of southwest Wyoming. Pp. 349-361 in Proc. 1998 Rocky Mtn. Regional/Low Permeability Reservoirs Symp. and Exh., Apr. 5-8 1998, Denver CO. Richardson, TX: SPE.

Wodka, P., H. Tirsgaard, C.J. Adamsen, and A.P. Damgaard. 1995. Underbalanced coiled tubing drilled horizontal well in the North Sea. Pp. 271-280 in Proc. SPE/IADC Drilling Conf., Feb. 28-Mar. 2 1995, Amsterdam, Neth. Richardson, TX: SPE.

Wood, J.R. 1997. Recovery of bypassed oil in the Dundee formation using horizontal drills. Annual Report to U.S. Department of Energy, Contract DE-FC22-94BC14983, 10 pp.

Xinzhong, L., Z. Ziren, and C. Ping. 1998. Drilling and completion of the deep horizontal well in Shixi oilfield. Pp. 223-232 in Proc. 1998 6th Intl. Oil & Gas Conf. Exh., Nov 2-6, Beijing China. Richardson, TX: SPE.

Yost, A.B., and W.K. Overbey, Jr. 1989. Production and stimulation analysis of multiple hydraulic fracturing of a 2,000-ft horizontal well. Pp. 321-334 in Proc. SPE Gas Tech. Symp., June 7-9 1989, Dallas TX. SPE Paper No. 19090. Richardson, TX: SPE.

Yukon Fish and Wildlife Management Board. 2002. The effects of oil and gas activity on fish and wildlife: A review of selected literature. Whitehorse, Yukon Territory, 87 pp.

Zammerilli, A.M. 1989. Simulation study of horizontal, high-angle, and vertical wells in Eastern Devonian Shale. Pp. 641-650 in Proc. SPE Joint Rocky Mtn. Reg./Low Permeability Reservoirs Symp. and Exhibition, Mar. 6-8 1989, Denver, CO. Richardson, TX: SPE.

A GUIDE

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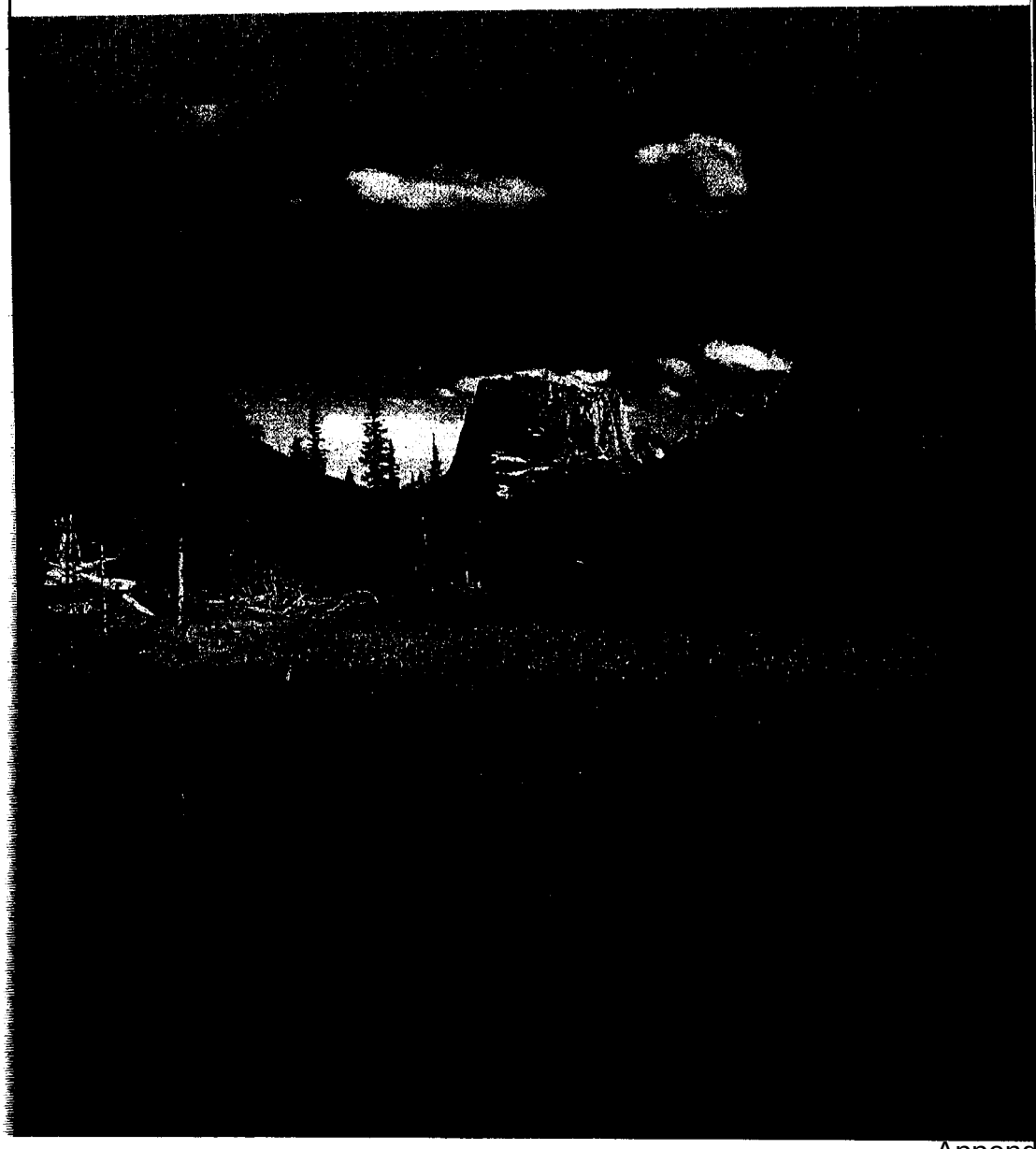
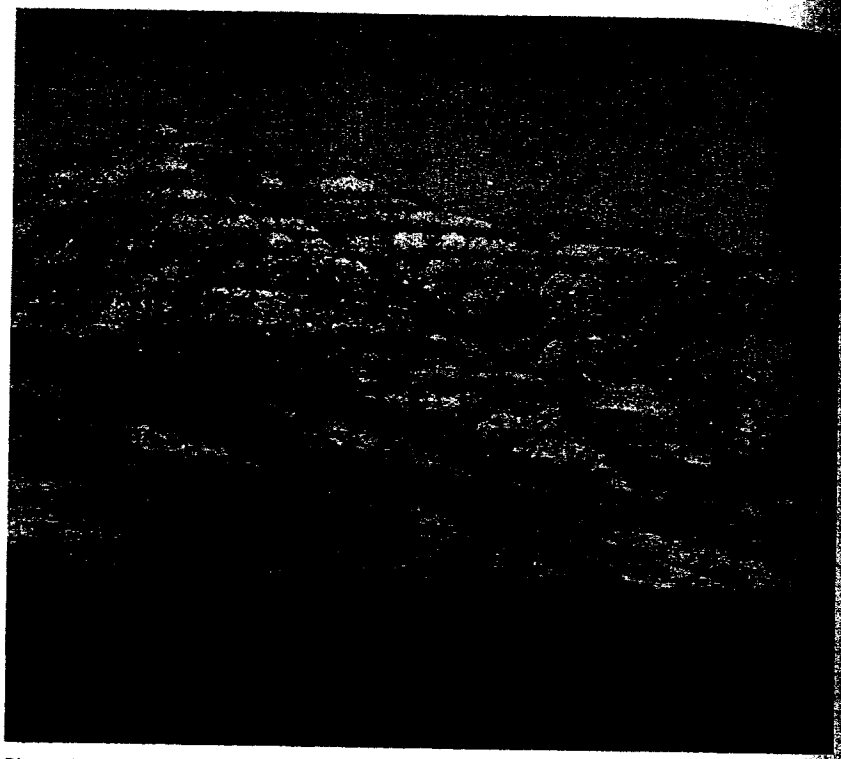
Erik Molvar

WILD Wyoming





Big, arid buttes typical of Fortification Creek.

ACCESS: There is no public access to this area, despite its size and importance to hunters. You can take the Kingsbury Road north from I-90 to link up with the Fortification Road, which approaches its south boundary. The Echeta Road follows the railway and approaches to within 3 miles of the WSA. From here, access is contingent on landowner permission. The BLM is currently negotiating a public access corridor along this route.

th Fork of Powder River

n: 35 miles northwest of Casper.
,900 acres.
istration: BLM (Casper Field Office).
ment status: Unprotected roadless lands.
tem: Great Plains Shortgrass Prairie Province, wheatgrass-needlegrass shrub steppe.
on range: 5,300 feet to 6,380 feet.
trails: None.
um core to perimeter distance: 1.7 miles.
es: Horseback riding, hiking, big game and upland bird hunting, rockhounding.
ason: April–October.
site and Midwest 1:100,000.

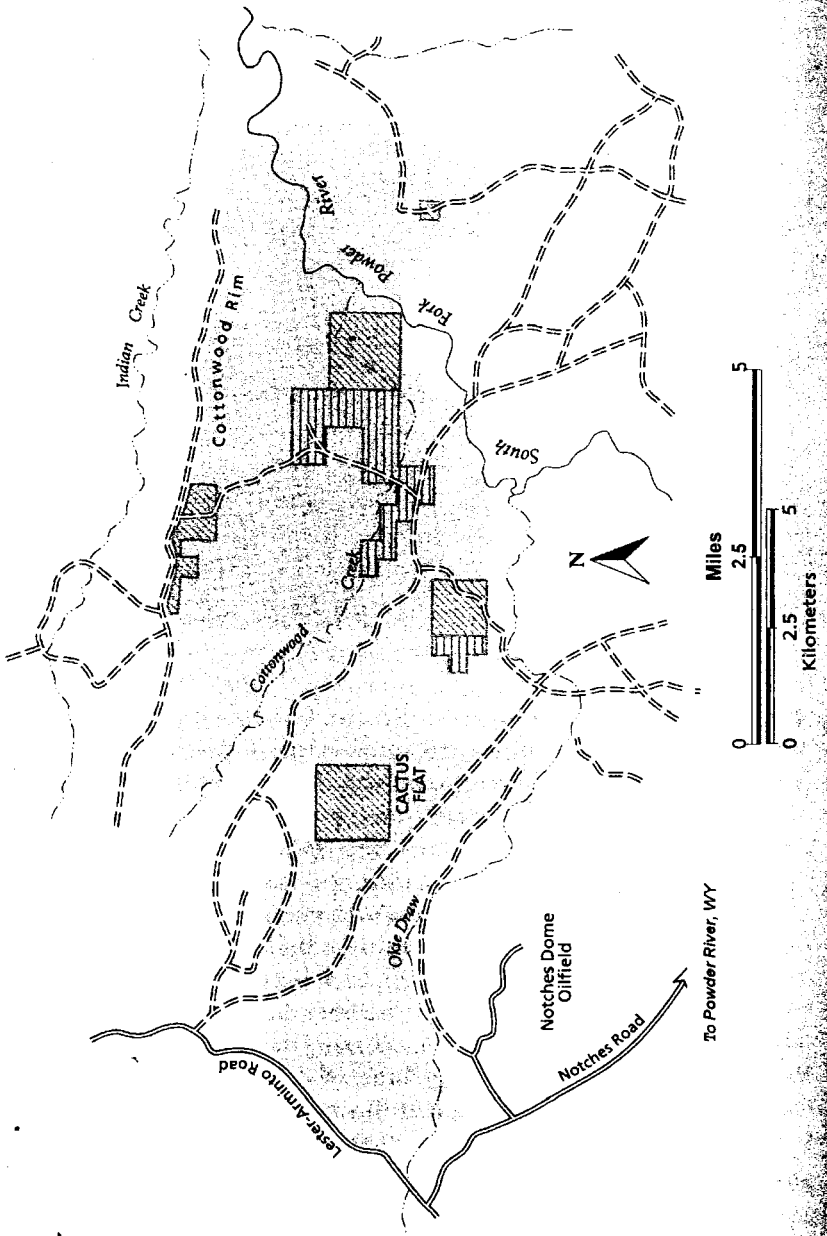
TRAVELERS ADVISORY:
FLASH FLOODS, BAD WATER

pen country near the headwaters of the Powder River's south fork is up of clay buttes and tablelands dissected by broad coulees, with some badland features to the east of Cottonwood Creek. It is dominated by asslands of big bluestem and blue grama. Cheatgrass, an annual invader kes over following overgrazing, forms extensive swards in the riparian along with sagebrush and greasewood. A series of sandstone hills rises the western edge of the roadless area, wooded loosely in juniper, pon- pine, and limber pine. This is an area of rock hoodoos and miniature s carved out by intermittent streams.

is area is a summer range for pronghorn antelope, and mule deer can be along the wooded margins and in the badlands. Prairie falcons and n harriers are also common residents. A few old fencelines and vehicle cks are scattered across the area, but they do not detract from its wild er. There has been oil development along the sandstone domes farther and there is some possibility of future oil development within the road- a. Cattle and sheep have grazed this area for over a century, and the e would continue if the area is granted wilderness status.

ATIONAL USES: This open country is ideal for unconfined horse travel, es a real feeling of the old west. Hiking and backpacking are also easy

CSL-0001



lains buttes guard Cottonwood Creek.

s the open grasslands, but there are no supplies of good water. Rockhounds search the dry washes for interesting finds. There is fine potential for big e and upland bird hunting here, with antelope being especially prevalent.

ESS: The western edge of the roadless area can be accessed from the town owder River via the gravel Notches Road or the Lester-Arminto Road. n the east, the area can be accessed by traveling west from the Twentythree Road near Merino.

Hike

onwood Notch

ance: 11.7 miles round trip.
culty: Easy.
ing and minimum elevation: 5,900 feet, 5,520 feet.
maps: Notches Dome, Cave Gulch Reservoir.
ng there: Drive west from Casper on US 20 to the settlement of Powder River, then north on County 106. Follow this gravel trunk road for 6 miles, then go straight at the and continue another 7.4 miles. Turn right on the gravel road just beyond the tone hoodoos. Follow this graded but pot-holed road 1.2 miles, then swing left onto a rack road. Bear right at the first split and left at the second to park atop a promontory een two small canyons.

Appendix B
Page 43 of 147

This off-trail hike visits small, rocky canyons and vast grasslands where bu
and scarps swell from the lowlands. To begin the trek, drop northward into
low canyon of Okie Draw and follow it east until it emerges from the
When gentler slopes appear, ascend onto the tableland to the north and
along its rim. Note the unusual buttes to the south, demarcating the edge
Notches Dome. You will pass through several fence gates and beneath a
phone line before an old jeep trail leads down to Cactus Flat.

Follow the northern edge of the flat to a fenceline and follow it east to
a gate. After passing through, you will have entered the vast and trackless
reaches of the South Fork highlands. Bear east for a notch in the flattop
ahead, crossing several clay-banked washes beyond Cactus Flat. Hike into
notch to meet an old jeep track, then follow it north along the bench tops
fine views of the Cottonwood Creek basin and the dissected buttes beyond
Then return westward along the rims to complete the trek.

Creek Buttes Complex

on: 15 miles east of Bill, Wyoming.
960 acres in 3 units.
stration: Thunder Basin National Grassland.
ment status: Unprotected primitive area.
em: Great Plains Shortgrass Prairie ecosystem, wheatgrass-needlegrass grassl nd.
on range: 4,500 feet to 4,900 feet.
trails: None.
m core to perimeter distance: 1.9 miles.
s: Horseback riding, hiking, bird watching, hunting.
son: March–May; September–November.
Thunder Basin National Grassland Map; Bill and Lance Creek 1:100,000.

TRAVELERS ADVISORY:
FLASH FLOODS, SUDDEN STORMS

d to find a stretch of High Plains grassland open to the public that re-
n its essentially wild state. The Thunder Basin National Grassland has,
h a program of land swaps, cobbled together a few such tracts of pris-
ssland. The Great Plains call to mind images of featureless flatlands and
wastes. But far from being a low, flat expanse, the prairies of the Thun-
n rise in undulating swells, punctuated by odd buttes and collections
wooded mesas.

remote corner of Wyoming has always been sparsely populated. A few
aders tried their luck at dry-land farming and small-time ranching
the turn of the century, but homestead allotments were too small for
g and the climate was too dry for farming. The last of the settlers were
out during the Dust Bowl years of the 1930s, and the federal govern-
sed the area to homesteading. In the 1960s, these empty prairies were
ver to the Forest Service for management as the Thunder Basin Na-
rassland.

ies of uplands in the heart of the Thunder Basin National Grassland
n a primitive state. Isolated among tracts of private ranch lands, these
ve been largely protected from motorized intrusions by their remote-
difficulty of legal access. The Miller Hills is the northernmost unit, a

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A Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetland Functions of Riverine Floodplains in the Northern Rocky Mountains

F. Richard Hauer, Bradley J. Cook, Michael C.Gilbert,
Ellis J. Clairain, Jr., and R. Daniel Smith

August 2002

Approved for public release; distribution is unlimited.

ANADARKO PETROLEUM CORPORATION

P.O. BOX 50648 • CASPER, WYOMING 82605

August 11, 2003

Ms. Linda Sloan
BLM-Casper Field Office
2987 Prospector Drive
Casper, Wyoming 82604

RE: Casper Resource Management Plan Revision Scoping

Dear Ms Sloan:

Anadarko Petroleum Corporation (APC) appreciates the opportunity to respond to the notice to prepare an Environmental Impact Statement (EIS) for the Casper Resource Management Plan (RMP). APC and its subsidiaries have considerable interests in the proposed analysis area that may be affected by the outcome of this planning effort. Following are the issues and comments that we have identified. APC respectfully requests that these issues and concerns be fully addressed in the EIS.

Lands in the Casper Field Office management area are significant in their potential for development of oil and gas resources. In addition, oil and gas activities are highly important factors in local and Wyoming state economies. BLM must ensure that a thorough examination of the opportunities for future development of oil and gas occurs and that any restrictions placed on development are fully warranted.

Fluid Mineral Planning:

BLM's Supplemental Program Guidance (SPG) for Fluid Minerals (BLM Manual 1624) requires that BLM give consideration to mineral resources in the planning process. In addition, it specifies that mineral resources are on a level equal with all other resource values. Equity is as important in selecting the planning criteria as it is in the consideration of alternatives, addressing the effects in environmental consequence analyses and in determinations used to select a preferred alternative. BLM should ensure that oil and gas resources are represented on equal footing with other resources throughout the planning process.

Use of Reasonable Development Scenario (RFD) in Impact Analysis:

APC believes that BLM should consider using "net acreage of disturbance" by oil and gas operations as the most appropriate impact assessment factor in its analysis. APC believe that use of a reasonably foreseeable development (RFD) scenario with a total number of wells does not provide an accurate basis for the assessment of potential impacts. Use of net acreage disturbance does and accounts for the modern, on-the-ground realities associated with oil and gas activities.

As an example, utilization of the total anticipated number of wells, as a measurement standard does not take into consideration the I reclamation of plugged and abandoned wells, which is conducted in accordance with applicable environmental regulations, returning the area to its natural state. These non-producing wells are sealed off or plugged to prevent impacts on the environment. The drill site and access route are re-contoured, reclaimed and replanted as required. BLM should take into consideration the actual surface conditions associated with development by analyzing a net effect of surface activities and then defining an acceptable range of allowable surface disturbance. In this manner, BLM would not bind itself to a projected "number of wells allowed" but rather would regulate the "net effect" on disturbance to the surface, providing incentive for environmentally sound and timely reclamation and surface management.

Furthermore, BLM should rely upon historic figures for determining average acreage disturbance per well location or mile of linear facilities.

Fluid Mineral Analysis:

The following should be examined in the planning effort:

- Management options that would protect or enhance opportunities to explore for and develop oil and gas resources;

- Application of reasonable mitigation measures (least restrictive that is necessary) designed to limit or avoid demonstrated impacts to surface resources access;

- Allowance for application of new information, technology or economic conditions on lands with unknown, low and moderate oil and gas potential. Management of these lands should be in a manner that permits future exploration and production activities, should the new information, technology or economic conditions support such activities;

- Effects on opportunities to lease explore and develop oil and gas resources resulting from restrictive surface management decisions;

- Limiting imposition of stipulations to remaining effects that may be present after application of standard lease terms and conditions. For example, under the 43 CFR 3101 regulations, a two-month occupancy restriction can be imposed under standard terms and conditions of a lease to protect critical habitat. Therefore, if the typical restriction used to protect calving areas is two months, no stipulation is needed because the BLM has the authority to restrict an operator, if necessary, to protect such areas under the standard terms of the lease. A lease notice apprising the lessee that calving grounds exist on the lease should be sufficient;

- The effect of surface resource management decisions on future subsurface development opportunities and activities. Reduced access to public lands for purposes of exploring for and producing oil and gas resources should be considered a separate issue from economic impacts;

- Socio-economic benefits of oil and gas development activities indicating the cost of administering the mineral program and industry's financial contributions to Wyoming schools, local, state and federal treasuries; and

- BLM must not make assumptions that industry can directional drill in any situation. Directional drilling is most commonly used for field development and not exploration activities. Directional drilling is expensive and difficult. Consideration of directional drilling as a mitigation tool is inappropriate for planning level analyses. Informational needs such as, increased costs of drilling and production, effect of increased costs on resource recovery, technical limitations (interplay of well depth, well spacing and target zones), technical abilities (e.g. extent of lateral distances achievable), and risks (both economic and well integrity) are only available at the development proposal stage. Any discussion of directional drilling should be limited to a discussion of the assessment factors that may be used when addressing directional drilling alternatives in project level documents.

Additionally, an account of the costs that stipulations, mitigating measures and restrictive policies impose on industry projects should be included, along with the concomitant economic impact to the state of Wyoming and local governments of reduced revenues. For instance, seasonal restrictions in SW Wyoming may have already impacted the market for many of the services (dirt construction, wireline services, fracing services, etc.) that the oil and gas industry relies upon. Such an impact is likely to occur due to the narrow "window of opportunity" for drilling created by seasonal restrictions. While demand for such services could be equally spread throughout a year, widespread seasonal restrictions create an artificial increased demand during the window and a resultant increase in the price to obtain these services during that time period. Other aspects to consider could include; impacts on employment, delays in bringing production on line, and added costs for facilities.

Standards and Guidelines for Oil and Gas

Section 1502 of the Council on Environmental Quality Regulations on the National Environmental Policy Act directs that mitigation measures be identified in an EIS which may be employed to reduce or entirely avoid impacts to other resource values. While this could be construed to mean that only lease stipulations need to be identified, we believe it is necessary to discuss other types of mitigation which may be utilized at the time of oil and gas drilling, both exploration and development, such as area-wide standards and guidelines for oil and gas operations. This information is necessary because it illustrates that with appropriate mitigation, oil and gas activities are compatible with other resource uses, including those in sensitive areas.

Interim development during the planning process

According to IM-2001-191:

> "When a RMP is being amended or revised, BLM will continue to process site-specific permits, sundry notices, and related authorizations on existing leases in an expeditious manner while ensuring compliance with NEPA and other laws, regulations, and policies.
>
> "The BLM has the authority and discretion to condition its approval of proposed actions with reasonable measures (including relocation, redesign or delays in the proposed action) so as to reduce the effect of actions on other resource values and uses, consistent with the lease rights granted (see 43 CFR 3101.12). That is, BLM can use its authority and discretion to condition its approval of proposed actions to not constrain alternatives under consideration in a RMP revision or amendment consistent with the lease rights granted. Actions that may appear to reduce a lessee's right to reasonably develop a lease should be cleared through the State Director and Regional Solicitor's Office."

During ongoing efforts to amend the RMP, BLM should use its authority and discretion appropriately to avoid undue delays in permitting oil and gas activities.

Additionally, APC requests that the planning effort for the Casper RMP not result in a disallowance for interim drilling in instances where the existing RFD "number of wells" would be exceeded. For example, if a proposal is submitted for 300 wells and the RMP will still allow for 150 additional wells, then the Casper FO should approve 150 wells rather than denying the whole project.

Monitoring and Lease Stipulation Effectiveness and Limits on Development

The revised RMP must assure that BLM will have a program in place to monitor the effectiveness of stipulations and conditions of approval (COA). Is each stipulation or COA doing the job it was

intended to do? Do they go too far or not far enough? Have anticipated impacts occurred at the level analyzed? Since planning is so times consuming, it is extremely important for BLM to be able to determine, well in advance, if predicted impacts associated with oil and gas development are close to being met.

In a similar fashion, other resource (i.e. grazing, mining, climate, vegetation management, wildlife management, air/water quality etc,) monitoring must occur simultaneously to ensure that sufficient information is available to determine causation of impacts. BLM must be clear in the RMP of its monitoring objectives, criteria and timeframes, and BLM's responsibility for such monitoring efforts.

Additionally, BLM employs any number of parameters or limits on development to make comparison of impacts among any number of alternatives analyzed. The RMP/EIS should make it clear that these analysis parameters (i.e. well numbers, total long term acreage disturbances, etc.) are merely tools for comparison of alternatives and not strict limits on development. To be more precise, once monitoring indicates that those limits will soon be reached it is a signal to BLM that additional analysis and possible revisions to the RMP need to be considered. In any case, development will be allowed to occur during revisions.

By employing the above principles BLM can have ample opportunity to initiate new planning efforts, if needed, and determine the effectiveness of mitigation measures while ensuring long term continuance and certainty of oil and gas development in accordance with planning decisions.

Valid Existing Rights

Valid existing lease rights cannot be changed by a new plan. Voluntary compliance to the new plan may be sought from lessees if activities are initiated. Nevertheless, BLM needs to specify in the planning documents if and how valid existing lease rights could be impacted by the new leasing decisions. Specifically, potential conditions of approval for operations and other changes should be identified.

Leasing vs. Recreation Opportunities

It is important to recognize that oil and gas exploration and development activities are fully compatible with semi-primitive recreational values and opportunities. The oil and gas industry has demonstrated repeatedly its ability to operate in sensitive areas with minimum effects on other resource values.

A decision to further remove lands from the constantly diminishing multiple-use land base would have a detrimental impact on local economic opportunities and welfare. Consequently, APC would necessarily strongly object to a no-lease or no-surface occupancy stipulation decision for areas allocated to semi-primitive recreation.

Geophysical Exploration

BLM should strongly promote geophysical activities throughout the planning area. Geophysical operations are perhaps the most adaptable and environmentally friendly exploration activity. Past experience on BLM lands have proven that geophysical activities can be adapted to protect wilderness values and the most sensitive wildlife values. Seismic exploration is of great value in deciding where not to drill thereby eliminating unnecessary surface disturbances associated with drilling. There is simply no reason to disallow the benefits that can be obtained from conducting geophysical activities across the entire planning area.

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Coal Bed Methane Water Disposal

BLM should ensure that all possible methods for handling coal bed methane produced water are addressed in the RMP. A toolbox of methods for dealing with produced waters should be included; such as off-channel reservoirs, closed basins, surface discharge, treatment with surface discharge and a clear recognition of the role of the Wyoming Department of Environmental Quality.

Visual Resource Management

BLM states that it is their responsibility to ensure that the scenic values of public lands are considered before allowing uses that may have negative visual impacts. While Anadarko understands BLM's responsibility for visual resource management (VRM) we are concerned that some entities are attempting to use VRM as a tool to preclude other resource development either at the planning stage or when reviewing project proposals. BLM should make it clear that visual resource management decisions are on an equal footing with other resource considerations.

Management decisions for the various Visual Resource Management inventory classification identified in the RMP must give consideration to other factors such as recreational user days, mineral development potential, management and presence of other existing resource uses. VRM is a resource allocation process that should occur in concert with and not contrary to allowances for other resource uses.

Energy Impact Analysis for All Alternatives

The National Energy Policy and Executive Order 13211directs federal agencies to fully consider potential adverse impacts of their decisions on the President's National Energy Policy and issue a statement of adverse energy impact. In order to fully disclose the impacts of various EIS alternatives BLM should prepare a "Statement of Adverse Energy Impact" for each alternative analyzed.

Private Lands

BLM needs to ensure the rights of private land owners are adequately accounted for in the RMP/EIS. This is a significant issue that must be addressed at the planning stage. While BLM does have the mandate through NEPA to analyze for cumulative effects of proposed actions, it does not give the agency authority to manage private property. For instance, cultural and historic resources are the property of landowners. Often, projects on BLM lands are interrelated and/or interconnected with activities on private lands. BLM should not attempt to gain regulatory authority on private lands through a strained application of the NEPA process. BLM's responsibility is to analyze the potential impact of the proposed activity on private land; however, this does not mean that BLM can or should dictate what activities are conducted on private lands.

BLM must also recognize the differences between management of recognized threatened and endangered species under the Endangered Species Act (ESA) and sensitive species. APC recognizes BLM's and the FWS's authority under the ESA to require clearance surveys for federal surface and where private surface/federal minerals exist, however, that authority does not extend to sensitive species. Any discussion of potential stipulations regarding non-ESA species must recognize BLM's lack of authority to enforce the stipulations on private property. Although APC will work with landowners to ensure that its activities are conducted in an environmentally sensitive manner, should a landowner insist on allowing activity to occur that would affect habitat of non-ESA species BLM must concur. Nor does BLM have the authority to condition approval of a permit by requiring a permittee to conduct non-ESA wildlife studies/surveys on private property.

Any requests for such surveys by the BLM must recognize that the landowner has the ultimate authority to agree or not to such surveys.

Historic Trails

The existing RMP decisions regarding protection measures for National Historic Trails should remain in effect until such time that Wyoming Historic Trail Management Plan is completed, subject to public review, and amended into the new RMP.

Sincerely,

Tom

Tom Clayson

03 AUG 13 AM 10:54

CSL-0003

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August 26, 2003

VIA FAX (307) 261-7587 AND MAIL

Mr. Jim Murkin
Field Manager, Casper Field Office
Bureau of Land Management
2987 Prospector Drive
Casper, Wyoming 82604

Re: Scoping Comments for the Revision of the Platte River Resource Management Plan and Associated Environmental Impact Statement

Dear Mr. Murkin:

On behalf of the National Trust for Historic Preservation (National Trust), we appreciate the opportunity to submit these scoping comments regarding Bureau of Land Management's (BLM) notice of intent to revise the Platte River Resource Management Plan and prepare an associated environmental impact statement to be named the Casper RMP (Casper RMP). These scoping comments are intended to outline cultural and historic issues which BLM needs to address in the revised Casper RMP.

Interests of the National Trust. The National Trust has a strong interest in the preservation of our nation's historic resources. Congress chartered the National Trust in 1949 as a private charitable, educational, and nonprofit organization to facilitate public participation in the preservation of our nation's heritage and culture, and to further the purposes of federal historic preservation laws. 16 U.S.C. §§ 461, 468. In addition to our headquarters in Washington, D.C., the National Trust operates seven regional and field offices throughout the country, including our Mountains-Plains Office in Denver, as well as 23 historic sites open to the public. With the strong support of our 200,000 members around the country, including 260 members in Wyoming, the National Trust works to protect significant historic places and to advocate historic preservation as a fundamental value in programs and policies at all levels of government.

General Concerns

The National Trust believes that BLM should be taking substantially greater responsibility for evaluating and protecting cultural and historic resources. BLM manages the largest and most diverse inventory of cultural resources of any federal agency. The Casper field area has a number of highly significant cultural, historical, and archeological resources, including the Oregon/Mormon National Historic Trail. Of significant importance is the Cedar Ridge-Badwater Creek area, determined to be eligible for the National Register of Historic

Places as a traditional cultural property (TCP). In addition, the Casper area contains many historic resources that have not yet been identified, and whose potential significance and eligibility for the National Register have not yet been evaluated. Because they are unidentified or unevaluated, these resources are likely to be the most vulnerable to unintended adverse impacts unless they are fully considered in the planning process. The RMP revision provides an excellent opportunity for BLM to proactively survey, evaluate, and protect these invaluable and irreplaceable cultural and historic resources.

Management decisions in the planning process should consider the broader implications of designated uses. We believe the RMP should outline proactive measures to protect cultural and historic resources from mineral development, and should examine how BLM can fulfill its stewardship responsibilities and incorporate specific management plans into each of the alternatives depending on the designated activities. Given this, we believe that outlining the issues and potential areas of interest at the outset of the resource management planning process enhance BLM's ability to develop an effective RMP.

The following comments outline our concerns and provide specific recommendations for developing an appropriate RMP:

1. BLM Should Engage in Consultation with Indian Tribes Early in the Planning Process

BLM should engage in consultation with Indian tribes early in the RMP process as required by the National Historic Preservation Act (NHPA), the Federal Land Policy and Management Act (FLPMA), and other statutes, policies and procedures. FLPMA requires Federal agencies to "coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of. . . Indian tribes by, among other things, considering the policies of approved State and tribal land resource management programs." 43 U.S.C. § 1712(c)(9). Under the NHPA, tribal consultation is necessary to identify "traditional cultural properties" and other religious and cultural values within a land management area during the planning process. See 16 U.S.C. § 470a(d)(6)(B); see also National Register Bulletin No. 38.

BLM's handbook on tribal consultation best describes why early consultation is necessary – "to assure that tribal governments, Native American communities, and individuals whose interests might be affected have a sufficient opportunity for productive participation in BLM planning and resource management decision making." BLM, H-8160-1 – General Procedural Guidance for Native American Consultation, I.A. (released 11/03/94) [hereinafter Native American Handbook]. The handbook also recognizes that conventional NEPA and NHPA analyses "generally do not appropriately address the consequences felt by Native American practitioners." Id. at II.D.

As the Native American Handbook further points out, consultation requirements include a "good faith effort to elicit specific kinds of information." BLM cannot assume that a failure to respond to an inquiry letter indicates that the tribe is not concerned. Native American Handbook at III.A; see also Pueblo of Sandia v. United States, 50 F.3d 856 (10th Cir. 1995). Effective consultation is important because Native American interests can only be dealt with through the consultation process. The handbook states that consultation is necessary because:

> Native American issues and concerns, although associated with BLM lands and resources, are based on intangible values. Intangible values are not amenable to 'mitigation' in the same way that a mitigation strategy can be used to address damage to, or loss of, physical resources.

Native American Handbook at II.

Actual mitigation of adverse impacts on cultural and historic resources might be effective at the time of planning specific projects to satisfy Section 106 of the NHPA. However, the BLM recognizes that

> [s]trategies to reduce proposed Federal actions' impacts, or proposed undertakings' effects, generally follow models related to [NEPA], the [NHPA], and their implementing regulations (40 CFR Parts 1500-1508 and 36 CFR Part 800). Where Native American cultural and religious concerns are involved, however, conventional methods of mitigation generally do not appropriately address the consequences felt by Native American practitioners.

Native American Handbook at II.D (emphasis added). Therefore, it is critical that BLM adequately solicit information from potentially affected Native American tribes, and more importantly, provide them with sufficient information about the project to identify areas of traditional cultural and religious significance. Failure to provide Native American tribes with an adequate opportunity to raise their legitimate concerns would mean that the RMP process is deficient.

Recommendations:

- Make a "reasonable and good faith effort" to consult with Native American tribes located in and around southwestern Wyoming, as well as tribes known to have a historical connection to the area;
- Adhere to federal laws and agency policies regarding consultation with tribes;
- Request information about areas with potential religious or cultural significance to Indian tribes;

- Allow Indian tribes who are interested in the RMP process an adequate opportunity to engage in consultation and provide information; and
- Ensure that areas identified as having religious or cultural significance to Indian tribes, including the Cedar Ridge-Badwater Creek TCP, are carefully considered in the RMP process, and that adequate protection for these resources is integrated into the RMP.

2. BLM Should Integrate Compliance with Section 110 of the NHPA, and President Bush's "Preserve America" Executive Order, into the RMP Process.

Federal legislation and executive orders emphasize the importance of cultural and historic preservation as a national policy. For example, the National Historic Preservation Act affirms that "the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people," and that "the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans." 16 U.S.C. §470(b)(2), (4).

BLM's stewardship responsibilities for historic properties are defined in Section 110 of the NHPA. Among other things, Section 110 requires BLM to locate, inventory, and nominate properties to the National Register, as well as to assume responsibility for preserving historic properties under its ownership or control. Id. § 470h-2(a).

BLM should take proactive steps to comply with the mandates of Section 110 of the NHPA, identifying within the RMP how BLM intends to comply with its stewardship responsibilities, especially when considering the impacts that other potential uses within the area may have on historic and cultural resources.

More recently, President Bush has strengthened the stewardship responsibilities of federal agencies. On March 3, 2003, he signed Executive Order 13287, entitled "Preserve America," which requires each federal agency to "prepare an assessment of the current status of its inventory of historic properties," expanding on the requirement found in section 110(a)(2) of the NHPA. Exec. Order 13287 § 3; see 16 U.S.C. § 470(h)-2(a)(2). Additionally, the President has required each agency to "ensure that the management of historic properties in its ownership is conducted in a manner that promotes the long-term preservation and use of those properties." Exec. Order 13287 § 4. Accordingly, the RMP should take stronger steps to ensure that all designated uses comply not only with the NHPA, but also with the mandates of President Bush's proactive stewardship agenda.

Recommendations:

BLM should:

- Integrate President Bush's "Preserve America" stewardship mandates into the RMP;
- Integrate Section 110 of the NHPA into the RMP process by identifying, evaluating, and
- nominating properties to the National Register;
- Adopt specific measures to protect cultural resources from artifact collectors, looters, and vandals;
- Ensure that allowed uses within the area will not diminish BLM's ability to identify and protect historic properties in the future; and
- Nominate the Cedar Ridge-Badwater Creek area to the National Register of Historic Places as a traditional cultural property;
- Manage the Cedar Ridge-Badwater Creek area as a Special Management Area to ensure adequate protection;
- Adopt "No Surface Occupancy" restrictions and additional necessary stipulations for Leases, including closing sensitive areas to leasing altogether, in order to avoid and minimize potential adverse effects on cultural and historic properties.

3. Adequately Integrate FLPMA's Multiple-Use Mandates Into the RMP Process

FLPMA requires BLM to establish land use plans that consider a combination of "multiple uses." 43 U.S.C. § 1701 et seq. However, BLM must manage the "public lands in a manner that will protect the quality of historical and archaeological values." Id. § 1701(a)(8). A determination of designated uses is not based on "the greatest economic return or the greatest unit output." Id. § 1702(c). Instead, FLPMA requires a "systematic interdisciplinary approach" as a method for achieving a combination of multiple uses. Id. § 1712(c)(1). Thus, BLM should consider all resources, including the preservation of cultural and historic properties, when determining use distribution within a given plan.

One of FLPMA's fundamental policies is that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; [and], where appropriate, will preserve and protect certain public lands in their natural condition. . . ." Id. § 1701(a)(8). In order to ensure that this policy is carried out, the RMP needs to address potential threats to these values from a variety of uses, including but not limited to oil and gas development. For example, the RMP should also address the potential impacts of recreational uses such as Off-Road Vehicles (ORV) and other recreational activities. Taking into account impacts from only one use would fail to meet both the spirit and letter of FLPMA's multiple-use mandate.

In general, the RMP must comport with the multiple use mandates set out in FLPMA and further defined in BLM's Cultural Resource Management Program (Manual 8100) [the "CRMP" Manual"]. BLM should follow the five BLM objectives for identifying, planning, and managing cultural resources described in the CRMP Manual -

(1) Respond to statutory authorities concerning historic preservation and cultural resource protection, and utilize the principles of multiple use;
(2) Recognize the value of cultural resources, and manage in a way that does not diminish these uses and values;
(3) "Contribute to land use planning and the multiple use management of the public lands in ways that make optimum use of the thousands of years of land use history inherent in cultural resource information, and that safeguard opportunities for attaining appropriate uses of cultural resources;"
(4) Protect and preserves representative examples of cultural resources; and
(5) "Ensure that proposed land uses, initiated or authorized by BLM, avoid inadvertent damage to federal and non-federal cultural resources."

BLM, CRMP Manual.

Recommendations:

BLM should:

- Establish as a goal the protection, conservation, and, where appropriate, restoration, of archeological and historic sites and landscapes in the Casper field area;
- Determine the sites or areas that are most vulnerable to current and future adverse impacts and adopt management actions necessary to protect, conserve, and restore cultural resources; and
- Outline specific management actions, such as stabilization, fencing, signage, closures, or interpretative development, to protect, conserve and, where appropriate, restore cultural resources.

4. <u>BLM Should Comply with Section 106 of the NHPA Prior to Designating Areas for Off-Road Vehicle Use</u>.

In the National Trust's view, designating certain areas for Off-Road Vehicle (ORV) use in the RMP requires prior compliance with Section 106 of the NHPA. Accordingly, BLM should conduct a Section 106 review of areas designated for ORV use, before approving the RMP. Section 106 review is triggered when a federal agency approves an undertaking. Id. . BLM's regulations state that the RMP "is not a final implementation decision on actions which require further specific plans, process steps, or decisions under specific provisions of law and

regulations." 43 C.F.R. § 1601.0-5(k). However, designating an area in the RMP as open for ORV use is a final implementation decision, because it does not require further specific plans or approvals from BLM. ORV use has the serious potential to harm identified and unidentified cultural and historic resources. Therefore, we believe that designating an area in the RMP for ORV use is a site-specific activity that requires Section 106 review prior to approval of the RMP.

Recommendations:

BLM should not approve ORV designations in the RMP, either "open" or "limited," until it has completed a Section 106 review.

5. Ensure Adequate Viewshed Protection for the Oregon/Mormon National Historic Trail within the RMP Area

In designating specific areas as open for activities, e.g. oil and gas development, BLM must ensure that such activities will not adversely impact the historic landscape, or viewshed, of the Oregon/Mormon National Historic Trail. Historic landscapes are a large part of what makes National Historic Trails so significant. If resource use designation in the RMP will potentially allow for surface occupancy, or other surface activities that may obstruct the viewshed of any historic trail, BLM should comply with the mandates of Section 106 of the NHPA prior to approving the RMP.

Recommendations:

BLM should:

- Conduct a Section 106 review before designating any areas in and around National Historic Trails as open for activities that may allow surface occupancy;
- Provide adequate buffer zones to ensure that surface activities will not adversely impact the viewshed for National Historic Trail;
- Attach adequate restrictions and stipulations for areas open for oil and gas development outside of the buffer zones; and
- In the alternative, restrict activities by applying NSO restrictions or other enforceable stipulations adequate to prevent all impacts to the historic viewsheds of National Historic Trail.

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The National Trust appreciates the opportunity to provide these scoping comments for the Casper area RMP. We believe that the resource management planning process is a critical step in the stewardship and protection of cultural and historic resources. If we can provide you with additional information or otherwise be of assistance, we will be happy to do so.

Respectfully submitted,

Michael Smith

Michael Smith
Public Lands Counsel

cc: Richard Curritt, Wyoming SHPO, Cheyenne
Tim Nowack, BLM, Cheyenne
Carol Legard, ACHP, Denver
Barbara Pahl, NTHP, Denver
Darrin Old Coyote, Crow Nation
Jimmy St. Goddard, Blackfeet Nation
Jimmy Arterberry, Comanche Tribe
Carlton Underwood, Northern Arapahoe Business Council
Floyd Wopsock, Northern Ute Tribe
Blaine Edmo, Shoshone-Bannock Tribe
John Washakie, Eastern Shoshone Tribe
Gilbert Brady, Northern Cheyenne Cultural Board

CSL-0004

WYOMING GAME AND FISH DEPARTMENT

Dave Freudenthal, Governor — Brent Manning, Director

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RES — ENG. SVC.
SOLIDS — RMG
BFO — NFO

11 August 2003

Linda Sloan

BLM Wyoming Casper Field Office
Jim Murkin
2987 Prospector Dr.
Casper, WY 82604

Dear Mr. Murkin,

The Swift Fox Conservation Team (SFCT) is a multi-agency group comprised of representatives from 10 state wildlife agencies within the historic range of the swift fox and select federal wildlife and land management agencies, including the Bureau of Land Management (BLM). The SFCT formed as a result of the U.S. Fish and Wildlife Service determination that listing the swift fox as a Federally Threatened or Endangered Species may be warranted. Through the efforts of the SFCT, the swift fox was delisted in 2001, but the SFCT remains committed to ensuring their long-term conservation.

We have been informed that the BLM is preparing and/or undergoing revisions of its Resource Management Plans (RMP) in many of our member states. Your office oversees lands that has the potential to impact swift fox conservation, and we request that swift fox conservation measures (e.g., recognize and manage habitat needs for sustaining populations and encouraging population expansion) be incorporated into future land-use plan amendments or revisions. We also urge you to incorporate analysis of the swift fox into all NEPA documents for the affected areas as well as include the swift fox on the BLM State List of Sensitive Species, if not already included. These actions would be consistent with BLM policy outlined in manual supplement 6830, which requires that BLM offices not authorize actions that would contribute to the need to list a species under the Endangered Species Act.

In general, swift foxes are associated with the shortgrass and midgrass prairie ecosystem (Figure1). Similar to many species, swift foxes were subjected to dramatic reduction in distribution from their historical range. However, as a result of natural recolonization and reintroduction, a contiguous population occupies portions of Wyoming, Colorado, and Kansas. Swift foxes also occupy portions of Oklahoma, Texas, New Mexico, Nebraska, South Dakota, and Montana. North Dakota is the only state within their historic range where swift fox are thought to be extirpated.

Conservation of swift foxes and their associated habitats can be achieved by a coordinated and cooperative management approach, utilizing both state and federal resources. The SFCT would be pleased to provide guidelines or comments regarding swift fox conservation during your revision process, and we look forward to working with your office in this cooperative effort. Please feel free to contact me at 307-332-2688 or martin.grenier@wgf.state.wy.us if I can be of assistance.

Sincerely,

Martin Grenier
WGFD Nongame Mammal Biologist
SFCT member, State of Wyoming representative

JE/mbg

cc: Jacquie Emer
Bob Oakleaf
Bob Bennett

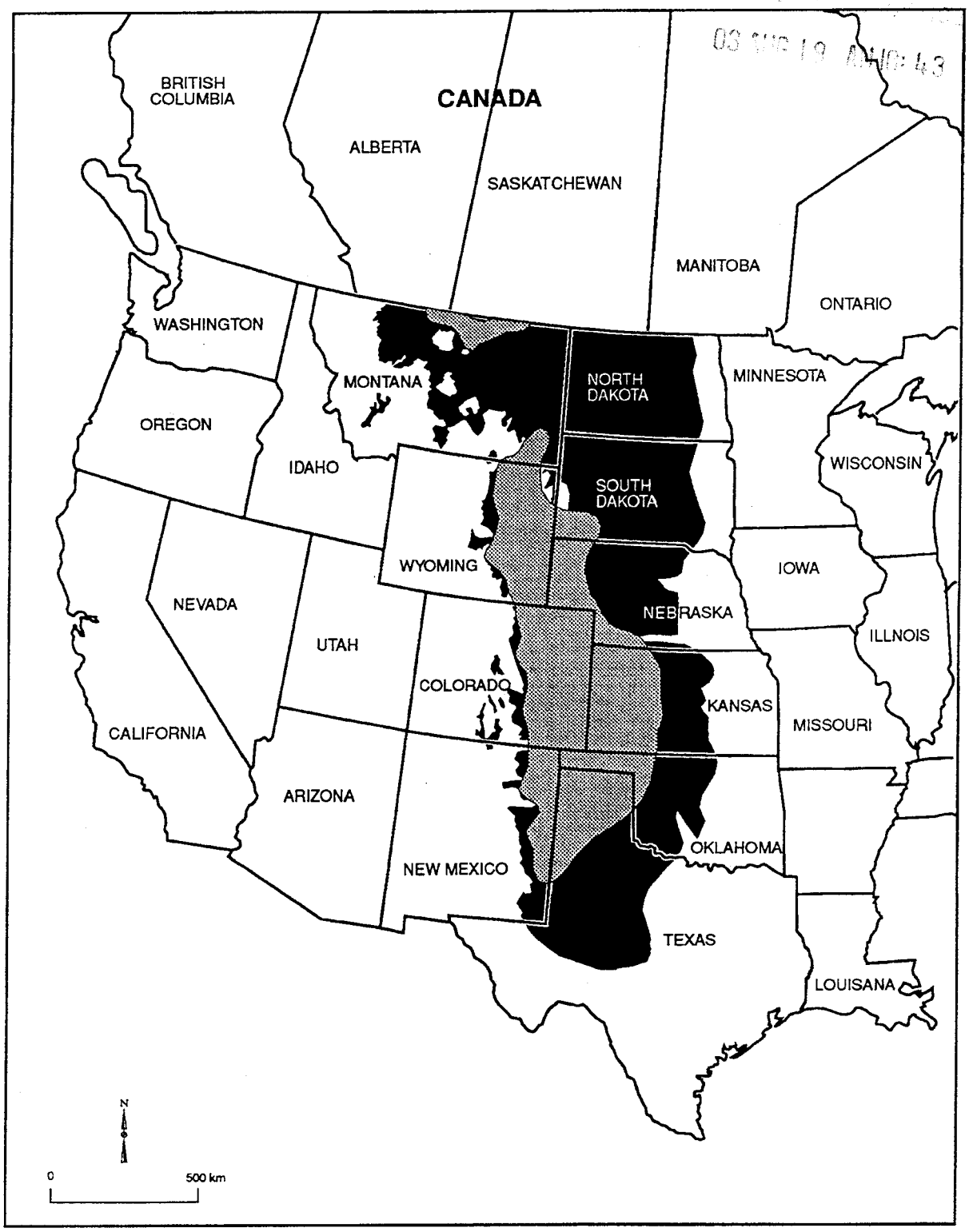

Figure 1. Current known swift fox distribution in the United States (Allen et al. 1996) and classification of shortgrass and midgrasss prairie grassland types in the central United States as modified from Lauenroth (1996).

Confirmation Report – Memory Send

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Job number	:	066
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11 August 2003

LINDA SLONE

BLM Wyoming Casper Field Office
Jim Murkin
2987 Prospector Dr.
Casper, WY 82604

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Post-it® Fax Note 7671	Date 9-19	# of pages ▶ 3
To TRACY WILLIAMS	From LINDA SLONE	
Co./Dept. STATE PLANNING	Co. BLM - CASPER	
Phone #	Phone #	
Fax # 307-777-8586	Fax #	

Headquarters: 5400 Bishop Boulevard, Cheyenne, WY 82006-0001
Fax: (307) 777-4610 Web Site: http://gf.state.wy.us

Wyoming
Department of Agriculture

Dave Freudenthal, Governor
John Etchepare, Director

2219 Carey Ave., Cheyenne, WY 82002 ■ Phone: 307-777-7321 ■ Fax: 307-777-6593
E-mail: wda1.state.wy.us ■ Website: wyagric.state.wy.us

BUREAU OF LAND
CASPER FIELD OFFICE

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August 29, 2003 03 SEP -8 PM 1:09

State Planning Coordinator's Office
122 West 25th Street
Herschler Building, 1E
Cheyenne, Wyoming 82002-0001

Dear Lynn Simons:

Following are our scoping comments for the Revised Platte River Resource Management Plan for the Bureau of Land Management.

Our comments are specific to WDA's mission within state government which is to assist the citizens of Wyoming to live safe and healthy lives, promote and preserve our agricultural community, be responsible stewards of our natural resources, and achieve integrity in the market place. As this proposed project affects the welfare of our citizens, our agriculture industry, and our natural resources, we believe it's important that we be kept informed of proposed actions and decisions and that we continue to be provided the opportunity to express pertinent issues and concerns.

The Notice of intent to revise this RMP notes the planning areas covers 1.4 million acres of BLM-administered public land surface and 4.7 million acres of BLM-administered federal mineral estate. The Notice further specifies several major issue themes, including livestock grazing, landownership adjustments, and management and cumulative effect of land uses and human activities on threatened, endangered, candidate, and sensitive species and their habitats. Thus, this project will definitely affect grazing permittees, agriculture producers, landowners, and other citizens, as well as our natural resources over a large area of our state. Officials need to consider these effects, both direct, indirect, economic, and environmental. Moreover, decisions that affect grazing or other uses in the study area will have significant compounding impacts and rippling repercussions on private, state, and other federal lands, and upon agriculture producers and communities adjacent to the study area. These impacts and repercussions need to be evaluated. The cumulative adverse impacts upon ranchers specifically should be included.

We strongly encourage BLM officials to continue to work with all grazing permittees and agriculture producers affected by this project to learn of their concerns and recommendations about the proposed policies and actions regarding this project. These folks are intimately familiar with the area under study and possess irreplaceable long-term, on-the-ground knowledge. They understand that it is in their best interests to continue to serve as stewards of the rangelands in this area. They are particularly aware of the impacts upon the wildlife and livestock habitat and the rangeland health of the proposed project. Their many years of daily on-the-ground wisdom often lead to recommendations that can help identify reasonable and

successful management strategies that are both environmentally and economically sound. Thus, we strongly recommend BLM officials aggressively address the concerns and recommendations of these stewards during the planning process.

It is imperative that BLM officials ensure that all livestock grazing permittees who are directly affected by this proposal receive all notices about this revision.

Grazing on public lands represents a vital economic value to agriculture producers and to local communities. Impacts on this economic activity, specifically within the affected area and also in adjoining areas, need to be included in the study.

Grazing also represents irreplaceable environmental and social values, contributing valuable wildlife habitat, open spaces, ranch land buffers between federal lands and developments, scenic vistas and visual beauty of the area, and the traditional image of the historic rural landscapes of Wyoming and the West. Any loss of these essential environmental, historic, and social values of livestock grazing to users and visitors of the area and residents of impacted communities should be included in the scope of the study.

Environmental studies often spotlight the costs of livestock grazing or of other commodity uses while failing to include the values of these uses. Perhaps worse, the studies fail to include the costs of desired goals, such as recreation, habitat improvement, naturalness, etc., while spotlighting their values. To be fair, the American public and the citizens of Wyoming deserve to know all costs and values of each use. In that regard, the specific costs of enforcement of each alternative should also be identified.

Previous proposed revisions have often unfairly singled out the impacts of livestock grazing regarding impacts on resources. These biases were compounded by the failure to mention other users which created identical or similar impacts on these resources. Although the impacts of wildlife and wild horses were often omitted in these areas, all uses which affect the resource under study should be included.

The Notice of Intent states the revised RMP will comply with all applicable laws, regulations, policy, and guidance. The congressional mandates, federal statutes, and implementing regulations that call for multiple use should be an integral part of the planning process and strongly evident in the Revised RMP.

We note that the Intent states "BLM will use current scientific information, research, new technologies, and the results of resource assessments, monitoring, and coordination to determine appropriate local and regional management strategies." We recommend you carry this mandate for science further. Peer-reviewed science should underlie your decisions regarding the revised RMP and that science should be identified in the decisions and discussions regarding this planned assessment.

BUREAU OF LAND MANAGEMENT CASPER FIELD OFFICE
09 SEP -8 PM 1:09

These comments are reflective of a specific agency mission only. These comments defer to and are subordinate to the State Position

Decisions in the proposed plan should allow BLM officials, grazing permittees, and company officials the opportunity to work cooperatively and the flexibility to make the best site-specific, case-by-case decisions that are in the best interests of the affected resources and citizens.

In conclusion, we appreciate the opportunity to comment on the scope of the proposed actions, we encourage continued attention to our concerns, and we look forward to hearing about proposed actions and decisions.

Sincerely,

John Etchepare
Director

BUREAU OF LAND
MANAGEMENT
CASPER FIELD OFFICE
03 SEP -8 PM 1:09

CSL-0005

State of Wyoming
Office of the Governor
Planning Coordinator's Office

DATE: September 5, 2003

TO: Linda Slone, BLM Project Lead

FAX NUMBER: 307-261-7587

PHONE NUMBER:

FROM: Tracy J. Williams, Policy Analyst

Linda: Attached, please find additional comments regarding the Casper RMP from the Department of Agriculture. I know that these comments are being submitted past the deadline. I apologize for any inconvenience this may cause. Thank you.

****

Transmitting (3) Pages **Plus** the Cover Page

****

Original letter mailed this date via U.S. Postal Service

122 West 25th Street -- Herschler Bldg., 1 East -- Cheyenne, WY 82002-0600
307.777.6924 -- 307.777.8586 fax

Wyoming
Department of Agriculture

Dave Freudenthal, Governor
John Etchepare, Director

2219 Carey Ave., Cheyenne, WY 82002 ■ Phone: 307-777-7321 ■ Fax: 307-777-6593
E-mail: wda1.state.wy.us ■ Website: wyagric.state.wy.us

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August 29, 2003

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Cheyenne, Wyoming 82002-0001

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successful management strategies that are both environmentally and economically sound. Thus, we strongly recommend BLM officials aggressively address the concerns and recommendations of these stewards during the planning process.

It is imperative that BLM officials ensure that all livestock grazing permittees who are directly affected by this proposal receive all notices about this revision.

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We note that the Intent states "BLM will use current scientific information, research, new technologies, and the results of resource assessments, monitoring, and coordination to determine appropriate local and regional management strategies." We recommend you carry this mandate for science further. Peer-reviewed science should underlie your decisions regarding the revised RMP and that science should be identified in the decisions and discussions regarding this planned assessment.

Decisions in the proposed plan should allow BLM officials, grazing permittees, and company officials the opportunity to work cooperatively and the flexibility to make the best site-specific, case-by-case decisions that are in the best interests of the affected resources and citizens.

In conclusion, we appreciate the opportunity to comment on the scope of the proposed actions, we encourage continued attention to our concerns, and we look forward to hearing about proposed actions and decisions.

Sincerely,

John Fitchepare
Director

DAVE FREUDENTHAL
GOVERNOR

THE STATE OF WYOMING

STATE CAPITOL
CHEYENNE, WY 82002

Office of the Governor

August 15, 2003

Linda Slone
BLM, Casper Field Office
2987 Prospector Drive
Casper, WY 82604

Re: Notice of Intent to Revise the Platte River (Casper) Resource Management Plan and Prepare an Environmental Impact Statement, 68 FR 119, 37020-22
State Identifier, 2003-085

Dear Linda:

I have reviewed the referenced notice on behalf of the State Planning Office. In addition, the document was distributed to state agencies for their review and comment in accordance with State Clearinghouse procedures. Enclosed you will find comments from the Wyoming Game and Fish Department, the State Historic Preservation Office, the Wyoming Department of Environmental Quality (Air and Water Quality Divisions), the Office of State Lands and Investments, and the Wyoming State Trails Program which resulted from their reviews. Your due consideration of the issues they have identified will be appreciated.

As a Cooperating Agency, the State of Wyoming looks forward to the revision process and trusts that it will be a productive partnership. A Memorandum of Understanding (MOU) which outlines the State's participation in all the Bureau of Land Management's (BLM) Resource Management Plan Revisions is presently under review by the legal divisions of the State and the BLM. The MOU will formally outline our roles and responsibilities. Should there be a need to draft any additional documents specific to this plan revision, please let me know.

Finally, as I mentioned in our phone conversation earlier today, I will be the State's representative and I look forward to working closely with you on this project.

TTY: 777-7860 PHONE: (307) 777-7434 FAX: (307) 632-3909

Please provide this office with fifteen (15) hard copies or electronic copy (submitted to SPC@state.wy.us) of documents for our continued review and distribution to interested and affected agencies. Thank you for the opportunity to comment.

Sincerely,

Julie Kozlowski
Policy Analyst

/jk
Enclosures (6)
cc: Wyoming Game and Fish Department
State Historic Preservation Office
Wyoming Department of Environmental Quality
Office of State Lands and Investments
Wyoming State Trails Program

Wyoming

RECEIVED
2003 AUG -5 P 1:40
PLANNING OFFICE

Wyoming Department of State Parks and Cultural Resources
State Historic Preservation Office

Richard L. Currit, SHPO
2301 Central Avenue
Barrett Building, 3rd Floor
Cheyenne, WY 82002
Phone (307) 777-7697
FAX (307) 777-6421

August 4, 2003

Lynn Simons, Director
Wyoming State Clearinghouse
Governor's Planning Office
Herschler Building, 1 East
Cheyenne, WY 82002-0600

RE: Governor's Planning Office Project ID#: 2003-085, NEPA Scoping Notice: BLM Casper, Platte River Resource Management Plan Revision (to be retitled Casper RMP). Converse, Goshen, Natrona, and Platte Counties. (SHPO File # 0803RDY003)

Dear Director Simons:

We have reviewed the above Scoping Notice, as requested by your office's transmittal letter of July 24, 2003, with a comments due date of August 11, 2003. Thank you for this opportunity to comment.

Consideration and management of cultural resources for Bureau of Land Management activities and lands is substantially conducted in accord with Sections 106 (36CFR800) and 110 of the National Historic Preservation Act, and the BLM National Cultural Programmatic Agreement as modified by the Wyoming State Protocol. These call for survey, evaluation, and protection of significant historic, cultural, and archaeological properties that could potentially be affected by proposed BLM actions -- in this case, specific to the Casper RMP. We do have a few comments to offer at this time (see below), but we will likely provide further and more in depth comments when provided with the Draft Casper RMP and EIS.

Generally, we expect to see an in depth overview and situational analysis of Casper BLM managed cultural resouces. A critical part of this analysis should be a discussion, supported by appropriate comparison charts, that indicates how well the Casper BLM achieved the cultural resources goals of the current (1985) Platte River RMP, relative to new goals (if any) that will be established by this revision, and what remains unchanged and/or unaccomplished from the 1985 RMP. Specifically, we expect to see special attention given by the BLM to the protection -- particularly viewshed protection -- of historically important transportation corridors (e.g., trails, roads, railroads) and to the Cedar Ridge Native American Traditional Cultural Property (TCP).

Please refer to the above SHPO project control number (0803RDY003) in future communications dealing with this action. If you have questions please do not hesitate to contact Robert York at 307-742-3054, or me at 307-777-6311.

Sincerely,

Judy K. Wolf
Review and Compliance Program Manager

03 AUG 20 AM 10:40

WYOMING

DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES
DIVISION OF STATE PARKS & HISTORIC SITES

Pat Green
Division Director
State Parks & Historic Sites
2301 Central
Barrett Building 4th Floor
Cheyenne, WY 82002

(307) 777-6323
FAX (307) 777-6005

July 29, 2003

State Planning Coordinator's Office
Herschler Building, 1E
122 West 25th Street
Cheyenne, WY 82002-0001

Re: Platte River Resource Management Plan, OFLP#: 2003-085

Dear Sir or Madam:

One of the key topics listed as a major issue that will be addressed in the Platte River Resource Management Plan revision is that of recreation, more specifically Off-Highway Vehicle (OHV) recreation (aka Off-Road Vehicle (ORV) recreation). The Wyoming State Trails Program would like to see more of an emphasis placed on establishing a current inventory of roads and trails that currently reflects the opportunities for ORV recreation in Wyoming. BLM-administered roads and trails that are to be enrolled in the Wyoming ORV Program will need to be clearly identified to ensure that appropriate maintenance and construction can be properly funded and administered. As this type of recreational activity becomes increasingly popular, this inventory will be necessary to facilitate the partnership between the BLM and the State Trails Program and to provide the highest quality experience for Wyoming ORV users. This inventory will also foster the development of a proper enforcement program to ensure that the use is occurring only in designated areas that are assigned by your agency.

The Wyoming State Trails Program is requesting that the planning process addresses these issues. We would like you to provide us with information regarding any mitigation measures that the BLM intends to take to ensure that recreational trail users will continue to be provided a positive visitation experience. We request that these comments not be ignored. Please keep us informed of any future developments and procedures pertaining to this project.

Thank you for considering our comments.

Sincerely,

Kim Raap
Manager
Wyoming State Trails Program

Dave Freudenthal, ***Governor*** **Phil Noble,** ***Director***

Office of State Lands and Investments

Funding Wyoming Public Education

122 West 25th Street
Cheyenne, WY 82002
Phone: (307) 777-7331
Fax: (307) 777-5400
slfmail@state.wy.us

Dave Freudenthal
Governor

Lynne Boomgaarden
Director

August 11, 2003

Ms. Lynn Simons, State Planning Coordinator
State Planning Coordinator's Office
Herschler Building, 1East
122 West 25th Street
Cheyenne, Wyoming 82002

Re: SPC Project Number 2003-085
Platte River (Casper) Resource Management Plan
Notice of Intent

Dear Ms. Simons:

The staff of the Office of State Lands and Investments has reviewed the captioned Notice of Intent and offer the following comments relative to the proposed action insofar as it pertains to the mission of this office.

A paramount concern of this office is the possibility and likelihood that, due to the mosaic land ownership patterns, federal prescriptions imposed by the Bureau of Land Management upon a collective area of federal lands will impede our ability to develop the State's subsurface. Therefore, we would ask that the Bureau of Land Management be sensitive to maintaining access to State trust lands isolated by lands under the BLM's jurisdiction and encourage a balanced approach to the use of the area's resources with minimal regulation when appropriate.

Unfortunately, our office does not possess coal resource, fire/fuels or forestry data that we could contribute to this effort at this time. However, we would be happy to provide our land status coverage insofar as it relates to a particular estate, be it mineral estate, surface estate or both, owned and administered by the State of Wyoming for the benefit of the common school and other beneficiaries, if you so desire.

We appreciate this opportunity to comment. If we may be of further assistance, please do not hesitate to contact this office.

Very truly yours,

Lynne Boomgaarden
Director

sc

The State
of Wyoming

Department of Environmental Quality

Dave Freudenthal, Governor

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMIN/OUTREACH	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZ. WASTE	WATER QUALITY
(307)777-7758	(307)777-6145	(307)777-7391	(307)777-7369	(307)777-7756	(307)777-7752	(307)777-7781
FAX 777-3610	FAX 777-6462	FAX 777-5616	FAX 777-6937	FAX 777-5864	FAX 777-5973	FAX 777-5973

August 7, 2003

BLM Casper Field Office
2987 Prospector Drive
Casper, WY 82604

RE: Response to the Scoping Statement, for the Platte River Resource Management Plan

Dear Sir or Madam:

These comments regarding the Scoping Statement, for the Platte River Resource Management Plan (RMP) in Converse, Goshen, Natrona, and Platte Counties are specific to this agency's statutory mission within State government which is protection of public health and the environment. In that regard these comments are meant to, in association with all other agency comments, assist in defining the Official State Position.

Thank you for the opportunity to comment on the proposed Platte River RMP revision.

The Department of Environmental Quality (DEQ) would like to provide the Bureau of Land Management (BLM) with any information concerning water quality that may aid in the RMP Revision process. The discharge and handling of produced water from the oil and gas industry is a specific concern of the Department. This concern is based on the large potential for oil and gas development in the area. The DEQ and it's staff would like to assist the BLM in assessing water resource concerns and developing mitigative measures as needed.

We appreciate the opportunity to comment on this process and look forward to working with you in the future. If you have any questions, please feel free to contact Jeremy Lyon at 307-777-7588.

Sincerely,

John V. Corra
Director
Department of Environmental Quality

JC/JML/bb/3-0859.ltr

d:\spcwpd\spc03\platteriver_rmp.wpd

These comments are reflective of a specific agency mission only. These comments defer to and are subordinate to the Official State Position.

CSL-0011

WYOMING GAME AND FISH DEPARTMENT

Dave Freudenthal, Governor — Grant Manning, Director

"Conserving Wildlife - Serving People"

RECEIVED

2003 AUG 14 A 8: 0

August 13, 2003

WER 2419.01
Bureau of Land Management
Federal Register, Notice of Intent
Platte River Resource Management Plan Revision
Referred in the Future as Casper RMP
PROJECT ID# 2003-085

Wyoming State Clearinghouse
State Planning Coordinator's Office
Herschler Building, 1East
122 W. 25th Street
Cheyenne, WY 82002-0600

Dear Ms. Simons:

The staff of the Wyoming Game and Fish Department has reviewed the Federal Register Notice to Revise the Platte River Resource Management Plan and to be titled and referred to in the future as the Casper Resource Management Plan. We offer the following comments.

The BLM should evaluate action items from the Planning Decisions section of the 1985 Resource Management Plan (RMP) to help determine continuing issues and concerns for the new RMP, including:

- Habitat Management Plans (HMPs) – WL1
- Fence modifications to improve pronghorn movements and development of permanent water sites for pronghorn – WL2
- Water development for mule deer – WL3
- Restoration of streambank cover to enhance riparian habitat on portions of Buffalo Creek and Trout Creek – WL10
- Status of wildlife management covered under the remaining segments of the Planning Decisions section (WL4 – WL9).

INFORMATION

We would like to collaborate with BLM personnel on updating the following pertinent wildlife data to ensure current and accurate information for this planning process:

i) Sage grouse lek locations
ii) Big game seasonal range designations
iii) Big game migration corridors

Headquarters: 5400 Bishop Boulevard, Cheyenne, WY 82006-0001
Fax: (307) 777-4610 Web Site: http://gf.state.wy.us

iv) Raptor nest locations
v) Important bird areas, such as bald eagle roosts, feeding areas, etc.
vi) Existing non-game bird and mammal habitats for BLM sensitive species and our Department's Native Species Status 1 through 3 species.

The Department has been collecting shrub (mahogany and sagebrush) production and utilization data for several areas within the Casper Field Office Area. This data indicates shrub condition is declining. As a result, habitat conditions for wildlife are declining. We would like to share this data with BLM, and collaboratively work to address shrub management in the RMP.

It should be noted that our Department's Casper Aquatic Region shares the North Platte River below Pathfinder Reservoir and parts of Salt Creek and the South Fork Powder River with the BLM Casper Region (Figure 1).

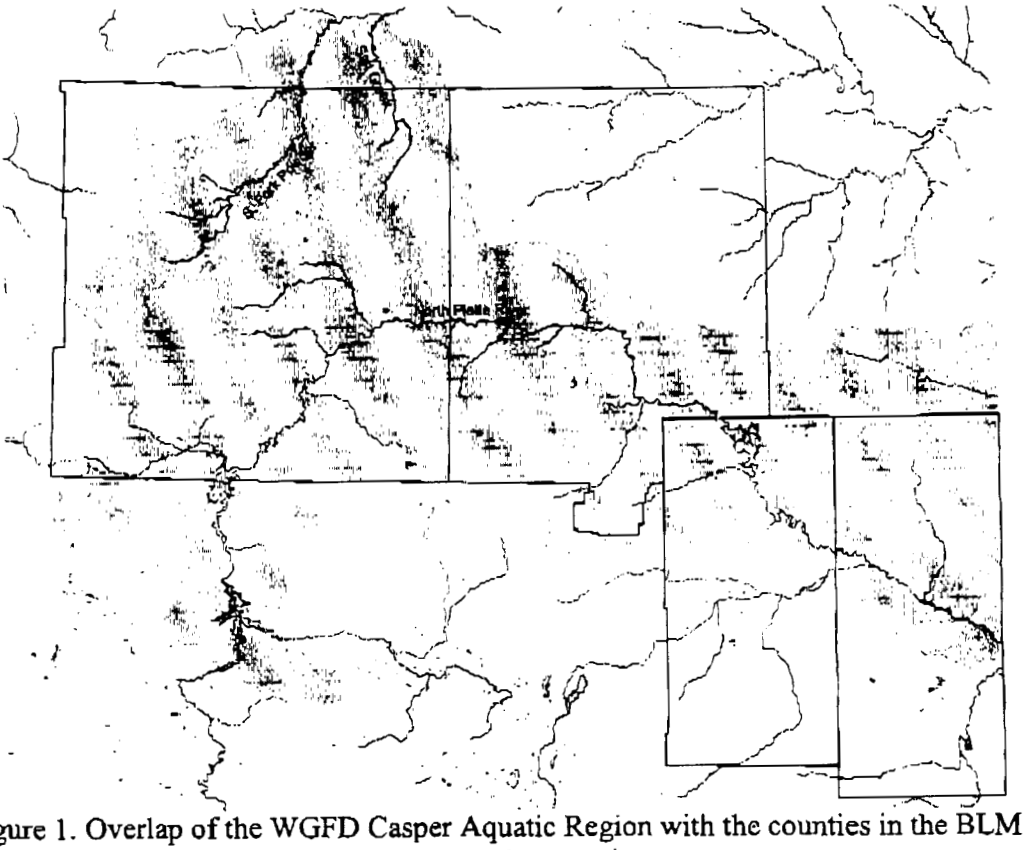

Figure 1. Overlap of the WGFD Casper Aquatic Region with the counties in the BLM Casper Region showing the major rivers and reservoirs.

Habitat Priorities.

Our Department's Aquatic Habitat Section recently prioritized the basins in each region according to fisheries and habitat issues (Figure 2). Casper Region priorities 1, 3, 4, 5, 6, 7, and 8 fall within the BLM Casper Region.

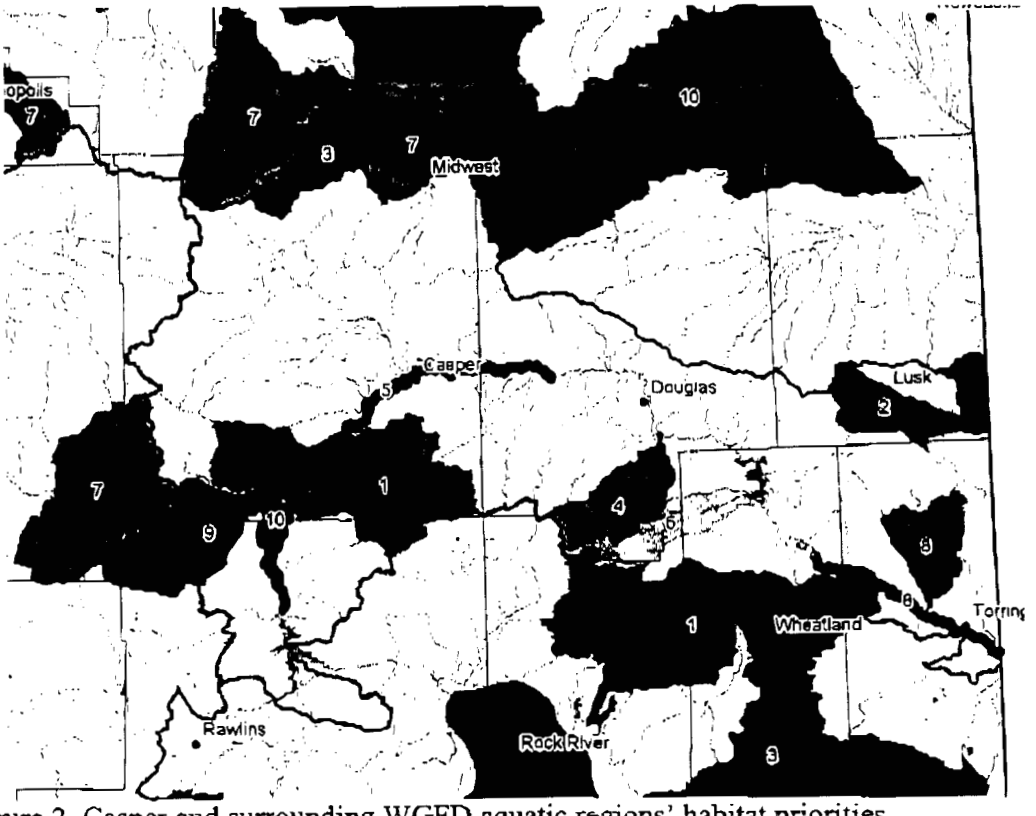

Figure 2. Casper and surrounding WGFD aquatic regions' habitat priorities.

Aquatic Non-game Species. Habitat priorities 3, the South Fork Powder River; 7, Salt Creek; and 8, Rawhide Creek and the lower North Platte River, were prioritized partly due to their non-game fish populations and herptile diversity. We will be intensifying data collection for these areas. Some of the data has already been provided to the BLM, but all data collected will be available to the BLM. The RMP should consider the sensitivity ratings of various non-game fish in habitat management.

ISSUES AND CONCERNS

Impacts of the recent drought on wildlife habitat. Together with other long-term effects (e.g., fire suppression, plant succession, livestock grazing, etc.) on wildlife habitat, we recommend the RMP evaluate planning contingencies to react to continued drought and other cumulative effects.

Off-highway vehicle use. This use impacts wildlife habitat and wildlife use of habitat. The RMP should specifically address transportation planning that includes off-road use and its probable increase in the future.

CBM and oil/gas development. There is potential for increased development (e.g., from CBM expansion of existing oil and gas fields). The RMP should address the foreseeable level of development and the probable impacts on wildlife and habitat. This should include habitat fragmentation, possible increased wildlife harassment, associated roadway impacts (such as erosion, non-native invasive plants, noise impacts to wildlife), and other cumulative impacts associated with mineral, oil or gas extraction. The RMP should also address mitigation approaches to minimize these impacts.

Sage grouse. Sage grouse have been petitioned as an endangered species. There has been much research and effort to address management of sage grouse and sage grouse habitat since the 1985 RMP was written. We recommend the RMP include guidelines for sage grouse and sagebrush management set forth in the Wyoming Greater Sage Grouse Conservation Plan (June 2003), Guidelines to manage sage grouse populations and their habitats (Connelly et al., 2000), and Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management (Wyoming Game and Fish Department and Wyoming BLM, 2002). We recommend the RMP encourage localized conservation efforts, such as the Bates Hole sage grouse conservation working group.

Game and Fish Department Casper Region Strategic Habitat Plan priorities. Maintenance and improvement of key wildlife habitats is an issue. These priorities are available and should be included in the RMP to help guide wildlife habitat management planning and implementation. All active management techniques (e.g., prescribed fire) as well as planning at appropriate scales (e.g., watersheds) should be incorporated in the RMP.

Big Sagebrush Management guidelines and objectives. Maintenance and improvement of sagebrush will be important for maintaining wildlife habitats and is a concern. The BLM has been given these already, and we recommend their reference and use in developing and implementing the RMP.

Habitat Management Plans. Continuation of existing HMPs and formulation of necessary additional HMPs is a concern.

ACEC Designations. Maintenance of key wildlife habitats and habitat components in perpetuity is a concern. Designation of special management areas for key wildlife habitats should be considered.

The RMP should address the possibility and ramifications of nominating the North Platte River from the Pathfinder Dam to the Dave Johnson Power Plant as an ACEC because of its outstanding value as a sport fishery.

Wildlife seasonal stipulations. Protection of key wildlife habitats during important seasons of use is an issue. Implementation of seasonal stipulations should be specifically addressed in the RMP.

Fire Management. Adequate and proper use of fire as a habitat management tool planning and implementation tool is an issue. The RMP should specifically address past and future uses of fire and its proper implementation for specific purposes, as well as post-treatment management and monitoring.

Fire frequency has been extended in most of the resource area with improved technology and fire fighting methods. In some areas, a return to a more historical fire regime may be desired. Use of prescribed fire and planning for managed wildfire would complement each other and provide for healthier plant communities. Certainly, potential invasion of exotic plants such as cheatgrass would be a determining factor in how the RMP addresses fire management.

Economics. The contribution of fishing and hunting, and estimates of the value of nonconsumptive wildlife uses, to the local and state economy, should be included. This will help guide discussions on both wildlife and other economic management directions in the RMP.

Non-game bird and mammal plan. Adequate habitat for sensitive species and prevention of future listings of these species is an issue. Our Department's plan for high priority nongame species should be referenced as guidance for habitat management in key areas.

Realty actions. Access to public lands is an issue, and management is easier if public lands are blocked up. The RMP should include and promote actions such as conservation easements and land exchanges to accomplish those purposes. Additionally, the RMP should consider access for anglers and hunters in realty actions. BLM should consult with WGFD for data that would ensure crucial ranges and riparian areas are conserved and that harvest can occur to meet herd objectives.

For BLM lands included within the boundaries of or adjoining our Department's Wildlife Habitat Management Units (Rawhide, Table Mountain, Springer/Bump Sullivan, and Cottonwood) we ask that the BLM not include these lands as lands targeted for disposal or mineral leasing. These lands provide important wildlife habitat and public access. This also applies to any other parcels of public land, regardless of size, that has any legal public access.

Of particular importance are those BLM lands adjacent to Glendo, Gurnsey and Grayrocks Reservoirs, and lands near the Richeau and Cooney Hills.

We also recommend that the RMP address withdrawal of mineral leasing associated with our Habitat Units and the lands adjacent to these three reservoirs.

Grass banks. The ability to implement habitat improvements on existing allotments is an issue. These actions could happen much easier with the availability of vacant allotments where permittees could temporarily relocate livestock while their regular allotments were being treated.

Transportation Plan. The effects of roads on wildlife and habitat, particularly in areas of intensive energy development, are concerns. Road management should be addressed in the RMP, particularly in reference to habitat fragmentation, habitat losses, and wildlife disturbance.

AMP development. The lack of specific allotment planning is a concern, particularly in key wildlife habitat areas. The RMP should promote planning, with emphasis on inclusion of all affected parties.

Cumulative impacts. With increasing intensity of land uses (energy development, recreation) the need for increased cumulative analysis of effects is a concern. This should be done at appropriate local and regional scales to be most meaningful.

Riparian area management. Management of riparian areas in this arid climate will always be an issue. The RMP should especially address Proper Functioning Condition (PFC). The RMP should explore the possibility of setting riparian objectives and desired future condition beyond what is currently presented in PFC evaluations, particularly in areas with more friable soils. Where management cannot achieve objectives, WGFD asks that riparian fencing be constructed. Waterfowl nesting cover at Goldeneye Reservoir is a particular issue that should be addressed in the RMP. Trespass livestock grazing has reduced or eliminated residual cover in the past.

Trapping and transplanting. The ability to move animals into or out of specific areas for the purposes of managing or re-establishing fish and wildlife populations should be addressed in the RMP.

Crucial wildlife habitats. The ability to maintain and, where needed, improve crucial winter ranges is a concern. The RMP should specifically address land management on these areas.

Forage allocation. The RMP should assure that adequate forage is available to wildlife during the necessary seasons of use.

Invasive weed species. Adequate management of invasive species (e.g., cheatgrass, knapweed, etc.) is an issue. Excessive amounts of these species can decrease wildlife habitat and habitat values.

Aspen. Aspen habitat management is an issue. This important habitat type greatly increases habitat diversity, but is present in limited amounts and will need specific attention in the RMP.

Forest Management (including aspen). Forest cover is very limited in most areas of the Casper Field Office Area. Management of this habitat to maintain and enhance habitat and thus wildlife diversity is a concern. Management under the new RMP should consider the benefits of forest cover, particularly Douglas-fir, to elk and other wildlife species as year-round cover and security cover. Alternatively, limber pine invasion of big sagebrush and mountain mahogany communities jeopardize the benefits of these shrub communities to wildlife, and a 10-15 year fire frequency in ponderosa pine communities would create a more desirable forest.

The RMP will need to address these diverse management needs in terms of providing wildlife habitat. Timber harvest on private lands bordering BLM lands in some areas increases the concern for landscape considerations on BLM lands.

North Platte River.

The North Platte provides a quarter million angling days per year. Access remains a critical issue. We applaud recent BLM actions to improve access and encourage the BLM to continue improving access through acquisitions and easements along the North Platte River.

The previous RMP focused on that section of the North Platte River west of Casper, but fisheries for trout and catfish extend further downriver. We recommend that the SW ¼ section of section 31, T34, R76 not be considered for disposal since it connects four state sections of river in an area that supports a trout fishery of 500 fish per mile greater than 6 inches and an uninterrupted riparian corridor for wildlife. Similarly, BLM properties in section 1, T24, R63, section 30, T25, R62, and section 25, T25, R63 are contiguous with the Rawhide Wildlife Habitat Management Area and we ask that they not be disposed.

Thirty-three Mile area.

We support the creation of new reservoirs that provide sport fisheries and wildlife habitat and the rehabilitation of existing reservoirs in the 33-mile area. We would like to coordinate with the BLM in developing a recreational plan for that area.

Spring and Seep Development. Protection of springs and seeps is an issue. The RMP needs to continue to protect these areas through fencing and adjacent water development.

Review the 1985 Platte River RMP. Several good initiatives were presented in the previous RMP that we would like to see continued in the upcoming revision, and an increased implementation of them.

Road Management. The RMP should address the issue of roads in the floodplain. Where streams must be crossed, best management practices should be employed to maintain stream equilibrium upstream and downstream of the crossing.

Development. The RMP should mitigate for development. Reclamation following development should require native species of vegetation and consider the needs of fish and wildlife.

Sincerely,

Bill Wichers

BILL WICHERS
DEPUTY DIRECTOR

BW:TC:as

REFERENCES

Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 2000, 28(4): 967-985.

Wyoming Game and Fish Department. June 24, 2003. Wyoming Greater Sage-Grouse Conservation Plan. 97 pp.

Wyoming Interagency Vegetation Committee. 2002. Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management. Wyoming Game and Fish Department and Wyoming BLM. Cheyenne, WY 53 pp.

9/25/03

BUREAU OF LAND
MANAGEMENT
CASPER FIELD OFFICE

03 SEP 23 AM 11:07

Northern Plains Region

Linda Slone
BLM Wyoming
Casper Field Office
2987 Prospector Drive
Casper, WY 82604

Dear Ms. Slone:

The Sierra Club would like to nominate the following areas for ACEC designation and would like these nominations to be considered in the revision for the Platte River Resource Management Plan now being prepared by the Casper Field Office.

1. **The North Platte River Corridor.** The North Platte River provides outstanding recreational opportunities on a nationally significant river. Outstanding boating, fishing and hunting opportunities exist along the North Platte River, and management should be geared to protecting these opportunities.
2. **Casper Sand Dunes**-This is one of the few areas in the Great Plains which contains not only sand hills but also active dunes. This type of geologic phenomenon is rare in the Great Plains since few active areas on Sand Dunes exist in the biome.
3. **Hole in the Wall/Red Wall-** This is a former ACEC that should be redesignated particularly in light of the Buffalo Field Office's finding that the Hole in the Wall and adjacent Red Wall areas meet the relevance and importance criteria of ACEC designation. Other than the emigrant trails and Teapot Dome, the Hole in the Wall is probably the only other nationally recognized historic site within the area managed by the Field Office. Although the actual Hole in the Wall is located in Johnson County near the Natrona County line, the historic values and outstanding scenery extend into Natrona County and warrant designation.
4. **Muddy Mountain Environmental Education Center**- Muddy Mountains is a very scenic area which emphasizes recreation and environmental education on Casper Mountain. It is one of the few montane sites where the BLM has developed environmental education as an emphasis. It is also extensively used by hikers, campers, and schools.
5. **South Fork of the Powder River Watershed-** Public lands west of I-25 and north of U.S. Highway 20/26 have been identified in a World Wildlife Fund study as one of the 10 best remaining areas of intact native prairie left in the Northern Great Plains of North America. For this reason the BLM needs to realize the importance of this area and implement special management to protect this important status.
6. **Emigrant Trails** - Four National Historic Trails pass through public lands managed by the Casper Field Office which are the Mormon, California, Oregon and Pony Express Trails. Obviously these four trails are of national significance, and ACEC designation would compliment the Congressional designations and allow the BLM to restrict activities in this area to those activities compatible with protecting these important trail corridors.

23 North Scott #27 Sheridan, WY 82801 TEL: [307] 672-0425 FAX: [307] 674-6187 www.sierraclub.org

03 SEP 23 AM 11:07

7. **Teapot Dome** - An ACEC should be established in the Teapot Dome area to explain this historic importance of this area. Teapot Dome was one of our nation's worst government scandals rivaling Watergate in importance. Since the scandal centered around lands within the boundaries of the Casper Field Office, we believe that the tract of land involved in the scandal should be designated an ACEC. In addition an adjacent area which overlooks the Naval Petroleum Reserve should also be designated which should contain a picnic area with interpretive displays discussing this historic event. Because of the active oil and gas activity in the area, it may be appropriate to explain oil and gas related facilities including derricks, pump jacks, pipelines, and other common equipment used in oil fields.
8. **Pterodactyl Track-** This area near Alcova contains significant Paleontological values including very rare pterosaur tracks. Only four other locations of these tracks have been found in the world. The relevance and importance of this area has already been established because the area is a former ACEC. Its status should be upgraded to ACEC once again. In order to protect this site, special management is necessary and ACEC designation is the best way of accomplishing this protection. The dinosaur tracks in the Bighorn Basin received ACEC designation, and thus the pterosaur tracks in Alcova should receive the same level of protection.
9. **Table Mountain -** This area contains important waterfowl and upland game bird resources, and is an important recreation area in southeastern Wyoming. Because of its important wildlife resources and this area is one of accessible areas of public land in the southeastern portion of the state, it should be considered for ACEC designation.

The Sierra Club supports the retention of Jackson Canyon as an ACEC because of its importance bald eagle habitat, but requests the removal of ACEC designation from the Salt Creek oil field. Salt Creek was one of the earliest ACECs, and although areas that are considered environmental hazards can be designated ACECs, we do not believe that the designation has helped at all in expediting the clean up the Salt Creek area. Although Salt Creek is one of the oldest oil fields in Wyoming we do not believe that it differs greatly from other aging oil fields in need of clean up and thus fails to meet the importance criterion that all ACECs must meet.

We appreciate this opportunity to provide early input into this planning effort.

Sincerely yours,

Kirk Koepsel

Kirk Koepsel
Senior Regional Representative

The State
of Wyoming

Dave Freudenthal, Governor

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMIN/OUTREACH	ABANDONED MINES	AIR QUALITY	INDUSTRIAL SITING	LAND QUALITY	SOLID & HAZ. WASTE	WATER QUALITY
(307) 777-7758	(307) 777-6145	(307) 777-7391	(307) 777-7368	(307) 777-7756	(307) 777-7752	(307) 777-7781
FAX 777-3610	FAX 777-6462	FAX 777-5616	FAX 777-6937	FAX 777-5864	FAX 777-5973	FAX 777-5973

July 29, 2003

Through: WY State Planning Coordinator's Office

Ms. Linda Slone
Casper RMP Project Manager
BLM Casper Field Office
2987 Prospect Drive
Casper, WY 82604

RE: BLM Casper Resource Management Plan Revision

Dear Ms. Slone:

The Air Quality Division of the Wyoming Department of Environmental Quality has reviewed the June 2003 Scoping Statement. As a result of that review the Air Quality Division identified some issues and concerns that should be addressed in the review and modification of the Casper RMP.

- **Fire**
  The Casper RMP should address where and under what conditions fire should be used as a land management tool and what areas should be identified for full suppression, limited suppression, and no suppression of wildfire. In addition, the BLM should take into account smoke impacts (i.e., public health, nuisance, and visibility impacts) associated with fire, as well as the minimization of fire emissions and smoke impacts to the maximum extent feasible.

- **Air Quality Management Objectives and Actions**
  The Air Quality Division is cognizant that existing RMPs contain Air Quality Management Actions, which BLM may carry forward into the revised RMP, that imply a certain BLM authority over air quality. The primacy for air quality under the Clean Air Act has been granted to the State of Wyoming and in two appeals of the Fontenelle and

Moxa Arch Records of Decision, the BLM conceded that it lacked authority over air quality. As such, the Air Quality Division is submitting the following comments so that the RMP may be revised to eliminate Air Quality Management Actions that are beyond the BLM's authority.

To ensure that the BLM does not imply a certain authority over air quality the phrase "within the scope of the Bureau's authority" should be added to the Air Quality Management Objective and/or Air Quality Management Actions as necessary. For example, Management Objective "...minimize emissions, within the scope of the Bureau's authority, that cause acid rain or degraded visibility." and Management Action "Requirements, within the Bureau's authority, would be applied...".

The authority to limit emissions and/or require emissions controls lies with the State of Wyoming. As a result, all references to "limiting emissions," "covering conveyors," etc. should be removed from Air Quality Management Actions. If the State determines that it is necessary to regulate emissions, it will do so through its State Implementation Plan (SIP) for air quality by promulgating appropriate rule. The Environmental Protection Agency has oversight responsibility during this process and will approve the State of Wyoming SIP for air quality.

Air Quality standards and guidelines are developed and established by the State of Wyoming as required by the Clean Air Act not the BLM. Therefore, any Air Quality Management Action referring to the "development" of air quality standards and guidelines should be deleted entirely from the RMP.

If you should have any questions on the above comments and concerns, please feel free to contact this office.

Sincerely,

Darla J. Potter
Visibility, Smoke Management, & EIS Coordinator
Air Quality Division

cc: Dan Olson, Administrator Air Quality Division
Cara Casten, Air Quality Engineer

"foncie"
<foncie@mymailstation.com>

07/28/2003 09:09 AM

To: crmp_wymail@blm.gov
cc:
Subject: Linda Stone, RPM of BLM

Dear Linda, July 28, 2003

It has come to my attention that you would appreciate comments from the public concerning the preservation of the Public Lands Trust.
In earlier attempts to make my feelings known to government entities, I have been asked, " What's your interest in Wyoming when you live in North Carolina?"

I have made four trips to the state of Wyoming in general as well as around the Platte River: 1958, 1974, 1998, and 2002. To see the Oregon/Mormon trails snake across the landscape, to hear the quiet broken only by the whisper of wind in the grasses and an occasional raspy call of a hawk, or the whistle of a marmot, to sit on the bank of a rushing river rapid, to behold a butte rising up out of otherwise flat ground, to touch remnants of wagon train parts at a river's ford (which were there in '74, but gone in '02)...all enriched and enlarged my sense of our country. These things and innumerable more I could show my eastern son, reinforce his nation's history, and teach him the value of preserving the lands left in trust for others to come and experience in the future.

To do other than preserve the Public Land Trust managed in the public interest would be a travesty in huge proportions. During the last week, we have seen and heard about the forsight of the man who saved 800+ acres in the middle of New York City. It is now the anniversary of Central Park where children have been able to experience sitting in the shade of trees and playing on grass since the late ninteenth century.

As a resident of North Carolina, I have an investment in the preservation of historic trails, archeological sites, and the habitat of wildlife that are a part of the heritage of our nation's people, found throughout our land as well as Natrona, Converse, Goshen, and Platte Counties. Please have the courage to stand up to the demands of those with special interests, deep pockets, political ambitions, or religious pressure and keep our Public Land Trust whole and managed in the public interest.

Sincerely,
Florenc L. Williamson
7905 Yester Ct.
Raleigh, N.C. 27615

"Mahlon Frankhauser" <m.frankhauser@att.net>

07/28/2003 09:56 PM

To: <crmp_wymail@blm.gov>
cc:
Subject: Preserving Wyoming's History and Wilderness

Though we have never visited this beautiful part of the country, we have certainly enjoyed viewing the scenery in pictures and on videos and in movies etc. We have spent many enjoyable times in other areas of the mid-west. We hope and pray that the preservation of this area will be accomplished for not only the present generation, but for all the future generations to come. This is a national problem here in our beloved United States of America. People are not thinking ahead, but just of the present and development at any cost. And the cost will be devastating! Once these areas are gone, they are gone forever. We shall fervently pray for the success of your mission!

Mahlon and Joan Frankhauser

"Bonds, James"
<James.Bonds@fhwa.dot.gov>

07/15/2003 02:58 PM

To: <crmp_wymail@blm.gov>
cc:
Subject: Casper RMP

Good afternoon,

Could you add my name to the mailing list please. I am interested in the update to the Casper RMP.

James T. Bonds
Federal Highway Administration - Wyoming Division
1916 Evans Ave.
Cheyenne, WY 82001

(307) 772-2004 ext 42

james.bonds@fhwa.dot.gov

Thank you

BJORK • LINDLEY • LITTLE • PC

LAWYERS

PETER A. BJORK†
LAURA LINDLEY
DAVID R. LITTLE
ROBERT C. MATHES†
DARIN B. SCHEER†
CHRISTOPHER G. HAYES*‡
ANN M. EASTBURN+

03 NOV 17 AM 11:07

*Of Counsel
+Special Counsel
†Also admitted in Wyoming
‡Also admitted in Louisiana

November 14, 2003

Bureau of Land Management
Casper Field Office
2987 Prospector Drive
Casper, WY 82604

Attention: Ms. Linda Stone

Re: Casper RMP Revision

Dear Ms. Stone:

This letter responds to BLM's Scoping Notice with respect to the proposed revision to the Casper (formerly Platte River) RMP. The timing of the plan revision presents an excellent opportunity to incorporate the EPCA inventory results into the plan decision. We urge you to provide realistic opportunities for the development of oil and natural gas from federal lands with only necessary restrictions on surface use. In particular, we recommend that the reasonably foreseeable development (RFD) scenario analyze sufficient potential development so that the document will have a useful life for planning purposes. However, the plan should emphasize that the RFD is used only as a tool to analyze potential impacts and does not constitute a cap or decision limiting the amount of development which may occur in the resource area.

Thank you for your consideration of these comments.

Very truly yours,

BJORK LINDLEY LITTLE PC

Laura Lindley

Laura Lindley

fwrd to SAIC
11-17-03 lms

LL/dfl

1600 STOUT STREET • SUITE 1400 • DENVER, COLORADO 80202
TELEPHONE: 303-892-1400 • FACSIMILE: 303-892-1401 • www.bjorklindley.com

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: CASPER **Date:** 11/13/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

WE'RE EVALUATING THE FEASIBILITY OF CONSTRUCTING A WIND FARM @ TEAPOT DOME (NPR3).

IS THIS OF INTEREST TO YOU?

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	MIKE TAYLOR 261-5000
ORGANIZATION:	DEPT of ENERGY
ADDRESS:	907 N. POPLAR STE 150
CITY/STATE/ZIP:	CASPER, WY

☐ **Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.**

☐ **No, do not include my name and address on the mailing list.**

Please hand this form in or MAIL (post-marked by November 20, 2003) to:

BLM Casper Field Office
2987 Prospector Drive
Casper, Wyoming 82604-2968
Attn: RMP Revision

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper, Wyo. **Date:** Nov 13, 2003

Thank you for your input.

PLEASE PRINT LEGIBLY.

Fact Sheet 3 – Preliminary Planning Issues Item B Access to and transportation on BLM lands Needs to include equestrian use as an acceptable ~~use~~ means of transportation on all BLM Land.

Fact Sheet 4 – Recreation – Equestrian use needs to be included as an acceptable form of recreation on all BLM Land.

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Edward J. Birgenheier
ORGANIZATION:	Pathfinder Backcountry Horsemen of America
ADDRESS:	Box 2557
CITY/STATE/ZIP:	Mills, Wyoming 82644

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forwd to SAC 11-17-03 [illegible]

03 NOV 17 AM 11:0[illegible]

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: CASPER **Date:** 11/13/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

EXPANSION OF THE POISON SPIDER ORV PARK. UTILIZATION IS VERY HIGH. OVERUSE IS EMMINANT. SOME ACREAGE PREVIOUSLY UTILIZED WAS FENCED-OFF. ADDITIONAL ADJACENT BLM ACREAGE IS THERE. EXPANSION ASSISTANCE IS AVAILABLE FROM 3 SPECIAL INTEREST GROUPS THAT UTILIZE THE AREA. EXPANSION CAN BE ACHIEVED BY RELOCATION / REMOVAL OF EXISTING FENCED BOUNDARIES.

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	DANIEL STRAKA
ORGANIZATION:	CASPER DIRT RIDERS, WY MOTORCYCLE TRIALS ASSOC.,
ADDRESS:	3688 RIDGECREST DRIVE
CITY/STATE/ZIP:	CASPER / WY / 82604

☑ **Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.**

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Location: Casper **Date:** 11/13/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

more water Development on public lands to benefit ~~the~~ livestock & wildlife.

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:
ORGANIZATION:
ADDRESS:
CITY/STATE/ZIP:

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Written Comment Form
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Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** 11-13-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

On access to the BLM land out NORTHEAST OF CASPER: I'm one of the landowners out there, and while I do my little bit on my own place for a few hunters, I'm not willing to allow the wide world to go back onto the other ranches out there. That would be crazy.

I don't know what to do to fix it out there, but I have heard people suggest that the Area 25 season is too long and the area is too big. The Game and Fish might look into two or three short seasons moving across the area. They might make things more manageable that way. I've also looked at the Walk-in access program, but it seems to be aimed at bigger places than mine and places that are used more.

You don't have to leave recreational areas or facilities open all the time, either. You could close ATV areas periodically.

OVER →

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:
ORGANIZATION:
ADDRESS:
CITY/STATE/ZIP:

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I agree with what was said in the meeting about your ranger. He shouldn't be working such a huge area alone. I can't believe that the BLM would expect him to. Whoever decides those things must be pretty naive.

I am a bit concerned about cheat grass, too, though it just occurs in patches and islands, both on BLM and private land out there.

Though I have found the Casper Office very pleasant and reasonable, I have been annoyed for a long time about the subleasing rules. I think the state's policy is far more fair. (I've already complained about that some place else.)

In general, I haven't minded having BLM land at all...

Billie Donovan

#2 November 13, 2003

Area 32 Unit-C&f.

Winter Habitat for antelope is in severe decline. Problem is that the heavy migration from Areas 47-48&31 in winter. Result is too many animals (antelope) that place severe stress on winter range. Resulting in severe winter range deteriration- especially shrub components.

Need to: reduce stress on range & that equates to reducing (managing) antelope.

OHV Trail- designated & designed.

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Wheatland **Date:** 11-10-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

Want BLM to become far aggressive with biological control of noxious weeds. Spray - County has done this - losing ground. Additionally, ~~Need~~ ~~to~~ Kills Mtn Mahogany + grass + forbs.

* Need to introduce biologics into System.
~~Not Sustainable. City lived Best.~~

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Mr. Clice McCollock
ORGANIZATION:	
ADDRESS:	
CITY/STATE/ZIP:	

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Written Comment Form
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Location: Wheatland **Date:** 11/10/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

For prescribed fires it may be more efficient to burn a larger area @ a time - may need to be cooperative between BLM & G&F & landowners
→ would be a more efficient for wildlife & would be more efficient financially

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Clyce McCulloch
ORGANIZATION:	JY Ranch
ADDRESS:	Box 125
CITY/STATE/ZIP:	Wheatland, WY 82201

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Written Comment Form
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Location: Wheatland **Date:** 11/10/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

Likes things just like they are.
Has grazing allotments

**** CONTINUE ON BACK FOR MORE SPACE ****

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NAME:	Joe Johnson
ORGANIZATION:	Joe Johnson Co.
ADDRESS:	29 W. Johnson Road
CITY/STATE/ZIP:	Wheatland, Wy 82201

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Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Wheatland **Date:** 11-10-05

Thank you for your input.

PLEASE PRINT LEGIBLY.

I believe the BLM is running the public lands a well as it can be. I would like to see it remain the same. My ranch has about 12,000 - 13,000 acres of which about 60% is BLM. My deeded ground is interspersed among the BLM. I would not like to see the public land put up for sale because I dont think I could purchase it at market value.

I would like to see it remain the same

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Bernard R. McGuire Jr
ORGANIZATION:	Rancher
ADDRESS:	4398 Palmer Canyon Rd
CITY/STATE/ZIP:	Wheatland Wy 82201

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Resource Management Plan (RMP) Revision Process

Location: Wheatland **Date:** 11-10-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

1. Wants grazing lease to stay the way it is now.
2. Will not allow access for hunting across ~~your~~ his private land
3. If lease comes up for sale, wants to have 1st right of ~~approval~~ refusal. 120 Ac

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Tom Pruit
ORGANIZATION:	
ADDRESS:	
CITY/STATE/ZIP:	

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BLM Casper Field Office
2987 Prospector Drive
Casper, Wyoming 82604-2968
Attn: RMP Revision

November 10, 2003

Clyce McCulloch- Jy

BLM needs to react to prescriptions when window is offered.

Ryan Amundsen- Area EA for Richeau Hills that addresses prescriptions in Mahogany on a landscape base.

BLM should get more aggressive with biological control of noxious weeds.

-Land tenure Adjustment for small isolated Tracts.

-Access Across PVT. Land to reach public Lands.

P1

12 Nov 03
@ Douglas, Wy

BLM CFO Resource Management Plan Revision

Here are my issues / concerns as an individual user of The Public Lands in the CFO.

Nat. Importance facilitate mineral development

- Concern: From a national view mineral development is the most important resource in the CFO Resource area. Need to

1. Clearly ID those areas where mineral development / resources exist - place a focus on facilitating and encouraging Coal & Oil and Gas - universum.

2. Require reasonable coordination with other resources - Rec. wildlife & grazing

3. Make clear the temp. impacts of mineral Dev is acceptable - restore T&E habitat & other wildlife habitats - ok to Temp. impact the individual animals - replace habitat in reclamation

4. Minimize amount of roads, do not allow above ground powerlines greater than 33kV, only gravel all weather roads -

P2

Special Area Little Med falls

Issue & Concern: Make the BLM lands @ Little Medicine falls a special area ACEC --- Focus on Rec. do not encourage additional levels of use, but provide access, parking, light grazing only, sign ~~bou~~ property lines. This is truly a special and unique area.

Ft. Fetterman & Med. Box Rd.

Issue/Concern: Fort Fetterman & Little Medicine (Box Elder) Roads - Historic travel ways manage/protect as such. Also set standards on the Fort Fetterman - Rock River utility corridor. < Protect & Interpretate while allowing todays uses.

Signs implying Pvt ownership.

Issue/Concern: Ranch Signs on Public lands, example Pathfinder Ranch signs, that imply Pvt ownership - Put a stop to this this implication that the public lands are private / use only by permission of the ranch owner. Require a charge permit for all signs on Public lands -

Esterbrook townsite

Issue/Concern: Sell at high bid the lots in the Esterbrook townsite. Expansion of the Esterbrook townsite is limited/controlled by few/constrained because few tracts are available on the market - make the lots at Esterbrook available.

Isolated tracts

Issue/Concern: Scattered isolated tracts of public lands. Use 640 acres as "small tract" - Sell at public open bid - unless they have "special values for wildlife, minerals, Rec."

This will do much to:

1. reduce Administration cost
2. Increase county tax rolls
3. Get out of Pot landowners zones.

Land exchanges

Issue/Concern: Land Exchanges (

- do an adjustment plan - areas to build on - areas to move out of - areas that could go either way - base a program on this.
- Solidify ownership
- Eliminate scattered tracts
- Acquire Access to public lands

Boundary lines to facilitate public use

Issue/Concern: Post / mark property lines so that public land visitors may more effectively use the public lands.

- Property Bdy signs
- Sign Access ~~Pords~~ Points

Provide access points

Issue / Concern: Provide Access points a place to park that has bdy signs etc - connect the people with the land.

Horse use

Issue / Concern: Provide horseback riding opportunities - an array - within 1 hr of Casper. There are a great number of horseback users in Casper / glenrock provide a place for them to go ride. Rei Backcountry Horsemen of America Casper, Chapter.

Access to public land

Issue / Concern: Many tracts of Public land that are of significant size do not have public access to them - do not have to be able to drive all over them, just drive to them, obtain access, sign and have a place to park

ATV Use

Issue / Concern: ATV use off roads is a quickly growing and often ("~~Rampt~~ Lawless") activity:

1. Prohibit off road vechicle use except in designated areas - including grazing users

2. Provide some ATV opportunities - mostly on low std. roads. Also some off road areas.

3. Prohibit ATV use on ~~tails~~ trails except where specifically allowed.

4. Require they be no louder than some set noise level.

a

Water rights

Issue/Concern: Do not allow anyone to hold a livestock water right except the U.S.A. - Control the H_2O control the range

O&G production pits

Issue/Concern: Do not allow any "pits" for oil & gas production, i.e., no new production pits - none --

Pasture size

Issue/Concern: Deal with Pasture size as a method to provide diversity accross the landscape. Set a standard there will be no net reduction in Average pasture size this will:

1. Provide biological diversity
2. Maintain Recreation opportunity
3. Eleminat or at least minize impacts to wildlife from fences - Big Game mortality - Bird / sage grouse mortality

electric fences

Issue: Electric fences are bad deal should be limited to true temporary use allow one time at a place for no longer than 6 mo. - unacceptable conflict with public use.

Historic trails

Concern: Provide Historic Integrity of the Historic travel ways, i.e., ~~Original~~ Oregon, mormon, Pony Express -- - maintain visual & physical integrity - do some interpretation -- also be specific about what is compatable uses - roads powerlines waterlines etc --

1. Where road have overlaid trail don't disallow upgrades, traffic, having utility corridor.

2. Protect pristine "ruts" / station sites.

3. Encourage public use by marking routes - have areas where
   - people can drive vehicles
   - Ride horses
   - walk

   down segements of the trail.

4. Encourage Historical "re-enactment"

Major travel ways

Issue: Provide recreational opportunity for / related to historic travel ways for example

- Coordinate with other BLM - USDA-FS to create a travel way people can ride from Crow agency, MT to Casper

- Bates Hole Livestock driving route for people to ride horse, Mt. Bike

Backcountry Byways

Issue/Concern: Continue & emphasize the recreational opportunity of Backcountry Byways.

Pine Ridge

Issue: Pine Ridge No of Glenrock - not available - unknown - no signs This is a truely high diversity visual & environmental that has exceptional Rec opportunities make those available to the public. starts N. of Glenrock - goes east to I-25 -- Bad lands (south south of) pine rock formation - excellent Big game. Make emphasis rec.

Vastness

Issue: One of the major environmental values the public lands have is vastness - big open areas. These vastness values need to be protected

- Limit Pasture size Keep Big
- Visual mitigation requirements
- Limit Roads - have road density stds
- Require appropriate Reclamation at the end of projects (oil-gas etc) restoring "vastness"

Rec events events

- Concern/issue: Recreation events
Prohibit those recreation events that are not related to the natural resources for example

: Competitive riding events that only require a place - motorcycle races - endurance horse races - -

: Para-military events

:

P. dogs

Issue: Provide the recreational opportunity of P. dog shooting

- scarce activity
- can be major local economic development/factor.

Submitted 12 Nov 03
J D Reedstrom
an individual user of CFO Public Lands.

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Douglas **Date:** 11-12-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

These ARe Suggestions to consider in doing your RMP update.

(1) I strongly Recommend disposing of scattered parcels of BLM Lands. The RATIONAL for This is That BLM doesn't have personell To offer ANY MANAGEMENT AND These LAnds if privately owned, would Add To the TAX bASE of The State.

(2). I Also oppose ANY MORE LAND Acquisation by BLM.

(3) It is A Mistake to MAke The public AWARE of items OR sites of interest (ARchelogical / Historic / Cultural / Ect.) AS This invAroubly LeAds To Looting & DAMAge. MANY sites would be better protected on privately owned LAnds.

(4) CBM developement, while necessary AND beneficial, still poses problems - SURFACE DAMAge & WATER disposal being Two of The most important. Also undoubtedly some domestic & Stock wells will be impacted. MANY existing wells ARE producing FROM COAL SEAMS. ARtesion wells ARE At gREAT Risk!!

(5) Multible uses of BLM LAnds must be MAINTAINED. Productive Industries Such AS Agriculture, MINING, oil & GAS, Timber, (Forest MANAGEMENT)

****** CONTINUE ON BACK FOR MORE SPACE ******

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OVER

NAME:	G. Eugene "Gene" HARdy
ORGANIZATION:	HARdy ENTERPRISES LTD. dbA: HARdy RANCH
ADDRESS:	181 JENNE TRAIL Rd. ~~Douglas, Wy. 82633~~
CITY/STATE/ZIP:	Douglas, Wy. 82633

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already on list

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Attn: RMP Revision

03 NOV 18 AM 10:58

etc. should be prioritized over some of the more "Radical" uses. I do not oppose Environmental protection but insist it be based on sound Scientific Science.

(6) Better invasive weed control is a must!! It is spreading on Well Locations, pipe Line Easements and BLM Land in general.

(7) Encourage more water developements for Livestock & Wildlife.

(8) Restrict as much as possible the use of motorized Vehicles (ATV) in particular, on BLM Lands except on established Trails & Roads.

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Douglas **Date:** 11/17/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

We in Converse County are very concerned about the Coal Bed Methane discharge water. At one time it was suggested this discharge would be into Antelope Creek and on into the Cheyenne River. This is not a good idea for many reasons. We suggest it be piped to the Platte River near Glenrock for replacing water "owed" to Nebraska

Marvin Applequist of Wyoming Farm Bureau has proposed an idea for the problem of abandoned oil & gas wells, a lot of them on BLM land. His idea is to convert them to water wells (a lot have water in them now), to add AUM's and wild-life numers to ~~the~~ BLM lands. This idea has merit, for one thing, it would be cheaper than drilling new wells and would add value to our State

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	Jess Rodgers
ORGANIZATION:	Converse Co. Cons. Dist Chair — Converse County Farm Bureau Pres.
ADDRESS:	286 Braag Road
CITY/STATE/ZIP:	Douglas, Wy 82633

☐ Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.

☐ No, do not include my name and address on the mailing list.

☒ Scoping Committee Member

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2987 Prospector Drive
Casper, Wyoming 82604-2968
Attn: RMP Revision

00 :11 NOV 01 NOV 03

Archie Bruner
300 Brase Rd.
Douglas, Wy. 82633
Nov. 12, 2003

BUREAU OF LAND MANAGEMENT CASPER FIELD OFFICE
03 NOV -6 PM 1:40

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Casper Field Office
2987 Prospector Drive
Casper, Wy. 82604-2968

RE: Preparation of Casper Resource Management Plan

Dear Managers:

Preliminary Planning Issues

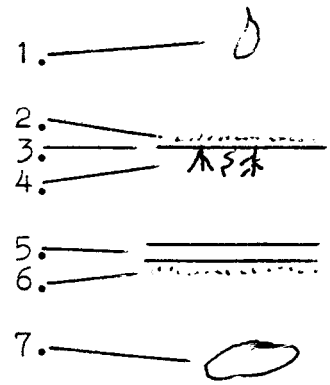
A. For the sake of future generations, conservation should be considered. Statistics do not tell us what to do, they tell us what we are doing. Simplicity, standardization, and stabalization are important.
B. We should not trample or misues land. Some mistakes fall under the heading of freedom and economic developement.
C. Resource conservation is good management.
D. Wildlife is not the foundation of domestic agriculture.
E. There is a process of evolution man has no control over. Respect natures support of livability.
F. Problem plants should be controld beneficialy.
G. Sustainable agriculture is paramount.
H. All land should adhere to futuristic benefit.
I. Be cautious and responsible.
J. Livestock should be tied to domestic agriculture.
K. Much of economic developement is not visual or realistic resource.
L. The movement of elements among plants, animals, organisms, soil, water, and air is the natural recycling foundation of life (it is THE ecologic system).
Agresive industry and human interference distract from quality air, water, health, food, and shelter. Hauling the crop off of land or any disturbance of elements from their original cycles is detrimental.
Theories of sience do not supersede the facts of life.
Domestic agriculture presents an opportunity to support natures bounty. The industrial world is a long way from domestic agriculture ("the hoe and spinning wheel" was domestic agriculture).
Industrial economics and population stabilization are difficult to handle.
The first commandment does not give us freedom of religion.
God is the ultimate power.

Respectfully,
Archie Bruner

03 NOV -6 PM 1:40

June 1, 2000

Fundamental Process Of Nature



1. Precipitation gives us water.
2. Elements containd in plant and animal waste carried doun by water.
3. Earths surface.
4. Roots of vegetation filter elements out of water.
5. Sewer and waste systems that place elements away from the root zone.
6. Elements carried to ground water.
7. Ground water feeds our springs and wells.

Industrial waste and clutter contaminate natures process. Wasted recources cause hardship for future generatios.

The fundamentals of nature should be the foundation of land use and economic developement to protect air, water, soil, and future life.

Archie Bruner

BUREAU OF LAND MANAGEMENT
CASPER FIELD OFFICE
03 NOV -5 PM 1:40

"From dust thou art to dust returneth", the Bible says.

All organic things are composed of elements, either directly or indirectly, from the soil. These elements need to return to the soil to recycle life under the laws of nature, which God created. Man cannot change Gods' law.

Agriculture is the management of elements to give people food, shelter, and exersize, which are the fundamentals of human life. Agricultural fundamentals is the foundation of life. We should get exersize maintaining food and shelter (basically).

Domestic agriculture gives us the opportunity to conform to nature. This country was founded and expanded with domestic agriculture. Maintaining soil productivity and resource conservation should be the first concern of economics, politics, and religion. Depleting the soil and waste of resources is vandalism.

Commercialization has presented resource wasteful methods in the support of life.

The industrial world has a long way to go to reach domestic agriculture. Some people and some institutions are not very adaptable. Historicaly, people have abused agriculture. The industrial world is in limbo.

New ways to do things is not success. Good ways to do things is success.

Tolerance? We must tolerate Gods' law.

LET'S KEEP POLITICS IN PERSPECTIVE

Making a living without imparing future generations is the story of success. Resource conservation is the ink which records the story. Simplicity and standardization is the bottle which holds the ink. The hoe and spinning wheel are conservative tools, (in capable hands).

Plants feeding animals and animals feeding plants is a fundamental of life. The natural recycling of organic material is the crutch of life everlasting. Domestic agriculture presents oportunity.

Managing plants and animals for food and shelter is the primary task of people. As we escalate our liberty we energize our justice.

Integrity is following a futuristic goal.

The world responds to kindness and respcsability.

God provides us with every headacke we bargain for and every bit of bread we earn.

03 NOV -6 PM 1:40

"JAMES HINES"
<Wolf82553@msn.com
>

07/28/2003 08:56 PM

To: <crmp_wymail@blm.gov>
cc:
Subject: platte river rmp

Please add my name to the Platte River RMP mailing list.

Thank you,

James Hines
P.O. Box 6058
Ventura, CA 93006

From Public Scoping Comment Database

Michael J. Markus
Director
Natrona County Development Department
120 West First, Suite 200
Casper, WY 82601
3074738517
3072359396
3072359436

Natrona County is a Cooperating Agency in the preparation of the RMP. I have been designated by the Board of County Commissioners to represent the County during this project.

The 1998 Natrona County Development Plan, which has been provided to BLM, includes a "Federal Lands and Resources Policy Plan" chapter. This Chapter recognizes the reliance of the County tax base on resources such as oil and gas, as well as providing recreational opportunities for Natrona County residents and visitors. It is clear that decisions that will be made as the result of the RMP will have long-term impacts to the economic stability and tax base of Natrona County.

The County would look to include the findings and conclusions of this RMP effort into potential updates of land use planning documents in the County, including the County Development Plan and the current update of the Casper Mountain Plan.

Potential new issues which Natrona County could face and that would have impacts on the local economy and wise land use planning are wind energy, coal bed methane, and CO2 production (such as the Anadarko project).

As the County representative for this effort, I appreciate the opportunity to provide comments and provide a broad based County perspective.

Michael J. Markus
Director
Natrona County Development Department
120 West First, Suite 200
Casper, WY 82601
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CFO Website Comments

Daniel Straka
WY Motorcycle Trials Assoc and Casper Dirt Riders
3688 Ridgecrest Drive
Casper, Wyoming 82604
bike4fun@juno.com

Recreational OHV users in the Casper District of the BLM have it pretty good and they know it. They all seem to be aware of the Poison Spider ORV Park. Even those new to this form of recreation seem to find out about it pretty quickly. The BLM has seen fit to allow unrestricted OHV use at the Poison Spider bentonite pit for as long as I can remember. A few years ago it was officially named the Poison Spider ORV Park. Since then many improvements have been made at the site in the way of amenities such as a toilet", picnic table and a trash receptacle. Twice a year special interest groups get together there along with BLM personnel to assist with general maintenance and beautification. I have seen as many as 30 vehicles parked out there on weekends, which translates to a lot of motorcyclists, ATV riders and four-by-four enthusiasts utilizing the area. It is in fact over utilized when conditions like this exist. With a mix of OHV types and riders which include children and adults alike safety can become an issue. I would like to propose that an expansion of this facility be included in the new RMP to address the utilization issue here. I have determined that there are adjacent BLM parcels West of the current boundaries that can be utilized to add an additional 80-240 acres to the area. This would serve to reduce the congestion issues that occur here on the weekends. An 80 acre expansion was submitted 4 or 5 years ago to the BLM for consideration and was well received however no action was taken. In addition to expanding the existing ORV Park, I would like to suggest that another parcel of BLM land be designated for OHV use so the user community has another destination choice. I would like to make one additional suggestion, with regards to how the area(s) are named. While the term Off Road Vehicle was acceptable when the park was first named times have changed, and ORV now carries a degree of negativity along with it. Because of this, the parks should be renamed to Off Highway Vehicle (OHV), which does not seem to carry any negativity with it.

CFO Website Comments

Keith Parmely
Casper Dirt Riders
4011 Cynthia Drive
Casper, Wyoming 82609
kjjep@iglide.net

These questions will be for land that is open or avalible for off-highway vehicle use. With the increasing use of Posin Spider Off-Highway Vehicle Park, it would be much safer to ride with the Park expanded.
Is there any other land available for another Off-Highway vehicle Park in ADDITION to Posin Spider? It's my understanding that the only trails for motorcycles is near Story & Posin Spider OHV Park ?

Is it possible for our club to have imput into new or establishing new trails for motorcycles? Are Places like Deer Creek , Esterbrook ," Bates creek & such avalible for \""designated\"" trails ? Will the proceeds from the sales of the OHV Stickers be used to establish new trails for OHV use

If there is land avalible for off-hihgway vehicle use", & or new trails can be established or designated," how can we get involved ?

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** 11-20-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

1. BLM offices need to be more diligent in monitoring grazing allotments. I know that many leaseholders overgraze, and with our drought situation, the wildlife has less to eat since the land is overgrazed.

2. BLM offices also need to be more diligent in monitoring ORV (off-road vehicle) use. The land gets really torn up (especially in this Field Office area), due to the ease of getting off-road in this desert-type, flat landscape. BLM needs to do much more education so people understand what this type of recreation does to the land.

3. Muddy Mountain is very underutilized by the General public. Picnic areas seldom seem to be used. Even the campgrounds are underutilized. Maybe the Casper Office could remind the public (through T.V. + Radio) that there is a very nice area there right in Casper's own back yard.

**** CONTINUE ON BACK FOR MORE SPACE ****

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NAME:	Jeanne Leske
ORGANIZATION:	
ADDRESS:	2001 Newport
CITY/STATE/ZIP:	Casper, WY. 82609-3803

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Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location:_____ **Date:** _____

Thank you for your input.

PLEASE PRINT LEGIBLY.

As manager of Springfield Ranch I would like to comment on some areas of the RMP which will affect our business.

Part of our land is located in the Rhehear Hills area of Platte Co. I was very impressed with the range improvement that occurred due to the prescribed burn that was done in 2001, and 2002. Part of the 2002 burn took place on our private property and the benefit to both wild life and livestock was tremendous.

Since this area contains a large amount of BLM property I feel it would be in the best interest of all involved for the BLM to proceed with more prescribed burning.

The second area I would like to address is a possible land transfere. Our lease included a 40 acre parcel in the NE¼, SE¼ of sec 25, R70.T22. We would be interested in either purchasing this parcel or trading it to the BLM for a same sized tract that would be adjacent

**** CONTINUE ON BACK FOR MORE SPACE ****

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NAME:	Kenneth Small (manager Springfield Ranch)
ORGANIZATION:	
ADDRESS:	153 Small Rd
CITY/STATE/ZIP:	Wheatland WY. 82201

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to another parcell of BLM which we have the lease on

Your consideration of these issues would be appreciated.

08 MAY 21 AM 10:55

03 NOV 21 AM 10:49

Kennecott Energy

November 19, 2003

Mr. Jim Murkin, Field Manager
Bureau of Land Management
Casper Field Office
2987 Prospector Drive
Casper, WY 82604-2968

RE: Public Comment, Casper Resource Management Plan (CRMP)

Dear Mr. Murkin:

I appreciated the opportunity to participate in the public scoping meeting held in Douglas, WY on November 12, 2003. Thank you for adding my name to your mailing list.

After review of the Final Summary of the Management Situation Analysis, I have no specific comment. However, as I noted during the meeting, the coal mining industry is an important part of our state and local economies. Antelope Coal Company (ACC) employs 270 residents of Campbell and Converse Counties. In addition, Antelope Coal Company supports a large percentage of Converse County's tax base.

While ACC supports the BLM's fundamental reasons to update the CRMP, we also wish to preserve the interests of our industry. Currently, the CRMP proposes no new standards in regards to air quality, water quality or wildlife, and we feel that the current standards protect these valuable resources. As we discussed, if more stringent standards were to be proposed they could restrict future coal mining in Converse County. In that event, those standards would need to be focal points for discussions during the CRMP process.

I look forward to future involvement with this process, as the CRMP is finalized.

Sincerely,

Patrick J. Baumann
Antelope Coal Company

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** 11-14-03

Thank you for your input.

PLEASE PRINT LEGIBLY.

I would like to see a more Incentive Oriented BLM Plan. for example members working with the BLM should get faster streamlined improvements and those people in the BLM weed and pest CRM should have a more understood feeding program so they should be able to pick weed free hay without paying the extra 20 to 30 dollars for Certified hay. As it is now those working with the BLM are the only ones obeying BLM rules I would like to see the public land set aside for a reason used for that reason.

(1) Now we are grazing land set aside for stock trail use these lands would make great landbanks or wildlife habitat if we did not graze after trail use, this would also leave feed on trail for winter trailing.

(2) The BLM is currently fenceing out stock trail lands for camping spots. this opens the door for all to pull lands out of trail

**** CONTINUE ON BACK FOR MORE SPACE ****

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NAME:	Randy Shepperson
ORGANIZATION:	K S Ranch
ADDRESS:	7286 Salt Creek Rte
CITY/STATE/ZIP:	Casper Wy 82601

☐ Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.

☐ No, do not include my name and address on the mailing list.

03 NOV 20 AM 10:37

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Casper, Wyoming 82604-2968
Attn: RMP Revision

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** 11/16/03

Thank you for your input.

PLEASE PRINT LEGIBLY.

off highway vehicle recreation IS the fastest growing activity on public lands, not only in wyoming, but nationwide. these recreationist are riding on public lands here in the west. Simply closing public lands to OHV use to prevent damage is not an option.

Some of the things I think can improve practical OHV recreation state wide can begin in the Casper RMP.

- Create an additional OHV park similar to the Poison Spider Park within the Casper district. I not sure of a site and there may not be one that is suitable. the Poison Spider Park gets more + more use.
- Create a looping ATV Trail system in areas that we know are frequented by offroad enthusiast. Some of these areas are muddy mtn/Casper Mtn ; Deer Creek ; ESTERBROOK ; Glendo
- It's important to include in The RMP the ability for this district to accomadate the OHV recreational user under the new plan.

****** CONTINUE ON BACK FOR MORE SPACE ******

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NAME:	J.R. Riggins
ORGANIZATION:	Motorized Rec. Council of Wyo / Casper Dirt Riders
ADDRESS:	344 Indian Paintbrush
CITY/STATE/ZIP:	Casper WYO 82604

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☐ **No, do not include my name and address on the mailing list.**

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Attn: RMP Revision

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** Nov. 18, 2003

Thank you for your input.

PLEASE PRINT LEGIBLY.

Our ranching operaion leases allotments in northwestern Natrona County. These allotments are vital components to the sustainability of our agricultural endeavor. Our efficiency is converting grass to food. The environment affects this food production. We enjoy a comfortable and compatible working relationship with BLM personnel. We appreciate this relationship and the fact that BLM bases its management goals and objectives regarding livestock grazing on an individual allotment basis. This is primary due to the diversity of allotments.

The MSA appears to be a comprehensive assessment. These written comments are intended to reply to the request for input in identifying additional issues and concerns. Many of the topics of management practices and management issues and concerns overlap. The Chapter numbers are being utilized as a guide only. These comments are intended to be used throughout the appropriate sections.

2.3 Fire Management

Prescribed fires as a management tool in our area would be questionable due to the risk of establishment or expansion of invasive non-native plant species. Pre and post

**** CONTINUE ON BACK FOR MORE SPACE ****

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NAME:	Robert, Rita & Jock Campbell
ORGANIZATION:	
ADDRESS:	4 Riggs Road
CITY/STATE/ZIP:	Shoshoni, WY 82649

[X] **Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.**

[ ] **No, do not include my name and address on the mailing list.**

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Casper, Wyoming 82604-2968
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fire management would be crucial and much would depend on a cooperative approach by all landowners.

24.1.2 Wildlife

An issue and concern not addressed is predator management.
Adequate inventory and monitoring data for big game species should be addressed before developing or preparing any appropriate management plans. This should apply to all wildlife species and their habitats but especially to the big game in regard to various permitted uses.

2.7 Lands and Realty

In this RMP revision we would like to see addressed the exchange of fee land and public land. We have fee land that is surrounded by public land and we have public land surrounded by fee land. All this is within our grazing allotments. By addressing these exchanges it would make management more efficient for all entities.

2.12 Rangeland Management & 2.12.2 Current Management Practices

Maintenance is necessary for efficient management of range improvement projects. In doing this maintenance work plans for immediate repairs and long term scenarios need to be considered. In grazing allotments the weather is a determing factor. Access to these range improvements can be an issue needing to be addressed. Our concern is repairing springs. It is difficult to get vehicles and equipment into sites without doing some surface disturbance.

2.13 Recreation & 2.13.2.1 Off-Highway Vehicles (OHV)

A criterion needs to be established regarding OHV trails.
Identifying Area and Trail Designations is a concern in the identified Crucial Big Game Range following the three management categories. Attention needs to be given to ensure visitor safety.
Clarification of the statements on pages 46-47 "Each year new trails are being created by a wide range of OHV users including, but not limited to, recreational users. Once a new trail becomes established it is considered by the public to be an existing route." Do these new trails become existing road and trails?
Management becomes an issue in controlling erosion on existing trails without maintenance. Avoiding erosion problems on a new trail becomes an issue. This issue overlaps into 2.15 Soil

2.19.1.3 Woodland and Forest Communities

Aspen communities are declining. Some method to reestablsih them needs to be developed.

03 NOV 20 AM 10: 37

Written Comment Form
Casper Field Office Planning Area
Resource Management Plan (RMP) Revision Process

Location: Casper **Date:** Nov. 18, 2003

Thank you for your input.

PLEASE PRINT LEGIBLY.

Sheet 2 of 2 Sheets

2.19.1.4 Invasive, Non-native Plant Species

It is in the best interest to continue the cooperative agreements with relevant weed and pest control districts. This is also addressed in 2.19.2.4 through 2.19.3.4. Adjacent surface owners need to have an interest in any integrated weed management program.

2.19.3.2 Riparian and Wetland Communities

Spring developments with watering facilty such as storage tanks would aid in more available water for livestock and wildlife and would help achieve management objectives.

We thank you for holding the scoping meeting and the opportunity to provide written comments.

Robert W Campbell

****** CONTINUE ON BACK FOR MORE SPACE ******

Public comments submitted for this planning effort, including names and street addresses of respondents, will be available for public review in their entirety after the comment period closes at the Casper Field Office during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except federal holidays. Individual respondents may request confidentiality. If you wish to withhold your name or address from public review or from disclosure under the Freedom of Information Act (FOIA), you must state this prominently at the beginning of your comments. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals or officials representing organizations or businesses, will be made available for public inspection in their entirety.

NAME:	Robert , Rita & Jock Campbell
ORGANIZATION:	
ADDRESS:	4 Riggs Road
CITY/STATE/ZIP:	Shoshoni, WY 82649

☐ **Yes, include my name and address on the mailing list so I can receive information on the Casper Planning Area RMP Revision.**

☐ **No, do not include my name and address on the mailing list.**

03 NOV 20 AM 10:37

Please hand this form in or MAIL (post-marked by November 20, 2003) to:

BLM Casper Field Office
2987 Prospector Drive
Casper, Wyoming 82604-2968
Attn: RMP Revision

CSL-0044

WYOMING GAME AND FISH DEPARTMENT

"Conserving Wildlife - Serving People"

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November 18, 2003

WER 2419.01
Bureau of Land Management
Casper Field Office
Casper Resource Management Plan
Management Situation Analysis Summary
PROJECT ID#: 2003-085

Kyndra Miller
Wyoming State Clearinghouse
Office of the Governor
Herschler Building, 1 East
Cheyenne, WY 82002-0600

Dear Ms. Miller:

We have reviewed the Final Summary of the Management Situation Analysis for the Casper Resource Management Plan (RMP) and offer comments on that analysis, what we believe future management should include, and some recommendations to address scoping issues and concerns.

Section 2.3 Fire Management, subsection 2.3.3 Management Issues and Concerns: This program should be incorporated into planning documents that address pre-treatment and post-treatment (prescribed fire) management, which includes rest to build fuels prior to treatment and rest following treatment to facilitate vegetative recovery.

Aspen should be specifically included as a resource that will benefit from the use of fire, and fire should be actively reintroduced back into the aspen community.

It is stated that burned areas usually offer an excellent opportunity for establishment or expansion of non-native plant species. We recommend incorporation of a provision into the fire program that will allow for the use of chemicals to prevent, reduce, and/or control the potential that exists for establishment and/or expansion of these species. This provision should be programmatic in planning processes, including post-management activities following a wildland fire.

Headquarters: 5400 Bishop Boulevard, Cheyenne, WY 82006-0001
Fax: (307) 777-4610 Web Site: http://gf.state.wy.us

Section 2.4.2, subsection 2.4.2.2 Wildlife: We recommend the BLM maintain and/or improve the following Habitat Management Plans (HMPs): Bolton Creek, Ferris-Seminoe, Grayrocks Reservoir, Laramie Peak Bighorn Sheep, Rawhide Wildlife Area, Springer/Bump-Sullivan Wildlife, Table Mountain Wildlife, and Goldeneye.

In addition, we recommend creation of:

- Four additional 1-acre exclosures within the Table Mountain Wildlife Area, and proportionately manage livestock grazing AUMs to account for the existing and additional exclosures.
- A Bates Hole Habitat Management Plan, which would incorporate the existing Bates Creek Aquatic Habitat Management Plan and Bates Creek Reservoir Habitat Management Plan. This Bates Hole HMP would facilitate better management decisions focused on wildlife habitat improvements, and address population-limiting factors.
- A 33-Mile Habitat Management Plan, which would incorporate the existing 33-mile Reservoir HMP, Railroad Grade Reservoir, Bishop Waterfowl HMP, Camel Hump Reservoir Wildlife and Recreation Area, and Teal Marsh Reservoir. The newly developed 33-Mile HMP would facilitate better management decisions focused on wildlife habitat improvements, address wildlife population-limiting factors, and address recreation-related issues involving the 33-mile reservoirs.

We recommend the BLM evaluate the progress of HMP goals and objectives, on an annual basis, and provide a status report to those agencies with Cooperating Agency Status.

Section 2.4.3 Management Issues and Concerns, subsection 2.4.3.1 Fish: The BLM states that no specific management issues and concerns have been identified. There are concerns regarding aquatic resources. We recommend the BLM coordinate reservoir design and development with WGFD personnel. Furthermore, we request 50 percent of the reservoirs created meet specifications for fisheries development. To meet fish management concerns, specifications should include a minimum depth of 10 feet, fencing an amount of uplands (headwaters area) adjacent to the reservoir 3 times the size of the reservoir surface acreage (3 upland acres: 1 surface acre ratio), and reservoir designs to include erosion control structures on the downstream outlet, providing roads to access the reservoir, and the emergency spillway being seeded with native grasses.

In addition, fish management issues are tied to other sections within the resource management plan that include, but are not limited to, riparian area management, road development and management, watershed health, etc. We ask that the BLM take aquatic management issues and concerns into consideration when addressing these management topics.

Section 2.4.3 Management Issues and Concerns, subsection 2.4.3.2 Wildlife: Forage for wildlife is a concern. We recommend the BLM allocate forage resources for wildlife in order to sustain WGFD big game population objectives and other wildlife populations. This should include working collaboratively with WGFD personnel and permittees to implement vegetative restoration projects using a watershed approach to improve resource conditions in those areas to achieve those objectives.

The BLM refers to a general concern that wildlife managers lack adequate inventory and monitoring data for many species, hampering the development of appropriate management plans. We recommend the BLM work collaboratively with us in developing, funding and utilizing remote sensing (landscape level landcover classifications) as a basis for landscape level inventory, establishing wildlife habitat monitoring areas based upon inventories, and sharing previously collected wildlife habitat monitoring data.

We urge the BLM to make sage grouse management a priority, with management directed to improve sage grouse habitat and populations to healthy levels, thereby precluding the need for listing under the Endangered Species Act. We recommend following guidelines for sage grouse and sagebrush management set forth in the Wyoming Greater Sage-Grouse Conservation Plan (June 2003), Guidelines to manage sage grouse populations and their habitats (Connelly et al., 2000), and Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management (Wyoming Game and Fish Department and Wyoming BLM, 2002).

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Section 2.7 Lands and Realty, subsection 2.7.1 Overview: It is stated that withdrawals are formal actions that set aside, withhold, or reserve federal lands for specific public purposes. We have a concern about the BLM's flexibility to do range improvements on active allotments. We recommend grassbanks be included as a withdrawal action, and be incorporated into this program. Grassbanks set aside allotments and/or portions of allotments to facilitate vegetative restoration (range improvements) projects on existing active allotments (i.e., prescribed burns, wildland fire restoration, etc.). These would provide an area for permittees to relocate livestock while vegetative treatments and/or other alternative restoration activities were being implemented on their active allotment. Furthermore, we recommend grassbanks be considered a key activity within the lands and realty program.

Section 2.7 Lands and Realty, subsection 2.7.3 Management Issues and Concerns: Land disposals can be an issue. We recommend the BLM not dispose of any public lands within and/or adjacent to Wyoming Game and Fish Commission Wildlife Habitat Management Areas, lands adjacent to the North Platte River, lands that are currently accessible to recreationists (i.e., hunters, anglers, etc.), and lands that facilitate access to larger blocks of public lands. BLM should also consider public access during realty negotiations. We request the BLM target land acquisitions, trades, exchanges, and/or easements that facilitate increased public access to the North Platte River, access to adjacent public lands, grassbank creation, and management of crucial wildlife habitats.

Section 2.8.3 Management Issues and Concerns, subsection 2.8.3.2 Oil and Gas: Oil and gas leasing is an issue. We recommend no leasing on our Department Wildlife Habitat Management Areas, that BLM add a lease stipulation that pad spacing be no less than 80 acres within crucial wildlife habitats, and no more than 10 percent of the cumulative area in crucial habitats be disturbed at any point in time. We recommend no more than 20 percent loss within a vegetative community (habitat type) to development, no surface disturbance within ½ mile of existing open water and/or riparian areas, and that directional drilling be encouraged within crucial wildlife habitats.

We request the oil and gas program require mitigation of impacts, including off-site mitigation when necessary, and also require rehabilitation of production and adjacent areas to pre-development conditions. We recommend the BLM not dispose of public lands where production has occurred simply because they have been developed (i.e., utilities and roads are present).

We believe the BLM's cumulative effects analysis of development (oil, gas, coal, etc.) has been inadequate in the past in individual EAs and EISs. Cumulative effects of increased development are having a substantial impact on wildlife populations. The RMP should include a detailed description of the process that will be used for determining cumulative effects of projects during the life of the RMP.

Section 2.12 Rangeland Management, subsection 2.12.2 Current Management Practices: The BLM states that 47 allotments are classified as "I" (Improve Existing Resource Conditions), 65 are classified as "M" (Maintain Existing Resource Conditions), and 416 are classified as "C" (Custodial Management). The number of allotments in the "I" categories is a concern. We recommend implementing management strategies that would improve 15 "I" classified allotments by the year 2010. We also recommend that 20 percent of all grazing allotments have an allotment management plan by the year 2015.

The BLM states that as of fiscal year 2003, 41 allotments had been evaluated for rangeland health, with 21 of these not meeting one or more of the rangeland health standards. We recommend the RMP include provisions to monitor these specific guidelines, and use the results in active management efforts to improve rangeland conditions.

Section 2.12 Rangeland Management, subsection 2.12.3 Management Issues and Concerns: We recommend the BLM manage vegetative communities for Potential Natural Community, which includes a diversity of grasses and forbs and un-even age classes of shrubs, and that management goals be based on a watershed level.

The BLM should review the status of lands withdrawn for stock driveway use, and consider creating grassbanks if the area of land would be large enough to facilitate grassbank activities. We recommend that salt and mineral locations within each grazing allotment be placed a minimum of ½ mile away from any water source and/or riparian area.

Section 2.13 Recreation, subsection 2.13.3.2 Recreation: Use of the North Platte River from BLM access is a management concern. We recommend evaluation of the North Platte River corridor for additional access site developments, and develop and publish a North Platte River float guide in collaboration with WGFD personnel. We recommend the BLM improve the road on the east side of Pathfinder Reservoir, which would include a crossing on Canyon Creek. The WGFD would like to collaboratively develop a recreational plan for the 33-Mile reservoirs.

We recommend the BLM maintain all public lands adjacent to Rawhide and Table Mountain Wildlife Habitat Management Areas as accessible areas for public use for wildlife recreation activities, and purchase, trade, and/or exchange isolated parcels of public land to

augment the existing parcels that border these Wildlife Habitat Management Areas to provide additional recreational opportunities

We request the public lands within Township 23 – 24 and Range 69 –70 (Muleshoe Flats) remain intact and not be sold, traded and/or exchanged due to the valuable public access these lands provide for hunting opportunities. These lands should be actively managed for the purpose of maintaining and/or enhancing wildlife habitat and existing wildlife populations.

Section 2.16 Special Management Areas, subsection 2.16.3 Management Issues and Concerns: Maintenance of high-value areas is an issue. We recommend the BLM maintain all active Areas of Critical Environmental Concern (ACECs), Special Management Areas, and Recreation Management Areas.

In addition, we wish to nominate a portion of the North Platte River from Pathfinder Dam to Dave Johnston Power Plant as an ACEC due to its fisheries values. We would request the designation be ¼ mile on each side of the River from the high-water mark, and that a controlled surface stipulation be placed within the ACEC designated area.

Also, we wish to nominate the South Big Horns-Red Wall area as an ACEC due to its wildlife crucial winter range value, aesthetic values, and because it contains the Casper Field Office's only curlleaf mountain mahogany. We recommend the ACEC designation include a 1 mile buffer around the curlleaf mountain mahogany vegetative community, appropriate livestock grazing management to eliminate competition with wildlife, and a no surface occupancy stipulation be placed within the ACEC designation.

Section 2.17.3 Management Issues and Concerns, subsection 2.17.3.1 Animals: We recommend the BLM incorporate the following list of sensitive species into the RMP, in addition to the current lists.

NATIVE SPECIES STATUS (NSS) OF FISH AND AMPHIBIAN SPECIES NATIVE TO WYOMING

	HABITAT DECLINING OR VULNERABLE	HABITAT STABLE	HABITAT INCREASING
RARE Populations are physically isolated and/or [illegible]	NSS1 Hornyhead chub Sturgeon chub Suckermouth minnow Western Silvery minnow	NSS2 Plains topminnow	

[illegible]	**NSS3** Black bullhead Common shiner Flathead chub Lake chub Mountain sucker Plains minnow	**NSS4** Bigmouth shiner Central stoneroller Channel catfish Iowa darter Longnose sucker Quillback River carpsucker Shorthead redhorse	Stonecat *Boreal chorus frog* *Bullfrog* *Great Basin spadefoot* *Great Plains toad* *Leopard frog* *Plains spadefoot* *Tiger salamander* *Woodhouse toad*	**NSS5** Creek chub
[illegible]		**NSS6** Brassy minnow Fathead minnow Plains killifish		**NSS7** Johnny darter Longnose dace Red shiner Sand shiner White sucker

DEFINITIONS (Applies only to fish and amphibians)

Status 1 Species - Populations are physically isolated and/or exist at extremely low densities throughout range. Habitats are declining or vulnerable. Extirpation appears possible. The Wyoming Game and Fish Commission mitigation category for Status 1 species is "Vital". The mitigation objective for this resource category is to realize "no loss of habitat function". Under these guidelines, it will be very important that the project be conducted in a manner that avoids alteration of habitat function.

Status 2 Species - Populations are physically isolated and/or exist at extremely low densities throughout range. Habitat conditions appear to be stable. The Wyoming Game and Fish Commission mitigation category for Status 2 species is also "Vital". The mitigation objective for this resource category is to realize "no loss of habitat function". Under these guidelines, it will be very important that the project be conducted in a manner that avoids alteration of habitat function.

Status 3 Species - Populations are widely distributed throughout its native range and appear stable. However, habitats are declining or vulnerable. The Wyoming Game and Fish Commission mitigation category for Status 3 species is "High". The mitigation objective for this resource category is to realize "no net loss of habitat function within the biological community which encompasses the project site". Under these guidelines, it will be important that the project be conducted in a manner that avoids the impact, enhances similar habitat or results in the creation of an equal amount of similarly valued fishery habitat.

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Status 4-7 Species - Populations are widely distributed throughout native range and are stable or expanding. Habitats are also stable. There is no special concern for these species.

Section 2.18 Transportation and Access, subsection 2.18.3 Management Issues and Concerns: Road management is both a management concern and an opportunity. We recommend the BLM consider the following: not create any new roads within crucial big game habitats, remove the "necessary tasks" statement (i.e., may go off-road to retrieve big game), maintain all public fishing access area roads a minimum of 2 times per year (includes borrow pits, culverts, crossings, etc.), develop erosion control measures when constructing new roads and/or maintaining existing roads, control non-native, invasive plant species along existing and/or new roads, evaluate existing roads to determine impacts to crucial and important wildlife habitats, close and rehabilitate unsuitable roads, and not permit construction of new roads in floodplains.

Section 2.19 Vegetative Resources, subsection 2.19.3 Management Issues and Concerns: Aspen management is of high concern. We recommend the BLM add a section to include aspen management. This vegetative resource is valuable to fish and wildlife, the watershed, and hydrologic functions. Aspen inventories should be promoted and on a regular basis, using adequate sampling methodologies. We request the BLM actively manage aspen stands to increase the amount of aspen acres by 80 percent by the year 2010, treat a minimum of 400 acres of aspen and/or potential aspen sites every 3 years, and conduct monitoring strategies to measure success of the treatments.

Section 2.19 Vegetative Resources, subsection 2.19.3 Management Issues and Concerns: Vegetation management is an issue. We recommend the BLM actively restore vegetation in those areas where past management activities have removed native vegetation (i.e., big sagebrush spray areas, wildfires, disturbed areas, etc.). We recommend the BLM actively manage big sagebrush/grassland communities to move 30 percent of this community toward Potential Natural Community by the year 2010, with an emphasis on the watershed level.

Section 2.19 Vegetative Resources, subsection 2.19.3.2 Riparian and Wetland Communities: Riparian habitat is a major concern. We request the BLM change riparian area management designations from Proper Functioning Condition to Potential Natural Community. This change in management would remove some, if not all, of the subjectivity that currently occurs within the Proper Functioning Condition rating system.

We request 95 percent of riparian areas within the Casper Field Office planning area meet Potential Natural Community by the year 2015. This would require monitoring progress on WGFD priority areas every 3 years in cooperation with WGFD personnel and permittees, using collaboratively developed processes. We recommend utilization levels on preferred herbaceous species not exceed 40 percent during the growing season (hot season), and utilization levels on preferred browse (woody) species not exceed 30 percent leader use annually. Stubble height on upland areas at the end of the grazing season should be a minimum of 6 inches, and greater than 6 inches along streams with critical fisheries habitats and/or easily eroded streambanks. Placement of livestock salt and mineral facilities should be a minimum of ½ mile from a water source and/or riparian area.

Section 2.19 Vegetative Resources, subsection 2.19.3.4 Invasive, Non-native Plant Species: We recommend the BLM change the designation from noxious weed to non-native, invasive plant species. This will facilitate management of those plant species not listed on the state noxious weed list, would allow more use of chemicals on a large scale, and would treat non-native, invasive plant species within big sagebrush/grassland, mountain shrub, grassland and riparian/wetland vegetative communities.

Section 2.21 Water Resources, subsection 2.21.3 Management Issues and Concerns: Reservoir management is an issue. We request the BLM evaluate each reservoir for multiple uses, including fisheries, waterfowl, wildlife, and livestock grazing management. We request the design of these reservoirs be such that the upper areas provide shallow water habitat (maximum of 2 feet deep), which includes emergent vegetation for waterfowl habitat.

Sincerely,

Bill Wichers

BILL WICHERS
DEPUTY DIRECTOR

BW:TC:VS:as

03 NOV 20 AM 10:38

DAVE FREUDENTHAL
GOVERNOR

THE STATE OF WYOMING

STATE CAPITOL
CHEYENNE, WY 82002

03 NOV 20 AM 10: 38

Office of the Governor

November 19, 2003

Bureau of Land Management
Casper Field Office
Attn: Linda Slone
2987 Prospector Drive
Casper, WY 82604-2968

Re: Management Situation Analysis Summary
State Identifier Number: 2003-085

Dear Ms. Slone:

This office has reviewed the referenced Management Situation Analysis Summary on behalf of the State of Wyoming. This Office also distributed the referenced document to all affected state agencies for their review, in accordance with State Clearinghouse procedures. Attached are comments from the Wyoming Game and Fish Department.

This office asks that the attached State agency comments receive your due consideration.

Thank you for the opportunity to comment.

Sincerely,

Tracy Williams

Tracy J. Williams
Policy Analyst

TJW
Enclosures: (1)

Wyoming Game and Fish Department

TTY: 777-7860 PHONE: (307) 777-7434 FAX: (307) 632-3909

WYOMING FARM BUREAU FEDERATION
P.O. Box 1348
Laramie, Wyoming 82073 • (307) 745-4835

03 NOV 21 AM 10: 51

November 19, 2003

Casper Field Office, BLM
2987 Prospector Drive
Casper, WY 82604

The Wyoming Farm Bureau would like to submit the following comments for the scoping process on the BLM's Casper RMP for the Platte River Resource Area. The Wyoming Farm Bureau Federation is a general agricultural organization which represents agricultural producers throughout the state of Wyoming. Many of our members utilize lands within the Platte River RM Area for part of their operations.

Agricultural producers have expressed concern over problems associated with working with the BLM for public access management. Because of the nature of private and public lands in some of the RMP area, problems have occurred because of misunderstandings by the public as to which lands are public and which are private. There are several management options which could help mitigate these misunderstandings. In areas where land ownership can be adjusted, the BLM needs to aggressively pursue these options if there is a willingness by the landowner to trade or purchase BLM lands. In the past, some of the proposals have languished and the landowner eventually concluded the Agency is not serious about a land trade or sale. We feel the Agency should look at all possible ways to streamline this process so that it can occur in a timely manner.

Members have suggested that too much emphasis has been given to wildlife management and that more of a balance should occur in those areas where there are wildlife and livestock issues. Many livestock producers have had to change their grazing practices in order to accommodate wildlife, but the reverse hardly ever seems to occur. Many times the Agency has been forced to accommodate more wildlife than necessary because of lack of management by the game management entity.

Livestock grazing on federal lands is an important component of food production in the US. We feel that many livestock producers cannot utilize their leases or permits because of impediments created by Agency rules. An effort needs to be made by the Agency to become livestock friendly so that necessary changes to livestock operations can occur without the Agency being an impediment. Historic numbers of livestock for the state of Wyoming have shown a large decline in livestock numbers on public lands. The Agency should seek to reverse this trend and look at ways to accommodate and enhance food production on those lands.

We are concerned about the impact of invasive non-native species through out the state of Wyoming. The Agency should aggressively treat weed infestations with the most cost effective means at their disposal. We recognize that chemical treatments cause concern with some segments of the public, but if effective chemical treatments are precluded then future impacts on federal and private land will be extensive and treatment costs will be significantly increased.

In Wyoming call 1-800-442-8325

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Threatened, Endangered, Candidate, and Sensitive species have the biggest impact on multiple use of BLM lands. We feel that lack of information relative to habitat needs of certain species have lead the Agency to restrict other economic uses on federal lands in order to "be safe" even if the Agency is unsure. We feel the Agency should be more aggressive in defending the multiple use mandate where habitat needs for listed or candidate and sensitive species is incomplete or lacking.

Water quality issues should be closely coordinated with the state of Wyoming, who has jurisdiction over these resources. Inventories and assessments of water bodies on BLM land should occur in accordance with state of Wyoming criteria. Water quality assessments and assessments of water bodies should be done by multi-disciplined teams of Agency employees which should always include range conservationists and where possible private livestock producers.

Air quality issues should also be closely coordinated with the state of Wyoming. Efforts to enhance range conditions by prescribed fires should be utilized as much as possible and the Agency needs to examine it's prescribed fire protocols to ensure they don't serve as an impediment to fire use. Smoke emissions from prescribed fires should also be considered in the context of fire prevention. In other words, if prescribed burns will reduce fire hazards, then a prescribed fire for that purpose should receive a second look if there are regional haze considerations. If a prescribed fire is not carried out because of regional haze limitations and later that same area is ignited by a natural event, then haze impacts could be greater than if the burn had been allowed to proceed. Flexibility is needed to provide for effective use of fire for resource protection and enhancement.

In areas where mineral development occurs on split estate lands, we encourage the Agency to ensure proper protections have been required of the mineral developer for the surface estate. Where reduction in surface values occur some mechanism for mitigation should be considered.

We would encourage resource use of the federal lands and encourage the Agency to work to help livestock producers utilize these lands.

Thank you for this opportunity to provide input.

Sincerely,

Ken Hamilton

Ken Hamilton
Administrative Assistant

cc NER in Platte, Goshen, Natrona and Converse
Board