

Comment AE152: Pronghorn surveys are being conducted following the protocol currently used by WGFD. Text (page B-31) has been changed accordingly.

Comment AE153: Pellet group counts normally do not provide reasonable estimates of population size and density. Pellet group densities have been used successfully to monitor change in use within an area or between areas with similar habitats. However, if turbines repel most pronghorns but attract a few that consistently remain near turbines, the analysis of displacement impacts will be confounded. However, observations of individual pronghorns by monitoring crews should detect such an anomaly.

The principal biologists conducting the pellet and pronghorn counts should remain the same throughout the project. However, technicians assisting with the counts may change. A consistent training and quality assurance program is in place to assure that the resulting data are comparable from year to year.

Pellet group counts are being used to detect major shifts in pronghorn use in response to the construction of the Windplant. The assumptions associated with the technique (Collins and Urness 1981; Leopold, et al. 1984; Neff 1968; Rowland et al. 1984; and White 1992) were evaluated prior to the selection of this technique.

Comment AE154: The protocol, as modified, should still be adequate to detect significant mortality. The level of effort contained in the protocol is a preliminary estimate of the effort considered adequate to detect significant mortality. However, the actual level of effort will be determined in consultation with the technical committee.

Comment AE155: Within-season variability would be incorporated into the scavenger trials by conducting the trials over several different days within each season. However, because scavenger trials may actually attract scavengers to the site, within-season replication would not be conducted unless results of initial monitoring suggest that it is necessary.

Comment AE156: The protocol for measuring raptor use is a sample survey of Foote Creek Rim, Simpson Ridge, and the reference area across time and space. The resulting estimates will allow comparisons among locations within each area as well as between impact and reference areas across seasons. The monitoring protocol devotes less time for point counts on Foote Creek Rim (8 hours) than baseline monitoring (18 hours). However, the addition of use surveys on Simpson Ridge results in more time spent in measuring raptor use and making incidental and in-transit observations under the current protocol. Four person-days per week are spent making observations during the migratory/breeding season within the KPPA under the current protocol versus 3 person-days per week during baseline studies.

This sampling effort should be adequate to detect major migration events and should provide an adequate comparison of the average use of observation points and study areas by common species within seasons. With the additional time spent in the KPPA, the monitoring surveys are more likely to detect regional shifts in use or unusual migratory pulses than baseline studies. However, extremely rare events occurring for brief periods of minutes or a few hours would likely require full-time monitoring of study areas

and may be missed by current monitoring sampling intensity. Baseline studies also may have missed such rare events.

Comparisons to the baseline data and other raptor use data can be made by standardizing data. Estimates of mean minutes of bird use per unit of time can be directly compared, even though the duration of observations may differ among areas or studies.

Comment AE157: The appropriateness of the reference area was evaluated during the first breeding season and it was replaced with a reference area in the Laramie Range. Several possible reference areas were considered prior to selecting the Shirley Mountain area. These included Fort Steele Breaks, Saint Mary's Ridge (near Walcott), Brown's Canyon Rim (near Rawlins), the Metfuel project area (in the Hanna Basin), the Red Rim RCA, Sheep Rock (near Saratoga), and numerous ridges within the Shirley Basin. Criteria used to select the area were:

- presence of ridges or topographic high points,
- proximity to a broad riparian area similar to Rock Creek, and
- existence of a large nesting population of raptors.

Fort Steele Breaks and Sheep Rock were rejected because there are not sufficient nesting raptors in these areas. Red Rim has seen a marked decline in nesting raptors in recent years, and is substantially more arid than the project area. Saint Mary's Ridge, Brown's Canyon Rim, and the Shirley Basin do not have sufficient riparian habitat. The Metfuel project area is too close to Simpson Ridge to enable a nesting survey area with a 10-mile buffer without overlapping the Simpson Ridge nesting survey buffer. The area east of the Snowy Range in the Centennial Valley area was also examined, but no suitable ridges could be found. WGFD was consulted to help select a reference area; however, no alternative reference areas were recommended.

Comment AE158: The site receives little use by passerines during winter and mortality during this period is expected to be unmeasurable. Passerine mortality during the migratory period may be higher than during the breeding season, but the impact to local breeding populations is expected to be minor. The levels of passerine mortality during the nonbreeding season (i.e., winter and migratory periods) would be estimated by the carcass surveys. It was agreed by the WGFD that passerine mortality was of greatest concern during the breeding season. Therefore, the monitoring protocol was designed to focus attention on passerines during this period. If substantial mortality is documented, more intensive studies may be required.

Comment AE159: During development of the monitoring protocol for passerines, it was agreed that modification of the baseline studies was appropriate (personal communication, March 29, 1995, with Steve Tessman, WGFD). The baseline data allow inference concerning passerine use on the edges of the rim. The monitoring protocol is intended to enable inference about use of the entire rim. Comparison can be made provided that the different areas of inference are considered.

Comment AE160: Mountain plovers have not yet been located in the Simpson Ridge area, but have been observed in the new (Laramie Range) reference area. Using the current protocols, it would be difficult to detect subtle changes in habitat effectiveness due to

Windplant development. However, because mountain plover surveys would be conducted annually, substantial impacts such as displacement or decline in reproductive success would be detected, and it may be possible to infer the causes of the impacts (i.e., if impacts were due to Windplant development or to natural causes). Because mountain plovers occur in the Laramie Range reference area, it may be possible to make comparisons of parameters such as fledgling success, nest occupancy rate, hatching success, and use patterns.

Comment AE161: The lagomorph survey of the reference area would be replicated for a minimum of three survey dates. Text (page B-39) has been modified.

Comment AE162: See Section 8.2.3.2 in the FEIS.

Comment AE163: The text has been modified accordingly.

Comment AE164: The text has been modified accordingly.

AG. Wyoming Department of Environmental Quality



JIM GERINGER
GOVERNOR

Department of Environmental Quality

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

ADMINISTRATION (307) 777-7758 FAX 777-7682	ABANDONED MINES (307) 777-8145 FAX 834-0199	AIR QUALITY (307) 777-7291 FAX 777-7682	INDUSTRIAL SITING (307) 777-7368 FAX 777-4937	LAND QUALITY (307) 777-7758 FAX 834-0799	SOLID & HAZARDOUS WASTE (307) 777-7752 FAX 777-8873	WATER QUALITY (307) 777-7791 FAX 777-8873
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Memorandum

To: Julie Hamilton, Wyoming State Clearinghouse
From: Gary G. Beach, Division Administrator *GB*
Date: March 3, 1995
Subject: Kenetech project, Clearinghouse #94-010



This project will be permitted through the Industrial Siting Council per application files 2-23-95 with this office. Any issues that the Division feels may need addressing will be handled by the permit.

AF. Wyoming State Land and Farm Loan Office



Wyoming State Land and Farm Loan Office

122 WEST 25TH STREET, HERSCHLER BUILDING
CHEYENNE, WYOMING 82002-0600
PHONE 307/777-7331
FAX 307/777-5400

March 9, 1995

Wyoming State Clearinghouse
Attn: Julie Hamilton
Office of the Governor
State Capitol
Cheyenne, WY 82002



Re: State ID # 94-010
Kenetech/PacificCorp Windpower Project EIS

Dear Ms. Hamilton:

On December 1, 1994, the Board of Land Commissioners approved an easement application from Kenetech Windpower, Inc. for a wind powered electricity generating facility to be located on approximately 6,080 acres of state trust land in Carbon County. The easement document was signed by Governor Geringer with an effective date of January 5, 1995.

Sincerely,

Paul R. Cleary
Paul R. Cleary
Deputy Director

AH. KENETECH Windpower, Inc.

KENETECH WINDPOWER

KENETECH WINDPOWER, INC.
500 Sansome Street
San Francisco, CA 94111
415-398-3025
FAX: 415-398-8102

March 27, 1995

U.S. Bureau of Land Management
Rawlins District
Mr. Walt George
P.O. Box 670
Rawlins, WY 82301

Re: Draft EIS, Wyoming Windplant No. 1

Dear Mr. George:

KENETECH Windpower, Inc. wishes to make the following comments regarding the above Draft EIS:

1. Section 2.1.11 Project-wide Mitigation Measures: Page 2.29, 4th paragraph, right column: We request that the second sentence be amended to read:
"Modification of prior phases would not include replacement of capital items (e.g., rotors, towers, or nacelles) but would be limited to relocation with the Project site of turbines associated with disproportionately high levels of avian mortality, painting of turbine rotors or other measures not requiring capital expenditure."
2. We request that an additional sentence be added to the end of the final paragraph in Section 4.2.3.3 Legislation Relating to Avian Mortality:
"This EIS evaluates the full range of estimated avian mortalities and impacts (other than those related to other protected wildlife species) which might be covered by such permits or stipulations, if any, for the first phase of the project."
3. Section 4.3 Cultural and Historic Resources: A listing of the BLM contacts and consultations with Native American tribes would provide useful documentation to establish the extent of consultations with the tribes.
4. Section 5.1.3.12 Birds: The last sentence in the first paragraph of this section should be amended to clarify that ordinary operation of already-constructed Windplant



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cont.

facilities will not be required to be curtailed or modified in the event an eagle or falcon builds and uses an active nest within 1.0 mile of project facilities. A similar clarification should be made in all similar avian mitigation statements.

5 Please clarify that Table 2.11 and Chapter 5 correlate with one another and that they each contain all of the project mitigations discussed in the EIS.

As the project applicant, KENETECH wishes to commend the Bureau of Land Management and its consultant, Mariah Associates, for the preparation of a thorough and highly-detailed Draft EIS. We appreciate this opportunity to comment on it.

Sincerely,

Steven P. Steinhour
Director, Lands and Permits

AI. Frank C. and Lois L. Layton

March 25, 1995

Mr. Wall George
Bureau of Land Management District Office
Post Office Box 670
Rawlins, Wyoming 82301

Dear Mr. George:

We are writing this letter to express some of our strong concerns with the Draft Environmental Impact Statement on the Kenetech/PacificCorp Windpower Project in Carbon County, Wyoming.

The Foot Creek Rim forms a HIGH rim with great wind currents and it overlooks the stream far below with its excellent riparian habitat. This stream area with its thick vegetative growth and water is sort of an oasis in an otherwise arid region and affords an ideal place to concentrate many prey species. In turn this concentrates a large number of raptors on Foot Creek Rim. The excellent and constant wind currents makes this such an unusually good place to soar and circle with a minimum of energy expended (a vitally important condition for the survival of these great birds.)

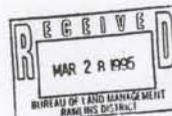
Also, we would like to call to your attention that the construction on Foot Creek Rim would undoubtedly eliminate the mountain plover that nest there and this rare species is expected to be placed on the Endangered Species List by the end of this year.

As we consider the very critical and irreversible damage that will result from the proposed construction on Foot Creek Rim at this time, we strongly urge you to issue a permit for a less critical wildlife area (such as Simpson Ridge) and REQUIRE that a well developed, intense research plan be incorporated into this development. Then, after the studies are made and results evaluated, we can determine what steps must be taken to make Foot Creek Rim much less destructive or if using a different sight is the only solution.

Thank you for this opportunity to include our comments and concerns in this Environmental Impact Statement.

Sincerely,

Frank C. Layton
and
Lois L. Layton
Post Office Box 2851
Casper, Wyoming 82602



Comment AH1: See Section 2.1.11 in the FEIS.

Comment AH2: Text has been modified as requested.

Comment AH3: Table 6.1 (Pages 6-2 and 6-3) have been modified as suggested.

Comment AH4: Text has been modified as requested.

Comment AH5: Table 2.11 and Chapter 5.0 have been modified so that they correlate with one another and each contains all mitigation measures discussed in the DEIS and FEIS.

Comment AI1: See Sections 8.2.1 and 8.2.3 in the FEIS.

AJ. Wyoming Outdoor Council

FROM :

PHONE NO. :

PO1



**WYOMING
OUTDOOR
COUNCIL**
1967-1992

25
March 28, 1995



Post-Net Fax Net	7871	Date	2/28/95
To	BLM-Rawlins Dist	From	Tom Throop
City		Co	WY Outdoor Council
Phone		Phone	307-322-7031
Fax	307-328-1471	Fax	307-322-7031

Walter E. George, Project Leader
Kenetech Wind Energy Project DEIS
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301

Re: Kenetech Windpower Inc. Wind Energy Project DEIS

Dear Mr. George,

The following is submitted in response to your invitation to participate in the environmental review process mandated by NEPA for the Kenetech Windpower Inc. Wind Energy Project.

The Wyoming Outdoor Council supports the project as revised. We believe Kenetech has worked hard to explain its proposed project to the public, to seek substantive comment on its plans and to change the project to address concerns raised.

While all types of energy production have environmental impacts, we prefer the kind of renewable energy production represented by the Kenetech proposal over non-renewable fossil fuel energy production typically seen in Wyoming.

We believe that appropriate and reasonable mitigation measures exist in the final project design. It is our view that the project represents an acceptable level of risk to Wyoming's environment. We commend Kenetech for truly listening to public concerns and making changes in their project design to address what they heard from the public and during the NEPA process.

The Wyoming Outdoor Council sincerely hopes that renewable energy projects like Kenetech's proposed project represent the future of Wyoming's energy development response to the growing needs of this region and the nation.

Respectfully submitted,
Tom Throop
Tom Throop
Executive Director

25 years of Wyoming Conservation Action

201 Main

Lander, Wyoming 82520

(307) 322-7033



Comment AK1: See Sections 8.2.3.3 and 8.2.5 in the FEIS.

Comment AK2: The visual impacts analysis in the DEIS shows that visual impacts of Windplant development on Foote Creek Rim would be a significant adverse impact (pursuant to the GDR RMP). The utility contracts currently in place for Phase I require wind speeds comparable to those on Foote Creek Rim, which are not known to exist elsewhere in southern Wyoming (see Section 8.2.1.1 in the FEIS). However, the significant visual impacts will be given considerable weight during BLM's decision-making process.

AK. Barbara Parsons

Subject: Kenetech Wind Power-Preliminary EIS
General Comments by: Barbara Parsons

Wind power is a desirable source of electricity. It is vastly preferable to hydro power and coal fired generating plants. Even so, like all of man's activities, it has an impact on other resources.

1 As this project goes forth, there should be on going mitigation studies and plans regarding the impacts on wildlife, especially raptors. Kenetech should work closely with agency biologists to lessen those impacts.

2 Members of the public have expressed conflicting feelings regarding the visual aesthetics of the wind turbines. Some think they will be beautiful and some think they will be an eyesore on an otherwise wild landscape. (Perhaps Kenetech should reconsider placing the turbines planned for the ridge above Arlington, since they will be extremely visible.)



AL. Friends of the Bow, Biodiversity Associates

March 28, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, WY 82301

Attn: Walter E. George, Project Leader

Re: Comments on the DEIS for the Kenetech Windpower Project and Freedom of Information Act request

The following comments are submitted on behalf of Friends of the Bow, Biodiversity Associates and the signatories in regards to the BLM's draft Environmental Impact Statement ("EIS") on the proposed Kenetech/IdacifCorp (the "applicant" or "permittee") Windpower Project ("the project").

OVERVIEW

Although we want to support well thought-out alternative energy sources, this project—with so little on-the-ground information—calls out for a go-slow approach. And while new wind energy technology does appear to offer an exciting opportunity, because this is the first of possibly many such windplants in Wyoming and the region, and because the project would be so expansive, there is a responsibility to do it right and with a view to the long-term.

As Wyoming residents we realize that what happens in Carbon County could set a state or national precedent. Problems like the loss of salmon runs and the expensive efforts currently underway to attempt to restore them in the Pacific Northwest and Idaho must be avoided. Recall it was originally thought that hydropower would supply energy without any negative effects. We now know this was wrong and we may now lose the salmon as a result. We'd like to avoid the same problems with windpower regarding raptors.

1 As proposed, this project amounts to a huge experiment with the nation's precious natural heritage, one with no obvious end, even if the "experiment" fails in regard to raptor mortality. Monitoring is not synonymous with protection and it will not eliminate negative effects if they occur. Merely noting problems is not the same as fixing them or preventing them, yet this appears to be the approach adopted by BLM. This is both imprudent and a breach of the public trust.

2 Similarly, the DEIS appears to assume that any adverse affect can be mitigated. Yet this is demonstrated nowhere in the document, nor are any supporting references offered.

3 The BLM should not be experimenting with wildlife on such a massive level. If the proposed project is intended to be an experiment (as readers of the DEIS are led to believe), then it should be designed as such. A variety of turbine designs, turbine towers, locations, etc. should be investigated, and the size of the



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cont. 4 project (i.e., number of turbines) should be the smallest possible to get a statistically valid sample. In subsequent environmental documents, we ask the BLM to (1) explicitly deal with the potential of violating the federal Eagle Protection Act, Migratory Bird Treaty Act, and Endangered Species Act (Merely concluding that these laws will be violated is not sufficient. How can a project be approved which will knowingly break the law?); (2) seriously evaluate alternative sites and turbine designs (in a supplemental DEIS); (3) scale down the first phase of the project and (4) add very clear criteria for shutting it down if raptor concerns are born out—regardless of location. Below we provide more detailed comments.

SPECIFIC CONCERNS

1. The proposed project would kill eagles, and therefore cannot be implemented without violating the Bald and Golden Eagle Protection Act.

The DEIS acknowledges that, despite all possible mitigation measures, the proposed windfarm would kill an estimated 2.7 to 9.0 Golden Eagles each year. DEIS at 4-48. This may be a significant underestimate in light of the high density of Golden Eagle nests in the project area and the use of the area for foraging. In addition, Bald Eagles migrate through the project area each year and may also be subject to injury and mortality. These threats to eagles also threaten violation of Federal law.

Specifically, the Bald and Golden Eagle Protection Act states:

8 "Whoever, within the United States or any place subject to the jurisdiction thereof, without being permitted so to do ..., shall knowingly ... take ... at any time or in any manner, any bald eagle ... or any golden eagle ... shall be fined not more than \$5,000 or imprisoned not more than one year or both...."

16 USC § 668 (emphasis added). The Act also provides that "each taking ... shall constitute a separate violation..." and that each subsequent violation shall be subject to fines of up to \$10,000 or imprisonment for up to two years, or both. Id.

The Act defines "take" in the broadest of terms: to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." 16 USC § 668c (emphasis added). Thus, in light of the DEIS's acknowledgements that 3-9 eagles, perhaps more, will be killed each year, the proposed windfarm would cause "takes" within the meaning of the Act. Furthermore, each "take" caused by the proposed windfarm would constitute a separate violation of the Act. Note also that "[T]here are no regulatory provisions for incidental takings [in the BEPA] as there are under the ESA or MBTA." DEIS at 4-45.

The BLM cannot authorize a project that would clearly violate Federal law,

1 Mike Morrison at the University of Arizona would be helpful in determining the appropriate number of turbines to be statistically valid. As of the date of these comments, Mr. Morrison could not, in the short time provided, give a definitive answer. Personal Conversation with Mike Morrison, March 28, 1995.

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cont. create and implement a conservation plan that specifies the impact to species and what steps will be taken to monitor, minimize, and mitigate such impacts, ensures that adequate funding exists for the conservation plan, and specifies what procedures will be used to deal with unforeseen circumstances. 50 CFR 13.21(b) and 50 CFR 17.22(b)(1).

These are tough measures implemented to protect the nation's natural heritage. We do not believe that the project, as proposed, can meet the high standard set by these regulations. Impacts to eagles were discussed above, and the DEIS makes conclusions for Peregrine Falcons which are similar: "The proposed Windplant may be the largest source of direct mortality to peregrine falcons in the area; any mortality to this species would be considered a significant impact." DEIS at 4-67.

10 The DEIS estimates impacts to Candidate Species Mountain Plover and Ferruginous hawks, and they appear significant, especially for the Plover. The Foote Creek Rim portion of the proposed project would appear to be disastrous for Plovers during both Phase I and full development: "potential nesting habitat lost during Phase I would be approximately 1032 ac (21% of the Foote Creek Rim area) for the LOP; full development of the rim would impact approximately... 3,022 ac (60%) for the LOP. This loss of habitat may be even greater if snowdrifts caused by Windplant facilities persist throughout the spring..." Shockingly, the DEIS does not even attempt to deal with this loss of habitat to a species for which "any mortality of this rare species would be considered significant" and "[l]oss of habitat in the breeding range is suspected as one of the primary causes for long-term population declines." DEIS at 4-67 and 4-68, respectively. The so-called mitigation presented on page 2-43 of the DEIS is unsubstantial and totally avoids the issue of habitat loss even though the birds "nest on top of Foote Creek Rim where turbines would be placed." DEIS at 4-57. This is a fatal deficiency in the current DEIS.

In the interest of brevity, we will not restate the information in the DEIS regarding Ferruginous Hawks except to point out that subsequent documents must explicitly deal with the fact that "cumulative impacts to the regional ferruginous hawk population would be potentially significant due to direct mortality associated with the proposed WTGs." DEIS at 4-69.

3. The BLM must address the uncertainties regarding impacts to raptors.

The Council on Environmental Quality (CEQ) regulations at 40 CFR Parts 1500-1508 state:

11 "(a) If ... incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the [EIS]."

"(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are

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The estimated takes in one year alone could subject the permittee (and, we believe, the BLM decisionmaker) to nearly \$100,000 in fines each year and up to 18 years in prison. Takes in subsequent years would bring still higher penalties.

The impacts to eagles and other raptors is our greatest concern about the proposal. There are several reasons for our elevated concerns about the impacts to these species.

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cont. First, eagles and other raptors are endemically rare, slowly reproducing, and are already subject to many sources of natural and unnatural mortality (e.g., powerlines, poaching, illegal poisoning, bio-accumulation of toxic chemicals, etc.) which already seriously limit their populations. Further mortality, even of a limited nature, can have serious consequences for the larger populations, especially where local populations are sustained without significant interaction with the larger meta-population.

Second, eagles and other raptors are at the top of the food chain, so small changes in their populations may have disproportionately greater changes on the underlying food chain (e.g., rodents). This is particularly true here in the west where most other large predatory animals have been removed (or widely suppressed) from the ecosystem.

And third, these birds are viewed by the public as being among the most noble, majestic, and free of all animals in nature. Perhaps this is why an eagle was chosen to be the symbol of our country. The killing of these beautiful and vulnerable animals must then be viewed as something to be avoided at all costs -- if for no other reason than to satisfy the public's desire that they be protected as a representative of something grander. This, after all, was partly why the Eagle Protection Act was originally created. "Whereas...the bald eagle is no longer a mere bird of biological interest but a symbol of the American ideals of freedom." 16 USC § 668(note).

The DEIS recognizes the vulnerability of eagles and their importance: "Mortality of even one bald eagle would be a significant adverse impact... Cumulative impacts to the regional bald eagle population may be potentially significant." DEIS at 4-66. Yet nowhere in the DEIS does it state how this will be prevented, only that it will be monitored.

For these reasons, we will not accept any BLM decision that will violate the Bald and Golden Eagle Protection Act, and we will take whatever action is necessary to fully enforce this law.

2. The proposed project may result in violations of the Endangered Species Act or in increased mortality and population declines of C2 candidate species.

9 Bald Eagles, Peregrine Falcons (Endangered), Mountain Plovers, and Ferruginous Hawks (C2) are known to be in the project area and cannot be killed without a permit from the US Fish and Wildlife Service. A permit for incidental taking of T&E species must meet strict criteria. There must be a valid justification for the permit, the action must not threaten the population under consideration, and the taking must not appreciably reduce the likelihood of the survival and recovery of the species in the wild. Furthermore, the applicant [Kenetech] must

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exorbitant or the means to obtain it are not known, the agency shall include within the [EIS]: (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts...; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts...; and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community."

40 CFR § 1502.22 (emphasis added). These requirements also applied to the DEIS. See, e.g., 40 CFR § 1502.9(a) (draft EIS's must fulfill and satisfy to the fullest extent possible the requirements established for final EIS's).

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cont. Clearly, a firm understanding of raptor impacts (immediate and long-term) is essential to the BLM's ultimate decision on this proposal. Perhaps this is why the most detailed section of the DEIS deals with raptors. Furthermore, the DEIS acknowledges there are uncertainties about impacts to raptors -- the primary and most troubling "irreversible and irretrievable commitment of resources" associated with the proposal: "The proposed Windplant would be the first industrial scale windpower facility in Wyoming, and potential raptor mortality is unknown." DEIS at 4-97, 4-46, respectively. Furthermore, "many years of additional research will be required before the relationship of WTC characteristics and raptor mortality can be conclusively determined," and "the level at which mortalities are considered significant is subjective." the proposed action would approve the construction of 201 turbines. DEIS at 5-9 and B-10, respectively. See also the attached Casper Star Tribute article (reporting that it is unknown how many raptors observed at proposed site were permanent residents; unknown whether new birds would migrate into the area to replace losses; unknown whether first-year impacts would be representative of long-term impacts, etc.).

Unfortunately, the DEIS fails to address incomplete and unavailable information about raptor impacts in accordance with 40 CFR § 1502.22 (apart from merely mentioning there are unanswered questions). This is unacceptable and must be corrected through circulation of a revised draft EIS.

If the BLM thinks it will be too costly to obtain any of the information needed to address these questions about raptor impacts (or other impacts), then the agency must disclose the estimated cost of obtaining that information and explain why that cost is "exorbitant" in comparison with other expenditures. "Exorbitant" must also be evaluated with respect to the applicant's ability to cover the cost (or any portion of the total cost). If the agency can show that cost is truly exorbitant or that there is no known way of obtaining the information, then the supplemental DEIS must present the discussions, summaries, and analyses required by 40 CFR § 1502.22(b) (e.g., an evaluation of the impacts based upon theoretical approaches or research methods generally accepted in the scientific community). Otherwise, the BLM must obtain the missing information and disclose it in the supplemental DEIS.

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4. The DEIS is contradictory and erroneous.

The most glaring example of this follows from the discussions on raptors referred to above. There are numerous statements in the DEIS demonstrating how little information exists regarding effects on raptor populations and habitat. Yet the DEIS then leaps to the conclusion that "[s]ignificant unavoidable impacts associated with the project would include incidental taking of migratory and/or T&E birds..." DEIS pg 4-97, emphasis added. If the impacts are unknown (see citations in Section 3 above), how can the DEIS conclude that they are incidental? Obviously, the use of "incidental" is incorrect and leads the decision-maker and the public to the wrong conclusion.

The DEIS is also contradictory in its treatment of compliance with wildlife protections laws. The DEIS states that "there are no regulatory provisions for incidental taking" under the HEPA, and that "taking of migratory and/or T&E birds without procurement of permits to allow such takings," yet it goes on to conclude that "project activities would be implemented to assure compliance with federal, state, and local laws..." DEIS at 4-45, 4-97 (emphasis added), and 5-1. Again, both cannot be true.

5. The BLM has failed to independently evaluate the applicant's information.

The CEQ regulations also state:

"If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental impact statement, then the agency should assist the applicant by outlining the types of information required. The agency shall independently evaluate the information submitted and shall be responsible for its accuracy. If the agency chooses to use the information submitted by the applicant in the environmental impact statement, either directly or by reference, then the names of the persons responsible for the independent evaluation shall be included in the list of preparer."

40 CFR § 1506.5(a) (emphasis added). The DEIS states that "[E]ven a few mills of higher cost could render the project uneconomical for utility companies... Kenetech analyzed and rejected various alternative sites in Wyoming based on the wind-resource/cost relationships described above." DEIS at 2-33 to 2-35. It appears that the BLM simply took the applicant's word that these areas were the only areas suitable for a viable windpower farm. This is not a rigorous analysis of alternatives, and there is evidence that it is incorrect or at least open for debate.

For example, it appears that other interests believe suitable sites exist elsewhere: "The only reasonably foreseeable [future] project in the area is the possible development of a windfarm near Medicine Bow," and "the proposed Medicine Bow windfarm would constitute another potential source for direct mortality, as well as displacement." DEIS at 4-3, 4-55.

To determine the extent to which the BLM complied with 40 CFR § 1506.5(a),

also *Sierra Club v. Costle*, 657 F.2d 298, 334 (D.C. Cir. 1981) ("The safety valves in the use of ... sophisticated methodology[ies] are the requirement of public exposure of the assumptions and data incorporated into the analysis and the acceptance and consideration of public comment, the admission of uncertainties..., and the insistence that ultimate responsibility for the policy decision remains with the agency rather than the computer.")

The BLM has exposed little or none of the underlying data, assumptions, methodologies, or uncertainties about the evaluation of potential windfarm sites. The public has been wrongly precluded from commenting on the key part of the analysis,⁴ and the agency is expecting the public to simply accept, without benefit of supporting data, the assertion that the proposed site is the only viable site. This is a fatal defect in the NEPA process. A supplemental draft EIS must be prepared and circulated to provide the public and other interested agencies with a meaningful opportunity to comment on the evaluation of windpower site potential and the tradeoffs available between wildlife protection and power generation, etc.

7. The DEIS fails to give rigorous and objective treatment to all practicable alternatives.

A. Other sites.

As discussed above, the DEIS did present virtually no data or studies to show whether any other site was economically viable or more environmentally preferred (and another entity appears to believe a windplant could be viable near Medicine Bow). The agency simply took the applicant's word for it. This is a fatal defect in the analysis. For example, the proposed location in Wyoming, and Wyoming overall, is not the only place in the region with wind; and there are power-grid connections throughout all of these states that could accommodate a windpower plant.

After the BLM obtains the applicant's information on site-potential, independently evaluates that information and ensures its accuracy, discloses that information (along with the data and methodologies used to obtain it) to the public

⁴ The evaluation of site potential is the key issue here because the primary decision criterion is: which site will provide the most windpower with the lowest impact to the environment (e.g., raptor mortality)? Economic viability and environmental impact both depend intimately and (almost) exclusively on site. The present site has high windpower potential, but also has high potential for raptor disruption and mortality. Other sites, with possibly different windpower potential, might also have fewer raptors/nests and would therefore have less environmental impact, cause fewer deaths of threatened species, and result in fewer violations of the Eagle Protection Act and Migratory Bird Treaty Act. The public has no way of knowing from the current DEIS.

we are hereby requesting the following documents pursuant to the Freedom of Information Act, 5 USC § 552, and NEPA, 40 CFR § 1506.6(f):

any and all information submitted by the applicant regarding the evaluation of various potential sites throughout the region for their economic viability for a windfarm, and

any and all documents containing or describing the BLM's "independent evaluation" of this information submitted by the applicant.²

If the BLM has not requested this information from the applicant and/or independently evaluated that information for its accuracy, we are asking the a supplemental DEIS be prepared and circulated to disclose: (i) the applicant's information (or a summary of it), and (ii) the BLM's evaluation of that information (or a discussion of that evaluation together with a summary of findings).

6. The BLM has failed to disclose key parts of the analysis for public review and comment.

We assume that some regional wind condition data, electricity market data, and computer models (e.g., econometric) or methodologies were used to evaluate the economic viability of potential windfarm sites throughout the region. If so, the BLM has a legal obligation to expose the methodology, assumptions, input and output data, and uncertainties to the public.³ See, e.g., *NRDC v. Herrington*, 768 F.2d 1355, 1385 (D.C. Cir 1985) ("An agency may utilize predictive model so long as it explains the assumptions and methodology it used in preparing the model. If the model is challenged, the agency must provide a full analytic defense"); see

² We believe we are entitled to a fee waiver under the criteria set forth by FOIA (information will contribute to the public understanding, and the requestors have no commercial interest in the materials). We also believe that the requested documents may involve less than 100 pages and would take less than 2 hours to assemble and reproduce. In such cases, the FOIA provides that the documents must be provided without charge regardless of the requestor's qualifications for a fee waiver. 5 USC § 552(a)(4)(A)(iv)(II). Finally, these requested documents underlie a NEPA document; 40 CFR § 1506.6(f) provides that these materials "shall be provided to the public without charge to the extent practicable..." If the BLM does not believe we are entitled to a fee waiver for this request, please contact us and explain (i) why you believe we are not entitled to a waiver, (ii) what information you require to show that we are entitled to a waiver, and (iii) the estimated cost - limited to "reasonable standard charges" (5 USC § 552(a)(4)(A)(iii)) - of assembling and reproducing the documents we have requested.

³ If, on the other hand, no such data or computations were used to evaluate site potential, then the BLM has absolutely no basis for dismissing other sites as unviable.

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for review and comment, and provides a "complete analytic defense" to any objections - only then will it be possible to say whether or not other potentially viable windfarm sites exist. If other potential sites are found - either in the applicant's original information, in the BLM's re-evaluation of that information, or in information submitted by commentators - they must be rigorously explored and objectively considered. A supplemental DEIS would have to be prepared and circulated (one has to be anyway) to present these alternatives to the public.

If alternative sites are rejected for any reason, the BLM must fully disclose and clearly explain all factors which were used as reject/accept criteria.

Even if it turns out that no other site could allow for a cost-effective windfarm based on today's energy market (highly unlikely), coal and gas are both depletable resources. Therefore, the price of coal- and gas-fired electricity will inevitably increase in the future. These increases would make windpower production economically viable (i.e., superior) in the future at other sites besides those now proposed. Therefore, the BLM must rigorously explore alternative sites with lower windpower potential if those sites would become economically viable at some point in the future.

There presently appears to be no excessive demand for electricity: "additional base load capacity will be needed by the middle of the next decade." DEIS at 105. This delayed implementation option therefore seems reasonable. Likewise, we see absolutely no reason - apart from maximizing corporate profit - why a windpower plant must be built in Wyoming now rather than sometime later when a better site (i.e., one that poses less impacts to raptors) could be utilized or when effects to raptors are better quantified. Public lands, the natural landscape, and the lives of wild animals should not be sacrificed simply to accommodate some private corporation's wishes to maximize its present-day profit.

B. Vertical Axis and other Wind Turbine (VAWT) Designs.

VAWTs designs may offer viable alternatives to the horizontal axis machines in the proposed project. At least one US company, FloWind of San Rafael, CA, is developing a Darrieus rotor-type machine which has an approximately equivalent power generation capacity per unit of swept area. The area is rectangular, and fairly narrow with an aspect ratio of about 3:1. Perhaps because the blades are confined to a narrower column, which could appear solid to avifauna, the columnar design may pose less of a threat to raptors. Depending on a number of factors, the height of the vertical axis machines could also be different, resulting in different impacts to birds. In our scoping comments, we

⁵ See *Sierra Club v. Costle*, *supra*, at 332 ("the agency must provide a 'complete analytic defense of its model [and] respond to each objection with a reasoned presentation.' The technical complexity of the analysis does not relieve the agency of the burden to consider all relevant factors and to identify stepping stones to its final decision.") citing *American Public Gas Ass'n v. FPC*, 567 F.2d 1016 (D.C. Cir. 1977); see also, *NRDC v. Herrington*, *supra*, at 1385 ("If the model is challenged, the agency must provide a complete analytic defense.")

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asked that such designs be considered as an alternative. This was not done.
It may also be possible to place more vertical axis machines per unit area in design of the windplant.
The use of cages or other structures to prevent bird-turbine collisions must also be evaluated.
The supplemental DEIS must consider these kinds of alternatives, even if the applicant is unwilling to use alternative designs. (The applicant apparently manufactures its own windmill designs - all of which are radial; however, there is no reason why the BLM could not make it a condition of the permit that the applicant use columnar designs manufactured by another company.)

C. Smaller/Redesigned Initial Phase

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As mentioned in the Overview section of these comments, the proposed project is being portrayed in the DEIS as an experiment to "test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource in the region." DEIS at iv. The experiment should have clearly defined goals, protocols, methods for evaluating results, etc (for all aspects including various turbine designs, not just for monitoring birds). The smallest possible number of turbines, and the largest number of turbine types, configurations, and placements should be investigated. A randomized, block design or similar technique should be used to maximize the utility of the results.
Furthermore, the experiment should be designed to fit into the existing national efforts to evaluate wind power. As the national agency leading windpower research, the National Renewable Energy Lab (NREL) should be consulted for concurrence, as should the National Wind Coordinating Council (NWCC), particularly the Avian subgroup of NWCC. We specifically request that the initial phase be redesigned to ensure it fits with the current efforts to coordinate and standardize research and results.

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8. The BLM has not proposed criteria for halting the windpower plant if impacts become excessive or are contrary to law.

The DEIS states that "the level at which mortalities are considered significant is subjective." DEIS at B-10. How will the public be assured that wildlife will be protected? What good is monitoring without some defined threshold? Many of the mitigation measures described in the DEIS are of dubious utility because they contain the caveat "when feasible." Coupled with so little on the ground knowledge, this cries out for specific, enforceable numeric criteria. And the laws, especially the ESA regulations, require it.
It is imperative that these criteria be specified prior to any approval for development of the proposed project. The political inertia to keep a project going, once it has been started, is very real and not easily overcome.
We ask that the applicant not be assigned the responsibilities for monitoring because the applicant has a financial conflict of interest in keeping reported impacts low (particularly if the applicant would be subject to repeated

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search for improved energy production. Unfortunately, it appears that this opportunity has been squandered.

10. Other problems with DEIS.

There are a few other additional concerns and questions we have. Time constraints prevent us from providing a narrative, so we simply list them below. Please respond to all of the following in subsequent documents.

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- One year of baseline data on raptors and other birds may not be sufficient.
- Were nocturnal surveys taken. Do the various birds of concern fly at night?
- Were personnel conducting other activities on-site during data gathering? Wouldn't this compromise the results?
- Some birds travel 20 miles from their nests. Why was a 10 mile buffer used?
- Is nest occupancy the best indicator of effects to birds? What is better?
- We have been told that "hunters can't push [game animals] under the towers in Montana." What about at the proposed site?
- The ROW should be contingent upon success of the first phase. DEIS at iii.
- A narrative regarding the flow chart on page 2-8, including criteria for terminating the project, should be provided.
- Why won't mitigation be performed on private land? DEIS at 2-29.
- Should nests be avoided regardless of the season/date? DEIS at 2-31.
- Although it is good that avian data is continuing to be gathered, the public will not be able to comment on the results in the FEIS. Data should come before the decision... DEIS at 3-32.
- More information on the "other" windfarm and possible cumulative impacts should be provided. DEIS at 4-3, 4-55.
- More than one "control" or "reference" are should be used to determine the impacts of any part of the project which may be approved. A single area would be susceptible to natural catastrophe, other developments, etc.

We again request that a supplemental DEIS be prepared and circulated so that important information regarding evaluation of alternate sites and alternative turbine design can be subjected to public scrutiny.⁷ We also hereby incorporate all of our prior comments (e.g., scoping, meetings) on this proposal herein. We ask that those comments and these be responded to in accordance with 40 CFR § 1503.4.

⁷ Apart from the few other problems noted in these comments, we found the rest of the DEIS to be acceptable. Therefore, we are not asking that the entire DEIS be rewritten and recirculated.

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penalties under the Eagle Protection Act).
The supplemental DEIS must describe the impact threshold above which BLM would find the project too harmful to continue operation (e.g., the number of eagle mortalities per year) and any levels whereby the agency would penalize the applicant (e.g., by monetary fine or partial permit cancellation) to encourage modifications that would reduce impacts found to be unacceptable.
These are particularly crucial matters for a proposal such as this one with a phased implementation.
Whatever project modification/termination provisions are to be established (based on avifauna mortality, etc.), they must be included as part of the eventual record of decision so that these provisions are enforceable by private parties. See, e.g., *Forty Most Asked Questions Concerning CEQ's NEPA Regulations*, answer to question 34c ("The Record of Decision should delineate the mitigation and monitoring measures in sufficient detail to constitute an enforceable commitment") and answer to question 34d ("the terms of a Record of Decision are enforceable by agencies and private parties. A Record of Decision can be used to compel compliance with or execution of mitigation measures identified therein").⁶

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9. The BLM failed to respond to public comment and failed to give real consideration of the no-action alternative.

In our previous communications with BLM on this project, we specifically asked "what contingency plan the BLM has in place to shut down the project in the event of excessive raptor mortality," "what the cutoff point will be," and that the "number should be determined ahead of time." We also asked "If your analysis determines the project will cause mortality and you know you can't knowingly kill eagles, how will the project get permission to build and operate the windmills?" Additionally we requested consideration of "alternative windmill designs" and other specifics. Native Ecosystems Council (the name we were operating under at that time) and Friends of the Bow Comments, March 15, 1994. None of these issues were addressed in the DEIS.
A recent article in the Casper Star-Tribune reports that the BLM has already decided to approve the proposed action. "BLM to approve multi-phase plans for wind farm." Casper Star-Tribune, date unknown. This is contrary to the principal purpose of the NEPA public process: to help agencies make better decisions which fully take into account environmental problems and the concerns of the public. Companies and agencies must do more than give lip service to the public's concerns and important environmental and public participation laws. Why should the public submit comments, at great expenditure of personal time, money, effort, etc., if the BLM has already decided to proceed with the proposal? And how did the agency give fair consideration to the no-action alternative? These are violations of NEPA and cast a dark shadow on the entire project. This project presented a good opportunity to carefully and wisely move forward the national

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⁶ 46 Fed. Reg. 18026 (Mar. 23, 1981).

Sincerely,

JK for
LJ
Leila R. Stanfield

JK for
DD
Donald J. Duerr


Jeff Kessler

Biodiversity Associates/Friends of the Bow
P.O. Box 6032
Laramie, WY 82070

Comment AL1: See Section 8.2.5 in the FEIS.

Comment AL2: See Section 8.2.5 in the FEIS.

Comment AL3: BLM's purpose for the project is to develop windpower; therefore, the proposed development is not intended to be an experiment. Page 1-5 of the DEIS (as modified for the FEIS) states that the "purpose of the proposed action is to provide wind-generated electricity from a site in Wyoming and to develop a further market for Wyoming-sourced wind-generated electricity." In addition, the DEIS clearly states that this would be an industrial-scale electricity-generating facility. BPA's purpose is more experimental (i.e., "to test the ability of wind energy to provide a reliable, economical, and environmentally acceptable energy resource in the region."), but BPA's role in the project is currently limited to the purchase of 25 MW of power from Phase I. The overall goal, however, is to develop and operate a commercial Windplant in Wyoming. The proposed turbine and tower design were selected because they would help achieve the purpose of the project, but additionally the proposed design is thought to reduce avian mortality in windfarms (see Section 8.2.5 in the FEIS). Reducing the size of the first phase would only aggravate the problem of not being able to collect sufficient data to obtain statistical power to make comparisons among the development area with the reference areas.

Comment AL4: See Section 8.2.2 in the FEIS.

Comment AL5: See Sections 8.2.1 and 8.2.11 and the response to Comment AL3 in the FEIS.

Comment AL6: See response to Comment AL3 in the FEIS.

Comment AL7: See Section 8.2.3.4 in the FEIS.

Comment AL8: See Sections 8.2.2 and 8.2.12 in the FEIS.

Comment AL9: See Sections 8.2.2 and 8.2.5 in the FEIS.

Comment AL10: See Section 8.2.12 in the FEIS.

Comment AL11: See Section 8.2.4 in the FEIS.

Comment AL12: The term "incidental take", as used in this section, is a legal term defined in the ESA as "any taking otherwise prohibited by section 1538(a)(1)(B) of this title if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." The proposed project, therefore, could result in the incidental taking of birds. As discussed in Section 8.2.2 in the FEIS, case law on what actually constitutes a violation of the MBTA, the ESA, or the BEPA is inconclusive (i.e., incidental takes may not be judged violations of the law). However, text has been modified to state that compliance issues concerning the ESA, the MBTA, and the BEPA would be handled by the USFWS.

Comment AL13: In response to the request for an independent evaluation of KENETECH's assertion that the project would not be economically feasible at this time at any other site, BLM enlisted the services of Dr. John Marwitz, Professor of Atmospheric Sciences, University of Wyoming, to perform an independent

evaluation. Results of this analysis are presented in Appendix I of the FEIS. Information requested under the Freedom of Information Act was provided to Friends of the Bow on April 26, 1995. See also Sections 8.2.1 and 8.2.11.

Comment AL14: Pursuant to CEQ regulations, agencies must identify any methodologies used and must make explicit reference to the scientific or other sources relied upon for conclusions (40 C.F.R. 1502.24). The DEIS, at pages 2-33 to 2-35, describes methods used to analyze and reject alternative sites. See also Sections 8.2.1.1 and 8.2.11 in the FEIS.

Comment AL15: See Section 8.2.1.1 in the FEIS.

Comment AL16: To delay the project would be impractical because some utilities have an immediate need for the energy which would be provided by the project. As described in Chapter 1.0 in the DEIS, many utilities are predicting power deficits over the next several decades, and utility planners view windpower as a viable way to help meet future demands, as well as to reduce pollutant emissions. Four utilities have identified an immediate need to incorporate wind-generated electricity into their resource mix and have contracted with KENETECH to provide the power. BPA needs to determine the cost and availability of wind energy to achieve an objective of the Northwest Power Planning Council. There is no statutory or regulatory provision that requires agencies to analyze an alternative to delay a project [*National Indian Youth Council v. Andrus* (D. N.M. 1980) 501 F. Supp. 649, 670-71. *aff'd sub mon.*; *National Indian Youth Council v. Watt* (10th Cir. 1981) 664 F.2d 220]. Although delay may be considered under some circumstances, the rule of reason dictates that a delayed action alternative need not be evaluated where delay would be impractical.

Comment AL17: Orloff and Flannery (1992) assessed collision-related mortality for various turbine types in Altamont pass and came to no conclusion concerning differences between vertical axis and horizontal axis turbines on tubular towers. The vertical axis blades may be less visible to birds than horizontal axis blades because less of the blade's surface area is visible from any one vantage point. Vertical axis turbines also require guy wires which may pose a collision hazard to birds. Furthermore, there is no evidence that the vertical axis design is cost-effective. Recently, FloWind (who has used vertical axis machines extensively) has chosen to use horizontal axis turbines for its BPA windpower project in Washington. Because there is no evidence that the vertical axis design is a viable or environmentally preferable alternative, the vertical axis design was not considered in detail. As stated on page 2-36 in the DEIS "Other possible alternatives, including turbine design changes or alternate placement of turbines within the project area, have been incorporated into the Proposed Action and Alternative A." For example, the change from lattice to tubular towers and painting of selected blades were made part of the proposal. By implementing a monitoring program which includes provisions for changing Windplant design features, issues raised during scoping have been built into the authorizing process for this project.

With respect to the suggestion that cages or other structures be used to prevent avian collisions, there is no evidence that these measures would reduce avian impacts. Furthermore, they may not be economically viable. See also Section 8.2.11 in the FEIS.

Comment AL18: See response to Comment AL3.

Comment AL19: See Sections 8.2.1.1, 8.2.3.4, 8.2.5, and 8.2.11 in the FEIS. The monitoring program was developed and would be implemented by an independent consultant under contract to KENETECH. The program was developed in full consultation with the USFWS and the WGFD, and monitoring results would be peer reviewed by professionals on the technical committee; results also would also be made available to the public.

Comment AL20: In response to this comment, we have included your scoping letter as comment letter AM in the FEIS and discuss each issue raised in the scoping letter. See also Section 8.2.3.4.

Comment AL21: The article in the Casper Star Tribune was in error. Final authorization to proceed with development would occur in the ROD for the project; construction of Phase I is contingent upon satisfactory completion of the environmental analysis, preparation of a POD, and issuance of a NTP. Pursuant to NEPA, BLM has identified the Proposed Action as the preferred alternative; however, BLM could take the No Action Alternative.

Comment AL22: See Section 8.2.4 in the FEIS.

Comment AL23: Nocturnal surveys were not conducted. The bird species of most concern (common raptors and mountain plover) are diurnal species (i.e., they do not tend to fly at night). See also the response to Comment AE71.

Comment AL24: Field surveys were conducted 1-3 days per week over a 13-month period. Observers' sole task was avifauna data collection. On rare occasions, archaeological surveys, Native American consultations, or other project- or ranch-related (i.e., fence mending, cattle roundup) activities occurred concurrently with periods of data collection. Care was taken to minimize wildlife disturbance during surveys by coordinating schedules and maximizing the distance between data collection areas and areas of other activity. Type, duration, location, and extent of other activities were noted on avian data forms. Because of the infrequency and limited extent of concurrent activity, no effect on the results is anticipated.

Comment AL25: Rationale for using a 10-mi buffer for raptor nest surveys is described on page A-14 in the DEIS.

Comment AL26: Nest occupancy is only one indicator of possible effects of development on birds. As described in the monitoring program (Appendix B in the DEIS), several parameters pertaining to bird populations would be monitored and the weight of evidence obtained would be used to infer effects. A better measure of effects would be to conduct population studies in which birds are marked with radio-collars or tags and tracked for long periods of time. WGFD has recommended against this type of study, unless the weight of evidence indicates that Windplant development was possibly affecting certain populations. If deemed necessary, these types of studies may be recommended by the technical committee.

Comment AL27: The operator of five wind turbines near Livingston, Montana, has observed that pronghorn antelope avoid the turbines (see response to Comment AE108). The literature search completed for this project was inconclusive as to whether

pronghorn antelope would avoid the proposed Windplant (i.e., potential impacts are unknown). Pronghorn use of habitat within the project area would be monitored (see Appendix B in the DEIS) to determine if the Windplant displaces big game. The technical committee would be responsible for evaluating impacts and recommending more intensive studies as well as mitigation (see Sections 8.2.3.1 and 8.2.3.3 in the FEIS).

Comment AL28: The ROW grant would be issued for the entire Windplant to establish this project's priority over other proposals for use of this public land within the KPPA and to avoid nuisance mining claims. See Section 8.2.9 for a discussion of wind energy development conflicts with coal resources. However, granting the ROW would not give KENETECH authorization to proceed beyond the first phase. Environmental consequences of each subsequent phase would be evaluated via subsequent NEPA documents and PODs and authorized by NTPs (see Section 8.2.6).

Comment AL29: The process BLM would use to permit future phases is described in Section 8.2.6. Criteria for cessation of Windplant operations is discussed in Section 8.2.3.4. Procedures for evaluating monitoring protocols are discussed in Section 8.2.3.

Comment AL30: See Section 8.2.5 in the FEIS.

Comment AL31: A critical period for birds of prey is during the breeding and nesting season, and construction is sufficiently disruptive that birds could be displaced. O&M activities associated with oil, gas, and coal extraction are not known to displace birds. For example, raptors are known to nest on coal mine highwalls and oil and gas wellpad facilities. Because birds appear to be tolerant of O&M activities, it is not deemed necessary to preclude development near nests. As stipulated in the DEIS (page 2-31), construction would be prohibited during the period from February 1 through July 31.

Comment AL32: Results of over 13 months of data collection are included in the FEIS including data from the winter of 1994/1995 which were not available when the DEIS was prepared. There is very little avian activity within the project area during winter months, and thus the overall analysis presented in the DEIS has not been altered by the additional data. See also Sections 8.2.4 and 8.2.6 in the FEIS.

Comment AL33: See Section 8.2.8 in the FEIS.

Comment AL34: Two reference areas would be monitored initially: the Simpson Ridge area plus the remote reference area (see Appendix B in the DEIS). When development is proposed for the Simpson Ridge area, another remote reference area would be selected and monitored.

Comment AL35: See Section 8.2.11 in the FEIS. In addition, we have included the scoping letter from the Native Ecosystems Council as comment letter AM.

AM. Native Ecosystems Council and Friends of the Bow

MAR-23-91 WED 10:54 BLM RAWLINS FAX NO. 328:171 P.02

Native Ecosystems Council
and Friends of the Bow
82070

P.O. Box 6032, Laramie, WY

March 15, 1994

Wall George
Rawlins District
BLM
POB 670
Rawlins, WY 82301



Dear Wall:

Thank you for the informational meeting held in Laramie February 23rd. We believe you already have our issues and concerns, but at your request, we are summarizing them here again in this letter. We are writing on behalf of our regional group, Native Ecosystems Council, and our local group, Friends of the Bow.

(A) COMPARING IMPACTS OF ENERGY PRODUCTION

First let us say, we are generally very supportive of the wind energy project. We think this kind of renewable, non-depleting, non-polluting way to produce energy is one of the paths to a sustainable future. As we mentioned at the meeting, we think the BLM's EIS should take advantage of this project to educate the public about the benefits of alternative energy sources like wind power. We are asking that your analysis include a comparative discussion showing how wind power stacks up alongside nuclear, coal, oil, and hydro-electric. The options might be put into perspective in a table showing relative costs, waste by-products, impacts to wildlife species, economics, sustainability, etc.

(B) CUMULATIVE IMPACTS TO WILDLIFE

As you are aware, our primary concerns about the project center on wildlife issues. We would be looking for the analysis to: (i) address impacts to critical winter range for antelope, deer, and elk, (ii) identify sensitive plants and plant communities and impacts to those, (iii) outline any plans to institute control measures on raptor prey species (including impacts to both predator & prey populations), and (iv) analyze impacts to all potentially vulnerable resident and migratory bird species.

We are assuming the EIS will consider cumulative impacts to all raptors including: Ferruginous Hawks and Harriers, as well as impacts to Mountain Plover, Swift Fox (if applicable), Sharp-tailed Grouse, and to Sage Grouse. No doubt the EIS will consider impacts to the Black-footed Ferret if it can occur in the area; we are asking that the BLM also use the highest level of analysis in investigating impacts to all Special Status Species with possible habitat in both development areas. Given that there will be some mortality to raptors, the EIS should outline what contingency plan the BLM has in place to shut down the project in the event of excessive raptor mortality. The analysis should lay out what the cutoff point will be, and that number should be determined ahead of time.

MAR-23-91 WED 10:56 BLM RAWLINS FAX NO. 328:174 P.01

Native Ecosystems Council and Friends of the Bow, page 3

10 by the transformers, and what contingency will be used to deal with possible leakage as well as the impacts of producing the PCB's and the impacts of disposing of these chemicals when they outlive their lifetime.

(E) ARCHEOLOGICAL SURVEY

We were glad to learn that BLM is calling for a full archeological survey. Because of its location, the Foote Creek Rim site in particular should be investigated for evidence of prehistoric cultural artifacts. We are starting from the assumption that ancient peoples may very well have migrated to and from the Medicine Bow National Forest via the Rock Creek drainage. There is a possibility that people who used this route could be related to populations of a stone-age culture now known to have existed at Sand Lake approximately 5,000 years ago. The EIS should explain what operational standards will be required of construction teams and mill crews and how they will be prepared to handle discoveries in the event artifacts are uncovered during the life of the project.

(F) ALTERNATIVES

Alternatives we see needing to be considered in the EIS include consideration of alternative designs and arrangements as ways to mitigate impacts to raptors:

- different spacing arrangements of windmills with a discussion of effects on raptor mortality
- alternative windmill designs such as vertical or columnar instead of bladed windmills
- installing whistles and lights on blades to frighten birds away
- using smaller diameter blades and more numerous blades (i.e., 10 blades instead of 2) so that blades appear like a solid disk in an effort to make them more visible to birds
- using transformers that don't use PCB's or other toxic materials

Thank you for this opportunity to comment. We appreciate the efforts of BLM and Kenetech Windpower, INC. to make this project as environmentally safe and as economically feasible as possible so that society can begin to benefit from renewable sources of energy.

Sincerely,

Letia Stanfield

Donald Duerr

MAR-23-91 WED 10:55 BLM RAWLINS FAX NO. 328:174 P.03

Native Ecosystems Council and Friends of the Bow, page 2

4 We are particularly concerned about golden eagles flying close to the ground knocking for food. We are asking that the analysis deal with the reality that these birds would find it almost impossible to fly around behind a standing windmill to find a safe perch, and thus would be particularly vulnerable to injury or death. We are concerned about raptor mortalities from both the windmills and the powerlines.

(C) MITIGATION

5 Everyone wants to assure that eagle mortalities will be avoided. We learned at the February meeting that both BLM and Kenetech Windpower, INC. are already aware of the need to make the project conform with the Migratory Bird Treaty Act and the Eagle Protection Act. Obviously there are and will be ongoing discussions with the US Fish and Wildlife Service about the "taking" of eagles. Our question to BLM is, "If your analysis determines the project will cause mortality and you know you can't knowingly kill eagles, how will the project get permission to build and operate the windmills?" In the event this question is not summarily answered by USFWS and construction is permitted, the EIS should explain what procedure will be followed if the mortalities cannot be mitigated (i.e., avoided or prevented or if the number is excessive). The EIS should discuss what authority the BLM will have, as part of the agreement with the company, to terminate the project or shut down those portions of the project that are causing mortalities.

(D) LAND USE IMPACTS

6 Concerns we have relate to impacts from proposed developments, including buildings, towers, roads, and powerlines. While we are not overly concerned about the visual impacts, we do think the analysis should consider the visual impacts of powerlines as well as windmills.

7 We are asking that the EIS analyze the indirect effects of increased road access like poaching, littering and vandalism. We have concerns about the microwave tower transmitters, and we think it is important that the EIS analyze whether or not the transmitters have enough power to harm birds which fly near them or perch on them.

9 On the topic of hazardous materials, we think the EIS should examine the possible impacts from hydraulic fluid spills and how these will be mitigated. We learned at the meeting that the company has taken some of these issues into account in the design of the windmills. While caps on the motor sections can act as protection measures, we also think catastrophic failure is still a possibility and should be considered (we have learned this recently with the Medicine Bow windmill - although it is of a different design, it has come apart a number of times). Thus, even though the mills will have caps, we think the EIS should discuss what will happen if the whole mill or more than one mill blows up or blows over and all the oil spills out. Also regarding hydraulic oil, the EIS should discuss how often oil will have to be changed and what provisions the company plans to make for recycling it. In a related matter, we think the EIS should discuss PCB's, if used

Comment AM1: BLM fully agrees that we have an opportunity to educate the public concerning the costs and benefits of using renewable energy resources compared with fossil fuels. Many utility resource planners such as BPA complete detailed analyses of the costs and benefits of various electric-power generating resources. The concept that is widely used to evaluate energy costs is that all energy sources have environmental externalities (i.e., environmental costs associated with power generation that are borne by society without compensation). These externalities have also been called environmental costs or environmental damages. Environmental externalities include, for example, the costs of health effects caused by air pollution, habitat mitigation due to damage by acid rain, controlling emissions, or protecting Pacific Northwest salmon.

Some utilities are incorporating costs for externalities into their resource programs and are using a variety of approaches for assessing these often intangible costs (Baechler and Lee 1991; Putt 1990; Buchanan 1990; Ottinger et al. 1990; WESTERN 1994). Table 2.10 in the DEIS presents estimated costs for externalities for selected electric power-generating resources and shows that known externalities associated with windpower are lower than all other major resources. As the environmental consequences of windpower are further studied, costs for externalities likely will change.

Table 8.4 in the FEIS presents a comparison of costs, emissions, waste water quality, land use requirements, and employment opportunities for various resources. This table was reproduced from WESTERN's Energy Planning and Management Program Draft Environmental Impact Statement (WESTERN 1994). The information is generic (i.e., it does not apply to a particular plant.

Table 8.4 Comparison of Planning Information, Environmental Impact Factors, Land Use, and Employment for Various Power-generating Resources (acronyms are defined at the end of this table and in Section 7.2).

Planning Information	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration ^a
Expected 1995 capacity, MW	78,674			6,911	2,078	536		21,005	9,818	1,869		380	1,600	
Capital cost, \$/kW ^b	1,613.45	1,844.6	1,452.45	445.05	595.7				1,987.2	2,089.55		3,245	1,217	595.7
Operations and maintenance cost, mills/kWh ^b	7.809	8.893	7.98	8.947	4.741				10.809	13.019		22	19	4.741
Capacity factor	75%	95%	80%	65%	65%		80%	50%	70%	80%	80%	25%	20%	80%
Heat rate, Btu/kWh	9,393	10,150	8,969	12,072	<8,546	13,600	14,800		10,377	20,080				11,020
Thermal discharge, million Btu	4.79	4.79	4.79	3.29	3.29				5.0	148.4		2.6		3.29
Environmental Impact Factors														
Air pollutants, lb/MWh														
CO ₂	1,970	2,150	1,810	1,390 ^g	1,300	1,620	3,400			160	3,747	1,310		1483
SO _x as SO ₂	1.6 ^g	1.5 ^g	0.66 ^g	0.009	0.006	0.557	0.258							
NO _x as NO ₂	3.2 ^g	1.5	0.61 ^f	1.064 ^d	0.519	5.025	4.832				5.815	0.34		1.973
VOC	0.036	0.058	0.048 ^f	0.016	0.27	2.293	2.94			0.001	0.172	0.014		0.139
CO	0.217	0.351	0.13	0.387	0.19	7.28	6.9				3.553	0.42		0.928
TSP	0.3	0.11	0.04	0.06	0.031	2.393	10.35				0.614	0.032		0.116
PM ₁₀	1.260													
N ₂ O	0.34	0.325	0.302	0.24	0.063		0.55				0.55	0.31		
H ₂ S										0.0664				
Total trace elements	0.054	5.146	0.00002							0.449	0.017			
Trace radioactive, curies/MWh									0.0055					

Environmental Impact Factors	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration ^k
Airborne water from cooling tower evaporation losses, gal/MWh									1800					
Water pollutants, lb/MWh	^e	^h	ⁱ	^j										^k
Wastewater	520	1200	270	45	510		1400							1120
TDS	2.6	5.8	2.7	0.227	2.55		7.2		0.0056					5.58
TSS	0.0078	0.017	0.00011	.00068	0.0077		0.022							0.017
TOC		0.045		0.0018	0.02									0.044
BOD		0.012		0.0004	50.0051									0.011
Total hardness	0.33	0.73		0.029	0.32		0.91							0.71
Total trace pollutant	1.88	0.000004	1.91307	0.1608	1.819		5.155		0.05002	0	0			0
Consumption, acre-ft/MWh	0.0012	0.0019	0.0018	0.00005	0.00038				0.0	0.0018		0.00003	0.0	0.0005
Radioactive effluent, curies/MWh									0.05					
Solid waste, lb/MWh	^e	^e	[*]											^k
Ash	30	45	87								1054			
Sulfur		1.6												
Total metals	0.029	0.015	0.625								1017.11			
Nuclear solid waste									0.028					
Land use														
Construction (acres per MW capacity)	1	1.5	0.6		0.1		2.1		1.74	0.2	1.6	3	5.9	1.7

Environmental Impact Factors	Pulverized Coal	Fluidized Bed Coal	IGCC Coal	Simple Cycle CT	Gas-fired Combin. Cycle CT	Diesel	Wood Waste Biomass	Hydro-electric	Nuclear Reactor	Flashed Steam Geothermal Plant	Municipal Solid Waste	Solar	Wind	Cogeneration ^o
Employment														
Construction (employee years per MW capacity)	4.7	5.1	5.7	1.4			9.6	9.3	1.8	4.1	24.1	19.6	1.9	15.1 ^m
Operations (employees per MWh generation)	.000076	.000084	.00013	.000017			.00064	.000068	.00015	.000043	.00064	.00018	.00023	.00064

Blank signifies no reported quantity.

The resources which were included in the model are simple-cycle combustion turbine, nuclear, hydroelectric, and renewables. The coal resources were modeled as a combination of the three technologies presented in this table.

BOD = Biological Oxygen Demand

CT = Combustion Turbine

IGCC = Integrated Gassification Combined-cycle

PM₁₀ = Particulate matter with a diameter of 10 microns or less

TDS = Total Dissolved Solids

TOC = Total Organic Chemicals

TSS = Total Suspended Solids

VOC = Volatile organic compounds

^a Costs same as natural gas-fired combined-cycle combustion turbine

^b Coal, natural gas, nuclear, geothermal, and cogeneration sources use 1988 Electric Power Research Institute (EPRI) data (EPRI 1989) inflated to 1992 dollars using 1.15 as inflator.

^c 90% sulfur removal by flue gas desulfurization

^d Use of low NO_x burner

^e 95% sulfur removal

^f Fuel gas moisturization process

^g Water injection process

^h 70% sulfur removal

ⁱ 95% sulfur removal with waste water treatment

^j Steam injection

^k Standard low NO_x combustor, no steam exported

^l Dry scrubber and fabric filter

^m Average of wood-fired and municipal solid waste combustion

Source: Western 1994.

but represents a range of plants or calculated values). Wind's shortcomings are in the estimated capacity factor (20% compared with 75% for pulverized coal) and land use (wind uses an estimated 5.9 ac per kWh produced, compared with 1 ac for pulverized coal). However, wind does not produce air or water pollutants, solid waste, or nuclear waste.

Air quality is an obvious point of comparison for renewable resources compared with fossil fuels. Section 4.1 in the DEIS presents a detailed discussion of the possible air quality benefits to be derived from the Proposed Action compared with generating the same amount of electricity with coal-, oil-, or gas-fired plants. Results of the analysis show that construction of a 500-MW Windplant could result in a 0.004-0.08% reduction in U.S. annual SO₂ emissions, a 0.018-0.037% reduction in U.S. annual CO₂ emissions, and a 0.003-0.047% reduction in U.S. annual NO_x emissions (see Table 4.2 in the DEIS). Costs to society associated with these emissions were also analyzed: the 500-MW Windplant could result in an annual savings of \$36,289,900 compared with an oil-fired plant, \$25,979,920 compared with a gas-fired plant, and \$331,125,000 compared with a coal-fired plant (see Table 4.3 in the DEIS). Variables such as human health effects, costs for developing pollution prevention devices, and waste by-products are included in these cost estimates.

The economics of windpower compared with other sources of electricity are compared in Table 1.2 in the DEIS. The low cost of windpower from the proposed site is due to many factors, but principally due to advances in turbine technology (see Section 2.1.3 in the DEIS) and the quality of the wind resource within the KPPA (see Sections 1.1.2 in the DEIS and 8.2.1 in the FEIS).

BLM agrees that it would be useful to compare impacts of various power-generating resources on wildlife species. Unfortunately, this type of analysis has not, to our knowledge, been completed for any project or regional planning document. Even defining the scope of the analysis would be a difficult task. For example, the primary objective could be to examine habitat loss and population impacts of individual projects. Alternatively, more indirect questions such as effects of CO₂ emissions on habitat within, say, the eastern red spruce forests could be evaluated. To compare impacts of various resources on wildlife, could require extensive data gathering that is not specifically relevant to this project; therefore, it was not evaluated in the DEIS.

Comment AM2: See Sections 4.2.1, 4.2.3, and 4.2.4 and Appendix B in the DEIS. In addition to the prey base monitoring described in Appendix B in the DEIS, there are no plans to institute control measures on raptor prey species.

Comment AM3: See Section 4.2.4 in the DEIS and Section 8.2.3.4 in the FEIS.

Comment AM4: See Section 4.2.3.4 in the DEIS. Section 2.1.4.5 in the DEIS describes how the 230-kV transmission line would be constructed to prevent raptor electrocution. On page 4-53 in the DEIS, provisions for marking overhead wires to improve visibility to birds and use of antiperching devices are discussed. In Section 5.1.3.11, provisions for raptor protection for all power lines within the Windplant are described.

Comment AM5: See Sections 8.2.2 and 8.2.3.4 in the FEIS.

Comment AM6: See Section 4.6 in the DEIS.

Comment AM7: See Section 4.2.3.1 (particularly column 2, paragraph 2 on page 4-40), Section 4.5.2.1 (page 4-87), and Section 4.5.2.5 (page 4-89) in the DEIS.

Comment AM8: The proposed project would not use microwave tower transmitters.

Comment AM9: See Sections 4.7 and 5.2.11 in the DEIS. In addition, see the Hazardous Materials Summary (HMS), included as Appendix J in the FEIS. The Spill Prevention Control and Countermeasure Plan (SPCCP), which will describe procedures for handling spills, will be available from the BLM prior to initiation of construction.

Comment AM10: See Sections 2.1.3.2 and 2.1.9 in the DEIS. The SPCCP, which will describe procedures for handling spills, will be available from the BLM prior to initiation of construction.

Comment AM11: See Sections 3.3, 4.3, 5.1.3.13, and 5.2.9 in the DEIS.

Comment AM12: See response to Comment AL17. Work completed by the avian task force shows that birds habituate to continuous whistles so these warning devices rapidly lose their effectiveness. Discontinuous and/or random warnings may be effective but were not considered as an alternative because this type of mitigation would be incorporated into the Proposed Action or Alternative A if appropriate. Because this action would be part of an alternative considered in the EIS, it need not be considered as a separate alternative. The Avian Task Force also recommends using slower turning rotors, such as the 33-m rotor used on the KVS-33 to reduce collision-related mortality. See also Section 2.1.3.2 in the DEIS.

AN. Wyoming Heritage Society

Part of the 1981 Wyoming Heritage Society

P. 1/3



Wyoming Heritage Society

119 West 2nd, Suite 3-E Casper Wyoming 82601 (307) 377-8000

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Bill Schilling, Executive Director

March 27, 1995

Bureau of Land Management
 Rawlins District Office
 PO Box 870
 Rawlins, WY 82301
 Attn: Mr. Walter E. George
 Via Facsimile: (307) 324-5423



re: Draft KENETECH/PacifiCorp EIS

Dear Mr. George:

Attached is a copy of our guest editorial which appeared in the Casper Star-Tribune today. Please accept this editorial as our comments to the DEIS, and about the project in general.

The Wyoming Heritage Foundation represents a broad spectrum of business interests—individuals, sole proprietors, professionals, associations, small businesses, labor, and multi-national corporations. We support responsible environmental practices and the concept of multiple use in the development and protection of natural resources and public lands. Over 11,000 individuals and businesses receive information materials from the Wyoming Heritage Foundation.

We strongly support this kind of clean, high-tech industrial development in the state. The DEIS is to be commended for the emphasizing the beneficial environmental impacts of the project with regard to air quality and socioeconomic.

As stated in the editorial, the small possibility of avian mortality is an acceptable risk in light of the potential economic development, increased tax base and job creation that will result from this project. This project is clearly in the public good.

Very sincerely,

Bill Schilling

Bill Schilling
Executive Director

Post-It Fax Note	7871	Date	3-30-95	Page	3
To	Mr. George	From	Bill Schilling		
City					
Phone #	307 377 8000				
Fax #	307 377 8000				

Working Together

Bureau of Land Management
 March 27, 1995
 Page 2

While we concur with most of the DEIS' provisions and mitigation measures, we nonetheless have four recommendations:

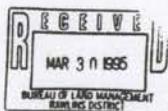
1. A mitigation measure presented on Page 2-29 notes that "Retrofit of prior phases would not include replacement of capital items (e.g., rotors, towers, nacelles), but could include removing the rotor from turbines associated with high mortality rates, painting turbine rotors, or other measures not requiring capital expenditure." We applaud the expressed goal of minimizing retrofit investments on the Project. However, because the number of operating turbines is a prime determinant of Project output, the Owners suggest that this phrase be reworded as follows: "Modification of prior phases would not include replacement of capital items (e.g., rotors, towers, nacelles) but would be limited to relocation within the Project site of turbines associated with disproportionately high levels of avian mortality, painting of turbine rotors, or other measures not requiring capital expenditure."
2. The Owners strongly encourage the Bureau of Land Management to establish a date by which avian monitoring will be completed. Such monitoring has been underway for more than a year at the time of this writing. The Owners propose that avian monitoring be concluded within two years of the Project's beginning of commercial operation.
3. The Owners applaud the provision communicated on Page 2-29 of the DEIS which specifies that the results of such avian monitoring will be applied solely to the Plans of Development for subsequent phases. Further, the Owners recommend that if any other desired modifications stem from research conducted independent of this Project, they be considered only for subsequent phases as well.
4. The Owners urge the BLM to carefully consider the impacts of any limitations and mitigating strategies proposed for the Project not only for their costs and impacts at the time of Project development, but also for their effects on Project operation and maintenance activities through its full 30-year life.

In addition, the Owners' review of the DEIS uncovered a number of observations of a more editorial nature, and these are included as an enclosure to this letter.

In closing, the Owners again commend the Bureau of Land Management and Mariah Associates, Inc., for their accomplishment in producing an exhaustive and highly professional

AO. PacifiCorp

825 N.E. Multnomah
 Portland, Oregon 97232
 (503) 464-5000



March 27, 1995

Bureau of Land Management
 Rawlins District Office
 P.O. Box 670
 Rawlins, WY 82301
 Attn: Walter E. George, Project Leader

Subject: Comments on Draft KENETECH/PacifiCorp Windpower Project Environmental Impact Statement

Dear Mr. George:

As the potential owners of the Wyoming Wind Project (the "Project"), Eugene Water and Electric Board, Tri-State Generation & Transmission Association, Inc., Public Service Company of Colorado, and PacifiCorp (together, the "Owners") jointly submit the following comments on the Draft KENETECH/PacifiCorp Windpower Project Environmental Impact Statement ("DEIS"), published in January, 1995.

In general, the Owners believe that this document reflects a well researched inventory of environmental and economic exposures associated with the Project. In particular, we applaud the concise yet accurate description of the Project site's unique wind resource. While Wyoming has long been known as a state generously blessed with wind resources, the Project site is uniquely gifted in this regard, and is one of few locations in the state which can support cost-effective, commercial wind generation at this time. The Owners further believe that the mitigation measures identified in the DEIS are well considered and appropriate both to the Project's development, to the operation and maintenance of the Project through its 30-year life, and to the protection of the area's natural and cultural resources. We commend the Bureau of Land Management, Mariah Associates, Inc., and the many others who contributed to the DEIS for their accomplishment.

Bureau of Land Management
 March 27, 1995
 Page 3

DEIS. Kindly contact me ((503) 464-5097) if questions on the Owners' comments should arise.

Very truly yours,

Fred D. Keast
Fred D. Keast
Project Coordinator

FDK:kf

c: Eugene Water and Electric Board
 KENETECH Windpower, Inc.
 Public Service Company of Colorado
 Tri-State Generation & Transmission Association, Inc.

BLM
March 27, 1995
Enclosure

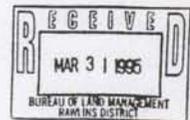
Specific Comments.

- 5 | 1. Page 2-19 (Section 2.1.4.5) and Page 4-53 (Section 4.2.3.4) should cite "Mitigating Bird Collisions with Power Lines: The State of the Art 1994" (APLIC 1994) for construction of the 230 kV transmission line, instead of Otendorff et al. (1981) as the latter does not pertain to transmission line hazards to birds.
- 6 | 2. Table 3.13 (Section 3.2.2.3) indicates 4 active golden eagle nests. Table 3.15 indicates no golden eagle nest failures, but only 3 nests produced young. This apparent inconsistency should be clarified.
- 7 | 3. Page 2-31 states that areas within 2 miles of lek centers (nesting habitat) will be avoided from March 1 through June 30. Pages 3-57 and 3-58 indicate this time period to be February 1 through July 15.

AP. Richard J. Guenzel

26 March, 1995

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301



Dear BLM

Thank you for the opportunity to review and provide my personal comments on the Draft Environmental Impact Statement (DEIS) for the KENETECH/PacificCorp Windpower Project. The purpose of my comments is to help identify problems and concerns with the DEIS so that the analysis and project can be improved, leading to better decision-making. First, I want to say that I am not opposed to wind power development and other renewable energy technologies provided that these are developed in an environmentally sound manner. As requested, I've tried to make my comments specific to help the EIS Team in addressing the comments and issues raised. I feel there are several significant issues and concerns that the DEIS fails to adequately address and I feel that BLM should disclose more information regarding several topics.

1 | One problem I see with the DEIS is that it does not fully acknowledge that the approval of the proposed industrial-scale windplant would be a precedent-setting decision. The KENETECH/PacificCorp project is the first proposal for a large-scale commercial windplant in an environment like Wyoming with the climate, wildlife and vegetation of the project area. The procedures and analyses used for this project could influence similar future decisions. I feel it is imperative for this decision to be based on adequate information, that the project be appropriately sited, and that monitoring and mitigation provisions are adequate. The significance of the project's impacts and their consideration in the DEIS should be elevated because of the uncertainty about impacts and the precedent-setting nature of this decision (40 CFR 1508.27 (b)(5) and (6)). The DEIS should be revised to disclose the implications and significance of this precedent-setting project. The FEIS should also reflect this concern.

2 | I also have concerns about the manner in which this project is being treated as a Right-of-Way (ROW) permit rather than evaluating this project as a major land use decision. The substantially long project life (perhaps longer than oil and gas or coal operations), the large area influenced by the project because of the WTG strings, related facilities, and transmission lines, unique characteristics about this type of operation, and the precedence of this project deserve greater scrutiny. The DEIS should include comparisons of the extent and duration of this project with oil and gas fields, coal mines, and other power-generating facilities. The GDRA RMP did not consider wind power projects of the scope as this proposal.

Comment AO1: See Section 2.1.11 in the FEIS.

Comment AO2: See Section 8.2.3.3 in the FEIS.

Comment AO3: See Section 8.2.6 in the FEIS. Text in Section 2.1.11 in has been modified to better describe the limitations on retrofit of prior phases.

Comment AO4: Mitigation measures stipulated by BLM would be subject to the rule of reason (i.e., required mitigation measures would be commensurate with the level of concern for the affected resource). BLM would consider costs of mitigation during construction and for the LOP.

Comment AO5: As of preparation of the FEIS, the new version of *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* was not available. Text on page 2-19 of the DEIS states that the 1981 version or any future updated versions would be applied to transmission line construction.

Comment AO6: Table 3.13 (Section 3.2.2.3) indicates a total of five active golden eagle nests in and adjacent to the KPPA [four in the Foote Creek Rim area plus a 10.0-mi (6.1-km) buffer and one in the Simpson Ridge area plus a 2.0-mi (1.2-km) buffer]. Table 3.15 also indicates a total of five active golden eagle nests within the KPPA; three nests produced nestlings, and the status of the other two nests was unknown as indicated.

Comment AO7: The correct dates are March 1-June 30. The text has been modified accordingly.

KENETECH/PacificCorp DEIS

2

3 | Because of the precedent-setting nature of the project, I urge BLM to assure that the project, if approved, be developed in a manner that allows impacts to be reliably and accurately evaluated. This would help identify corrective actions needed for the first phase and help subsequent phases to be designed and operated so as to minimize or mitigate impacts. In order to adequately evaluate impacts to wildlife and other resources, baseline data collection and monitoring of project areas and control sites need to be conducted under scientifically valid procedures. There have been several methodological changes and delays in implementing baseline monitoring for the project to date which lead me to question the adequacy of the information analyzed in the DEIS.

4 | Detailed information on many resources have not been presented for the Simpson Ridge and transmission line routes. CEQ regulations provide for including essential information for a reasoned decision in the EIS (40 CFR 1502.22(a)). Several other documents have not yet been made available for review including the biological assessment. BLM should allow public review and comments on these reports before BLM makes a decision on the project.

4 | While we encourage the development of renewable energy technologies, I am concerned that the rapid pace for developing this project is precluding adequate predevelopment replication of baseline information. Another confounding influence is the timing and changes in procedures to date. There appears to be a substantial amount of information that is not being applied to reduce impacts of this project. Sound baseline data are needed to compare to monitoring and mitigation efforts. I am concerned that the statistical power of the monitoring design will not be sufficient to reliably detect impacts. These data are essential for precedent-setting projects with a high degree of uncertainty.

6 | I don't feel that the DEIS adequately addresses mitigation effectiveness as required (Federal Register 46(55), 18026-18036, 3/23/1981). As I indicate elsewhere, the DEIS is unclear as to what will and will not be mitigated. The discretion of the Authorizing Officer to determine what mitigation is needed and the deferral of much of the mitigation decisions to the Plans of Development (PODs) suggest that the impact assessment of the DEIS is incomplete. Perhaps the DEIS should assume a worse case scenario if mitigation measures and their effectiveness will not be disclosed.

9 | One area where I find the DEIS to be particularly weak is in the alternatives considered. CEQ regulations require that agencies "Rigorously explore and objectively evaluate all reasonable alternatives..." (40 CFR 1502.14(a)) including reasonable alternatives outside the jurisdiction of the lead agency (40 CFR 1502.14(c)). Additional federal guidance (Federal Register 46(55), 18026-18038, 3/23/1981) specifies that reasonable alternatives include those that are practical and feasible from a technical standpoint, not simply alternatives desired by the applicant. I am concerned that applicant preferences and schedules have unduly influenced the alternatives considered in detail by BLM in contrast to requirements in 40 CFR 1502.2 (f), 1502.5, and 1506.1(a)(2).

The Proposed Action and Alternative A do not adequately represent the full spectrum intended by NEPA for reasonable action alternatives. Alternative A, although specifying 40% fewer WTGs, would likely have impacts closer to the Proposed Action, particularly since many site-specific analyses for the Simpson Ridge area are not presented. For some resources (e.g., mountain

plowers), Phase I at Foote Creek Rim would cause the bulk of the impact. Yet it would not be included in the assumed reduction of 40% for Alternative A. Also, portions of Alternative A would probably still be located in more sensitive areas of the KPPA. The DEIS does not give serious consideration to the No Action alternative.

Analyzing alternative sites strengthens the analysis included in the DEIS by providing a better comparison of environmental impacts which should lead BLM to make better decisions. Other reasonable alternatives exist and should be analyzed. I suggest that one other reasonable alternative would be to consider Phase I at Foote Creek Rim only since this would provide power for the part of the project that has been contracted. Another appropriate and reasonable alternative would consider locating the Phase I portion of the project within less sensitive areas in the Simpson Ridge area. The Simpson Ridge area has also been identified by KENETECH as a viable site for a windplant. That alternative would require less transmission line construction, and could avoid sensitive wildlife resources and concerns that have been verified at Foote Creek Rim. The Medicine Bow Project mentioned in the DEIS is also another viable and reasonable alternative that would satisfy the purpose and need stated in the DEIS. Other plausible alternatives suitable to detailed analysis exist outside the KPPA but within the wind corridor. I strongly encourage BLM to provide detailed analyses on these and/or other reasonable alternatives. The ones I have suggested should be appropriate and could apply data already compiled for the proposed project. The DEIS should be revised or supplemented as provided by 40 CFR 1502.9 by including these detailed analyses of other alternatives. The DEIS as it stands, is deficient and may not stand up to legal challenges. It seems appropriate and prudent to include more detailed analyses of alternatives for this precedent-setting project.

I have additional concerns about the DEIS process for this project and believe the DEIS would be strengthened by resolving these problems. I indicate these below and in my specific comments. Among my procedural concerns is that the DEIS fails to point out opposing views or selectively presents interpretations of studies in many places. Such disagreements need to be disclosed as required by 40 CFR 1502.9. For example, the DEIS failed to acknowledge that there has been substantial disagreement about the alternatives being considered in detail.

I believe there is considerable disagreement on the significance of impacts and the suitability of proposed mitigation measures. Scoping comments should be referenced. Virtually no mitigation is provided to compensate for loss of habitat function. It is my understanding that the policy of the Wyoming State Office of the BLM is that mitigation will not be required if it cannot be provided on-site. If that is the case, many of the project's impacts would not be mitigated and the significance of impacts for the project should be elevated. BLM should explicitly state their mitigation policy and how and where it will be applied for this project. BLM should also disclose that several project impacts would not be mitigated, or that permit conditions would not require mitigation. It appears that the DEIS does not accurately state the significance of project impacts. On one hand, the DEIS assumes mitigation will be in place. On the other, the DEIS states that BLM will not require mitigation in certain circumstances. However, these are not quantified. For example, BLM only gives much consideration to impacts to big game populations where actual physical disturbance occurs on crucial big game winter ranges (c.f., significance criteria). The project could pose a significant impact to these populations by cumulatively impacting other

19 Page 1-6, ¶3, 1.1.2 The Wyoming Wind Resource. The DEIS should include more complete information in order to compare the wind resource within the 62-mile wide wind corridor. How do winds vary within sites (e.g., Foote Creek Rim, Simpson Ridge, and other alternate sites)? Data should be provided regarding the seasonal frequencies and intensities of wind gusts by compass direction. How frequently would WTGs be idle at these sites due to calm or extreme winds? How does this compare to periods of peak power demand? The description of the wind resource in the DEIS should be described in greater detail and at a finer level of resolution to support or refute suitability of alternative project locations. This analysis should include this information (40 CFR 1502.22).

21 Page 1-8, Top ¶. The DEIS does not disclose that the GDRA RMP did not consider commercial windplants like the proposed project (see 40 CFR 1502.9). I question the appropriateness of tiering to the RMP here.

22 Page 1-10, 1.4 Issues and Concerns. BLM should disclose opposing points of view as required of NEPA. Issues and Concerns listed in this section do not appear to reflect the significant scoping comments from state and federal agencies about the need to analyze alternative project locations and other modifications to the project. This includes my above discussion about the range of alternatives analyzed in detail in the DEIS. Mitigation effectiveness, baseline data adequacy and monitoring sensitivity are other areas where there appear to be substantial disagreements ignored in the DEIS.

23 Page 1-10, Last ¶. Some of the contractors supplying portions of the DEIS appear to have interests in providing additional services if the project is approved. Were disclosure statements completed as required of contractors preparing environmental statements (see 40 CFR 1506.5(c))?

2.0 PROPOSED ACTION AND ALTERNATIVES

24 As I stated earlier, the alternatives analyzed in detail in the DEIS do not represent a reasonable range as required by 40 CFR 1502.14 and other sections. A precedent-setting project such as KENETECH's warrants detailed evaluation of a range of alternatives to better understand the impacts and consequences of the project. I refer to my above suggested alternatives.

25 Page 2-1, ¶1. This section of the DEIS fails to disclose that the proposed and alternative actions would set a precedent. The scale, scope, intensity, operation and impact of this project is significantly different from other ROW permits. The DEIS should expound on how this project is different and attempt to quantify these differences.

26 Page 2-1, ¶3. I return to my contention that Alternative A does not provide a reasonable range in consequences from the Proposed and No Action alternatives. Reducing the project by scaling the project back by 40% of the WTGs will not necessarily result in a 40% reduction in impacts from the Proposed Action. It is likely that the WTGs eliminated from this proposal would be the ones located in relatively lower wind areas. There is a high probability that the remaining WTG strings

11 winter ranges and causing avoidance of preferred habitats. The DEIS implies that mitigation will only be applied to those phases of the project after Phase I. Those impacts would go unmitigated. The DEIS fails to disclose this. Significance criteria identified in the DEIS do not respond to many of the impacts described for the project. Many of the significance criteria are not linked to the monitoring program. More meaningful criteria should be developed.

13 The DEIS should provide specific mitigation measures for a range of possible impact contingencies rather than waiting for additional measures to be provided in PODs. The DEIS includes catch-22s by establishing significance criteria based on arrangements made at the POD stage (e.g., soils). Authorizing Officers will be more inclined to apply mitigation measures if they are prescribed in the EIS. Including contingency mitigation in the EIS also allows full public review and lets project operators know what to expect up front. At the POD stage, operators may not accept additional mitigation. BLM does not have a reputation for applying additional mitigation measures for other projects after environmental analysis.

My specific comments on the DEIS follow. I have identified these by chapter, page, paragraph and section. Some of my comments are posed as questions, although they indicate ways the DEIS should be revised. I can elaborate on my comments where BLM's EIS Team need clarification or further suggestions.

1.0 INTRODUCTION

14 Page 1-1. As I stated above, the DEIS should disclose the precedent-setting nature of this project. This would be the first industrial-scale windfarm to be sited in Wyoming and within the ecosystem present in the project area. As such, the precedence and uncertainty of this project increase the significance of the impacts (40 CFR 1508.27(b)(5) and 6).

15 Page 1-4, Top ¶. I do not feel that the mitigation and monitoring identified for the project are adequate. Mitigation contingencies should be defined in the EIS which may later be adopted in PODs. POD conditions are more enforceable when these are included in the EIS documentation. The EIS should include mitigation for the range of impacts that may occur (40 CFR 1502.14(f), 1502.16(h)). The uncertainty associated with the project raises the significance. Therefore, effective mitigation should be planned to cover worst case impacts. This strengthens the analysis and allows operators to anticipate requirements.

16 Page 1-4, ¶5. Analyzing Phase I alone as another reasonable alternative is supported by the fact that only 70.5 MW of the power capacity for the entire project (Phase I) has been contracted.

17 Page 1-4, Last ¶. I refer to my previous comments that the DEIS should be strengthened to satisfy the intent of NEPA. These concerns relate to the selection and analysis of reasonable alternatives, significance, monitoring, mitigation effectiveness, and disclosure.

18 Page 1-5, 1.1 Purpose and Need. The purpose and need stated here disagrees with the purpose and need mentioned under "Alternate Project Location" for a demonstration windplant (Sec. 2.4, Page 2-33).

26 would occur in sensitive resource areas so the impacts could be nearly as great as the full project. The lack of a specific project design hinders this analysis. How about analyzing the project excluding Foote Creek Rim? Would that substantially reduce impacts to wildlife resources?

27 Would that also minimize archeological conflicts? Resources in the Simpson Ridge portion of the

28 project should be described in similar detail to the Foote Creek Rim project.

29 Page 2-1, ¶6, 2.1 Proposed Action. Will conservation easements owned by the Wyoming Game and Fish Commission within the project area be impacted?

30 Pages 2-2 - 2-4, Tables 2.1(a), (b) and (c). The amounts and types of disturbance shown in these tables do not account for wildlife displacement or loss of utility of areas surrounding disturbed sites. However, the DEIS recognizes such impacts later in the document.

31 Page 2-5, ¶3, 2.1.2 Plan of Development. I reiterate my concerns that baseline wildlife surveys and monitoring, as currently proposed, are not adequate for evaluating impact significance, identifying need for mitigation, and determining mitigation effectiveness or project compliance. Mitigation contingencies should be committed to in the EIS to guarantee that impacts on important resources are compensated. I do not feel that sufficient modifications would be imposed in PODs by BLM. The DEIS fails to assure effective mitigation will be implemented to address significant impacts of the project. I am also concerned that unless adequate baseline data and monitoring on control sites are provided for from the start, provisions to require additional monitoring will be confounded rather than allow reliable information to be collected for this precedent-setting project.

32 Page 2-5, Last 2¶s. The DEIS does not provide substantial evidence that the baseline studies or monitoring protocols for wildlife will be reliable enough to determine cumulative impacts (see 40 CFR 1502.9). It appears that most of Phase I will rely on less than 1 year of adequate baseline information because of changes in design and late initiation of some surveys. Other project-related activities on Foote Creek Rim may be confounding baseline surveys. Has that been evaluated? Adequate baseline data should be collected for over 2 full years prior to construction. The proposed monitoring protocols will not provide this. BLM should agree to require statistically reliable baseline information to be obtained prior to issuing a notice to proceed with PODs for subsequent phases.

33 Page 2-7, Figure 2.1. Any additional mitigation measures that might be required in PODs should be included as contingencies in the EIS along with meaningful criteria for monitoring effectiveness. Such criteria have not been provided for in the DEIS.

34 Page 2-8, ¶3, 2.1.3 The Windplant. I can't see where the DEIS provides evidence that the proposed WTG strings (Map 2.1) have been sited so as to minimize impacts to wildlife and other resources (The turbine strings appear to coincide with areas of high raptor use as shown in Section 3).

35 Page 2-8, ¶6. The DEIS indicates that much of the information needed to evaluate environmental impacts on the Simpson Ridge portion of the project is incomplete. This information appears to be

- 35 cont. essential for this environmental analysis (see 40 CFR 1502.9) If that is the case, BLM should seriously consider evaluating Phase I at Foote Creek Rim as a reasonable alternative and BLM should reconsider its preferred alternative
- 36 I don't feel that the AO will have sufficient expertise to determine environmental data needs. Criteria should be established within the EIS to assist the AO in making an informed decision. I again question the adequacy of only one year of intensive predisturbance data, based upon recent scientific papers on adequate impact assessment study designs.
- 37 Page 2-11, First ¶. How often and for how long would WTGs not generate power because of winds outside of operating ranges for Foote Creek Rim, Simpson Ridge and other sites in the vicinity of the project?
- 38 Page 2-15, ¶3. The EIS should impose restrictions to minimize the timing and frequency of disturbance by project personnel?
- 39 Page 2-15, ¶6, 2.1.4.1 Road and Pad Construction. What mitigation would be provided when sensitive areas cannot be avoided?
- 40 Page 2-19, ¶6, 2.1.4.5 230-kV Transmission Line Construction. The DEIS provides no evidence that sensitive wildlife areas would be avoided. How will these impacts be compensated?
- 41 Page 2-21, ¶2. What procedures would be followed if trees cleared within the ROW are used for nesting by raptors or other sensitive migratory birds?
- 42 Page 2-21, Last ¶, 2.1.4.7 Final Road Grading, Erosion Control, and Site Clean-up. Disturbed sites on Foote Creek Rim would be subject to strong wind erosion. Would sediment be deposited in drainages associated with Rock Creek? How would this be prevented?
- 43 Page 2-22, ¶2, 2.1.5 Public Access and Safety. How is the "immediate vicinity of the wind turbines and facilities" defined? Would the project affect public access to the Wyoming Game and Fish Commission's Wick Brothers Unit and the utility of these lands?
- 44 Page 2-28, ¶2, 2.1.10 Reclamation and Abandonment. Does the BLM reclamation policy provide off-site mitigation if on-site mitigation is not feasible? If not, how will surface disturbances be mitigated for the LOP?
- 45 Page 2-28, ¶6, 2.1.11 Project-wide Mitigation Measures. I am concerned that the project would not mitigate for many of its impacts. The EIS should provide contingencies for adequate mitigation over a range of potential impacts instead of relying upon unspecified measures to be incorporated in PODs. Will these be "waived" or "excepted" since the implications are different. If measures are waived, then prescribed mitigation would be eliminated. BLM frequently excepts projects from mitigation or stipulations prescribed in the RMP. If prescribed mitigation will not be enforced, then these measures would not be effective as required by NEPA. These measures are not supported in the DEIS

- 57 Page 2-30, Item 9. Will wind erosion be controlled at disturbed sites on Foote Creek Rim and other exposed sites to prevent sediment deposition into wetlands and streams such as Rock Creek?
- 58 Page 2-31, Item 12. Is this mitigation consistent with Item 9 to avoid construction within 500 ft of surface water and wetlands? Will transmission lines avoid grouse leks, raptor nests, wetlands and other sensitive habitats?
- 59 Page 2-31, Item 13. Applying this restriction to "active" raptor nests conflicts with stipulations provided in the GDRA RMP. BLM's raptor surveys have usually been conducted after a large proportion of nests fail so that many active nests are missed. The raptor inventory may not be adequate to know whether or not a raptor nest was active in the last three years. Weren't raptor studies for this project on Foote Creek Rim initiated late in 1994. When were nesting studies initiated on Simpson Ridge and surrounding areas? Does the DEIS's use of "Extensive raptor nesting studies" imply that "intensive" nesting studies were not performed? Were all potential nesting areas adequately searched over the last three or more years? What proportion of active nests are missed during surveys by species?
- 60 Page 2-31, Item 16. What does the DEIS mean by imposing seasonal stipulations "within certain areas"? What defines "certain areas"? The DEIS should state clearly what these are and how they will be applied during the project. It appears that the DEIS will only prescribe mitigation of some project impacts on crucial big game winter ranges. Will impacts to wintering big game in other (noncrucial) wintering areas be mitigated? If so, how?
- 61 Page 2-31, Item 17. This item also appears to contradict the wildlife stipulations identified in the GDRA RMP, specifying only "Known active sage grouse leks." Have lek inventories been adequate to verify activity at leks? How frequently have each lek in the project been searched in recent years? Is the statement that restrictions would be placed on construction activities around "known nest sites" an error? Do you really mean around "leks"? If this mitigation only applies to leks on public ground, will impacts to leks on other lands not be mitigated? How many leks would not be mitigated? The DEIS should disclose exactly what is meant here.
- 62 Page 2-32, Item 18. If wildlife will be excluded from substations, will those acreages be mitigated? Will raptors and other birds perch on those fences?
- 63 Page 2-32, Item 20. I feel that BLM should obtain from other agencies some defensible, objective criteria in advance defining under what circumstances they would allow consideration of excepting construction activities from federal and other regulations? Does the DEIS really mean crucial winter ranges here instead of "water" ranges? Will mitigation be assured? How? It appears that BLM has a tendency to except projects from seasonal restrictions. If that continues, will these mitigation measures be effective?
- 64 Page 2-32, 2.2 Alternative A. I refer BLM to my previous concerns about the lack of a reasonable range of alternatives being analyzed in detail. I don't believe the DEIS fulfills the intent of NEPA here. There is probably a greater chance that the impacts of Alternative A are

- 47 Page 2-28, ¶7. Adequate baseline data for impact areas and control sites are required to determine the level of impacts and monitoring sufficiency. Recent papers in the scientific journals Ecology and Ecological Applications provide requirements for impact assessment studies using the Before/After/Control/Impact approach. These papers criticize the approach by Green which is referenced in the DEIS. It is essential that adequate, replicated predisturbance data be obtained for a precedent-setting project as this.
- 48 Page 2-28, Last ¶-Page 2-29, first ¶. What specific recommendations has KENETECH's Avian Task Force made for this project? Have those recommendations been implemented? It does not appear that the recommendation to site windplants away from areas of high avian use has been followed for Phase I (c.f., Maps 2.1 and 3.14-3.17). The map comparisons also suggests the size and spacing of the windplant has not been adjusted to reduce impacts. No off-site mitigation has yet been considered. Contingencies should be developed and incorporated into the DEIS. Will off-site mitigation be required and enforced? If not, then impact assessment should assume more significant impacts.
- 49 Page 2-29, ¶3. How does KENETECH propose to handle incidental take under the Migratory Bird Treaty Act and other laws? The DEIS suggests that mitigation would be required for "subsequent" phases of the project. That suggests Phase I impacts will not be mitigated?
- 50 Page 2-29, ¶4. Has KENETECH modified windplants at other sites to mitigate impacts? Were these measures effective? How effective were they?
- 51 Page 2-29, Last ¶, Item 1. Given BLM policies, will mitigation measures be effectively implemented? If landowner preferences prevent mitigation on site, will BLM require off-site mitigation? How does the DEIS handle project impacts where landowner preferences do not provide mitigation on-site?
- 52 Page 2-30, Item 2. As noted above, I do not see that windplant facilities have been placed to avoid sensitive wildlife habitats on Foote Creek Rim. Important wildlife habitats include winter ranges not designated as crucial. Will impacts to those areas be mitigated? How?
- 53 Page 2-30, Items 3-4, 9, Page 2-31, Items 10, 12. What mitigation is proposed for areas that are not "feasible" to avoid? How effective is that mitigation?
- 54 Page 2-30, Item 6. How would disturbance during the life of the project be mitigated?
- 55 Page 2-30, Item 7. If initial revegetation efforts using native plants are unsuccessful, what else would BLM require? Not all habitat values would be restored if nonnative species like crested wheatgrass are used. Perhaps transplanting shrubs or other intensive reclamation techniques should be used on appropriate sites where initial reseeded efforts failed.

- 66 cont. closer to those of the Proposed Action because some project facilities and operations would still occur in sensitive areas and the road and powerline infrastructure would probably be nearly as extensive. For some resources, the Foote Creek Rim project would have the greatest impact and there is little evidence in the DEIS that much if any of the 40% reduction would apply to that phase. The analysis in the DEIS is deficient by the lack of actual quantification other than assuming a net 40% reduction due to fewer towers. I question the validity of assumptions for Alternative A. This alternative does not provide much useful information for decision-making. I have noted that better alternatives exist and have suggested some above. Wouldn't the public interest be better served by analyzing a more complete and appropriate range of alternatives for a precedent-setting project like this? Again, the alternatives considered in detail raise questions about whether the desires and schedule of the applicant have unduly influenced BLM's selection of alternatives for detailed consideration (40 CFR 1502.5 and 1506.1). The consideration of a reasonable range of alternatives is an extremely important component of implementing NEPA in the decision-making process (40 CFR 1502.2 and 1502.14).
- 67 Page 2-33, 2.3 No Action Alternative. I don't feel that the No Action alternative receives serious consideration in the DEIS. The DEIS mentions the Medicine Bow Project elsewhere and there appear to be other proposals for windplants in the area. Wouldn't the development of one of these other projects under No Action also fulfill the purpose and need (provide a wind-generating facility in Wyoming) stated for this EIS?
- 68 Page 2-33, 2.4 Alternatives Considered but Rejected. I must again take issue with the DEIS for avoiding a detailed analysis of reasonable alternatives for this precedent-setting project. The EIS does not make decisions - it is a vehicle for helping to objectively evaluate environmental consequences. I think the DEIS does not satisfy the intent of NEPA. I again strongly encourage BLM to reconsider its position on alternative analysis and supplement the DEIS with a proper analysis of reasonable alternatives. I've noted other reasonable alternatives above. CEQ Regulations (40 CFR 1502.2, 1502.5 and 1506.1) and other guidance (Federal Register 46(55), 18026-18038, 3/23/1981) direct agencies to consider alternatives other than those preferred by the applicant, that applicant preferences and schedules should not limit the agencies' consideration of alternatives, and that agencies can consider alternatives beyond their jurisdiction. The acknowledgement of at least one other wind power proposal outside the KENETECH project indicates other feasible alternatives exist within the wind corridor. Also, relocating Phase I in the Simpson Ridge area is another alternate location and project that may have reduced environmental consequences while fulfilling the purpose and need of the project. Phase I could be sited in the Simpson Ridge area to avoid sensitive areas better than at Foote Creek Rim since the former is more expansive. The DEIS documents significant resources that would be impacted by Phase I at Foote Creek Rim.
- 69 Page 2-33, ¶6 and Page 2-34, Table 2.9. Windspeed information described here and in Table 2.9 on Page 2-34 is incomplete and is not of sufficient resolution to substantiate that no other alternative sites are viable. The DEIS should provide data on windspeed, direction, frequency and intensity at a finer scale. That information is crucial to the decision. The interpretation of this table is confounded by the comparison of areas of drastically different sizes and does not reflect the variability of conditions within sites. How frequently and for how long would WTGs not generate

- 70 cont. power because wind conditions exceeded operational limits? Table 2.9 should provide statistical confidence intervals for the estimated costs. It is hard to follow the cost estimates discussed in the text when compared to the table because of different units. These should be consistent.
- 71-72
- 73 Page 2-35, ¶2. The purpose of comparing alternatives is to evaluate environmental consequences to aid decision making (40 CFR 1500.2). I don't feel that the DEIS demonstrates that all other sites are unsuitable for wind power generation. Suggestions in the DEIS elsewhere indicate other sites may indeed be suitable.
- 74 Page 2-35, ¶3. The DEIS should cite the official 1992 comments from the Wyoming Game and Fish Department that no alternatives were suitable.
- 75 Page 2-35, ¶4, Expand or Reduce the Project Area Size. The DEIS shows that Phase I is located within sensitive wildlife habitats. KENETECH indicated that the Simpson Ridge area is suitable. The DEIS does not explain why Phase I could not be located within the Simpson Ridge area and avoid more sensitive wildlife habitats. Transmission line construction would be shorter if Phase I were placed in the Simpson Ridge area. This would presumably be cheaper for KENETECH and PacifiCorp. I recommend BLM reevaluate their position and refer back to my previous comments on alternative selection. Since Phase I (Foote Creek Rim) is the area of the project where most detailed analyses have been conducted, it may be appropriate to exclude other parts of the project until the necessary and adequate data for analyzing those portions of the project are completed. Studies on wind and snow, (page 3-2), ambient noise (page 3-21), and vegetation (page 3-24) have not been completed for Simpson Ridge, according to the DEIS. Most wildlife inventories for that area are less intensive than surveys being conducted at Foote Creek Rim (pages 3-36, 3-58).
- 76 Page 2-35, ¶5, Construct the Project in One Phase. Monitoring impacts under Phase I will be limited under the present procedures and schedules unless modifications are made. I can find very little evidence that prior knowledge from other wind power projects has been applied at Foote Creek Rim to minimize impacts to wildlife and other resources by relocating sites or altering the number of towers or placement of WTG strings.
- 77 Pages 2-38 - 2-45, Table 2.11. CEO regulations require that mitigation effectiveness be described. I can't find that here or elsewhere in the DEIS. What supporting documentation can BLM provide to demonstrate the effectiveness of proposed mitigation measures. Also, how does the precedent-setting nature of this project enter into that determination? The DEIS fails to
- 78 acknowledge that wildlife will be impacted by the project on areas outside crucial winter ranges. I
- 79 don't think any of the mitigation would be effective. Cumulative impacts may be more significant
- 80 than BLM assumes (40 CFR 1508.7). I again question the assumption that Alternative A would only result in a 40% lower impact than the proposed action. Will monitoring be sensitive enough
- 81 to reliably detect impacts? At what level of effect?
- 82 Page 2-42 - 2.43, Table 2.11 (con't), Wildlife: Will the project impact big game on noncrucial winter ranges? What mitigation is provided and how effective is it? I can't find where loss of

- 90 cont. information collected for the project and assess its utility for determining baseline conditions and impacts.
- 91 Page 3-34, First ¶. Don't the Wyoming Game and Fish Department's big game population objectives relate to postseason populations and not end-of-biological year estimates as stated in the DEIS? This should be clarified.
- 91 Page 3-36, Table 3.10. The preceding comment applies to this table.
- 91 Page 3-40, ¶¶ 2-4, Page 3-42, ¶5, Page 3-44, ¶6. Again, don't population objectives for mule deer, white-tailed deer and elk, respectively, refer to postseason populations and not end-of-year estimates as implied.
- 92 Page 3-46, ¶4. The DEIS indicates that raptor observations peaked during migratory periods. These are based on diurnal observations. Many bird species migrate at night and at heights above the ground that differ from typical habitat use by those species. How was avian nocturnal use monitored? Radar studies have been used at other wind power projects to help evaluate this avian use. The National Renewable Energy Lab (NREL) in Golden, Colorado provides funding for such studies. It is my understanding that KENETECH has received funding from NREL for assessing wind plant impacts on birds at other projects. If nocturnal avian use was not evaluated here, why not? Isn't that information important for understanding how the project may impact birds? How does lack of these data affect BLM's interpretation of impacts and significance?
- 93 Page 3-48, Figure 3.2. It would be more meaningful if this figure included confidence intervals about the mean number observed per monthly survey to help assess reliability of the data.
- 94 Pages 3-49-3-51, Maps 3.14-3.16. WTG strings and associated roads as shown on Map 2.1 on page 2-6 should be superimposed on these figures to evaluate how the windplant has been sited to avoid impacts to raptors.
- 95 Page 3-52, ¶3. It is my understanding that raptor nest searches were conducted relatively late in 1994 nesting season. Leaf-out and harsh winds also apparently reduced the ability of surveyors to locate nests and determine their status. The DEIS should describe the limitations of the baseline data raptor nesting.
- 96 Page 3-53, ¶2, Page 3-53, Table 3.13: I think the statement on page 3-53 that raptor nesting density is greater in the Simpson Ridge area than at Foote Creek Rim should be clarified. Map 1.2 on page 1-3 shows the Simpson Ridge area as being in excess of 5 times the acreage of the Foote Creek Rim area. If buffer areas differ between sites, how does that influence this comparison? A finer breakdown would be helpful. Do the composition of habitats included in the areas differ? Were no accipiter nests found? What percentage of nests are missed? Table 3.13 suggests that composition of raptor nests between the two areas are different. This deserves some discussion. Does raptor species composition relate to mortality risk and frequency?

- 82 cont. habitat quality and function will be mitigated? Impacts due to displacement and stress are not quantified.
- 83 I can't find where 40 CFR 1508.20 defines acquiring federal and state permits for incidental take of federally protected birds as mitigation. How will these impacts be compensated? The BLM's project leader for this EIS has stated that migratory birds will be killed at any site so there does not appear to be any effort to avoid certain areas to minimize impacts to birds. Is it reasonable to assume that impacts would be of the same magnitude for all species at all sites? This has been an issue regarding alternative selection. The DEIS indicates that Phase I has not been designed to minimize impacts to raptors or mountain plovers on Foote Creek Rim. When would such mitigation be used and how will unavoidable impacts be compensated? The table does not provide
- 84 mitigation for impacts to sage grouse on leks? Is any consideration given to avoiding sage grouse wintering areas?
- 85 Page 2-44, Table 2.11 (con't), Land Use: Will the project result in changes in the utility of lands? I do not see where losses in the utility of lands and their quality for recreation will be compensated.

3.0 AFFECTED ENVIRONMENT

- 86 Page 3-0, ¶5, Climate and Air Quality. Because it is germane to the issues considered in this DEIS, characteristics of the wind resource for the KENETECH project area and surrounding areas should be described in more detail, as I suggested above. The DEIS should include descriptions of wind patterns within the wind corridor for several sites within the project area including the frequency, intensity, and duration of wind speeds on a seasonal basis. How do these vary seasonally, and across the area?
- 87 Page 3-0, ¶7. The ability for wind to transport snow across Foote Creek Rim suggests that wind erosion of soil and other particles from sites disturbed for project construction could deposit these downwind into drainages and wetlands. Was this considered in the DEIS?
- 88 Page 3-21, ¶2. The DEIS should note that wildlife may be adversely displaced by noise and other disturbances outside crucial big game ranges.
- 89 Page 3-24-3-27, Biological Resources. There appear to have been several delays in initiating wildlife surveys, changes in methodology, and limitations on areal coverage. These should be identified and discussed in the DEIS. Has any scientifically valid review of the adequacy of baseline data and monitoring techniques been performed? What level of sensitivity (i.e., what type and magnitude of effect) do preliminary results indicate the methodology will be able to detect? That should be disclosed in the DEIS. When were big game surveys initiated? How many were conducted prior to the release of the DEIS?
- 90 Page 3-32, ¶4, 3.2.2 Wildlife and Fisheries: Although data collection has been ongoing for about one year, methodology and coverage have varied. Not all wildlife resources have been monitored since February 1994. The DEIS should describe the level and reliability of wildlife resource.

- 97 Pages 3-59-3-62, Sections 3.2.2.5 (Waterfowl, etc.) and 3.2.2.6 (Passerines): My comments about nocturnal use by raptors also is relevant here. How was nocturnal bird use evaluated, particularly during migration periods, since this is important at other wind project sites? Was additional funding through NREL considered for evaluating these impacts? Would these be addressed in the future aspects of the project?
- 98 Page 3-61, Figure 3.3: Again, confidence intervals should be provided with the means on these figures to help readers assess the quality of the data presented.
- 99 Page 3-73, Map 3.17. It would be illustrative to overlay the WTG strings and roads on Map 2.1 on page 2-6 on this map of mountain plover sightings to demonstrate how facilities have been located to avoid impacts to this species. Would the Simpson Ridge project impact this species to the same extent?
- 100 Page 3-115, Map 3.23. Visual resource classes south of I-80 should be included since the project will impact visual resources for recreationists on the national forest and the Wick Brothers Habitat Unit of the Wyoming Game and Fish Department. How do BLM visual classes compare to those on nearby national forest? The text should be revised to include these in the analysis.

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

- 101 I again question the effectiveness of various mitigation measures prescribed in the DEIS and whether these will be enforced. Little information is provided to substantiate that mitigation measures would be effective. The DEIS leaves open just what will be mitigated and where. This is critical to the evaluation of impacts due to the project. The DEIS should state that many significant impacts will not be mitigated, nor have many impacts been adequately assessed. Again, the precedent-setting nature of the project warrants greater consideration of environmental consequences. This analysis is constrained by the lack of reasonable alternatives considered in detail. As discussed in 40 CFR 1508.27, significance increases with the degree of uncertainty associated with the project. The lack of adequate baseline, and limitations on the design of control and monitoring protocols, will likely result in weak criteria for determining the need for and effectiveness of mitigation from this project. Very little quantitative analysis has been provided to show the accuracy and reliability of these protocols. I again feel that the EIS should incorporate a range of mitigation contingencies since PODs are typically weak.
- 102 Significance criteria for some resources, as discussed below, are often unresponsive to issues and concerns raised about the level and nature of impacts. Many of the significance criteria are not tied directly into monitoring protocols. What scientific data support these as meaningful criteria for application to this project?
- 103 I again reiterate my concern that about the assumption that Alternative A represents a 40% reduction in impacts from the Proposed Action.
- 104 Page 4-1, ¶1. The DEIS should identify which mitigation and monitoring measures can and will be conditioned to a BLM permit. How does this relate to the statement in the last part of ¶3? BLM

- 108 **CONT.** should also specify which mitigation items are not likely to be enforced, when and where they will not be enforced, and what these mean to the assessment of impacts and consequences. Will BLM's policy on not requiring off-site mitigation influence the impacts of the project?
- 109 Page 4-1, ¶1. What methodology and evaluations support the DEIS interpretations that prescribed mitigation would be effective and that residual impacts are accurately determined? Will mitigation measures for nonfederal lands become a condition of the permit?
- 110 Page 4-1, ¶5. How do the precedent-setting nature of the project and uncertainty about the impacts affect the assessment of significance in the DEIS as prescribed in 40 CFR 1508.2? What scientific information supports the determination of significance criteria? I again am concerned with the BLM's interpretation that only impacts to big game on crucial winter ranges would be adverse to those populations? What scientific data support that position?
- 111 Page 4-3, ¶2. There do appear to be other proponents besides the Medicine Bow windfarm project that are interested in windfarm development in the vicinity of the KPPA. These should be anticipated. BLM could contact area landowners to determine other potential projects.
- 112 Page 4-3, ¶3. This portion of the DEIS should disclose that the impact of the project would exceed the acreage disturbed because of changes in utility of surrounding areas and displacement of wildlife.
- 113 Page 4-26, Last ¶. What scientific criteria will BLM "deem appropriate" for use in determining when construction activities would not be restricted in sage grouse nesting habitat? How are "critical winter periods" defined?
- 114 Page 4-28, 4.1.8.5 Cumulative Impacts. Additional mitigation for noise impacts should be identified in the DEIS and implemented if needed.
- 115 Page 4-29, ¶5, 4.2.1 Vegetation. Significance criteria are not directly tied to monitoring provisions (see Chapter 5, page 5-14). These should be explicitly identified in the DEIS and incorporated into PODs and reclamation plans. These criteria require that site-specific vegetation inventories be conducted prior to disturbance. Have these inventories been performed?
- 116 Page 4-31, ¶5. If revegetation is not achieved, will impacts be mitigated off-site? How will the use of crested wheatgrass or other nonnative species with low wildlife habitat values be compensated?
- 117 Page 4-33, ¶6, 4.2.3.1 Big Game. Significance criteria for big game do not adequately reflect concerns and identified impacts resulting from the project. Big game populations can be significantly impacted on seasonal ranges other than crucial winter ranges. Table 2.11 recognizes that stress and displacement may impact big game populations. The proposed significance criteria do not relate to proposed monitoring protocols for big game (Appendix B). Therefore, the significance criteria described in the DEIS are not meaningful and should be replaced with criteria that reflect physical and psychological habitat loss (avoidance) resulting from the project. Resident segments may respond to impacts of the project differently from

- 118 **CONT.** nonresident or migratory segments of big game populations. The uncertainty associated with the project should raise the level of significance (40 CFR 1508.27(b)(5)). This places emphasis on obtaining adequate predisturbance and control data. The sensitivity of the monitoring must be defined at the onset.
- 119 Page 4-34, ¶1. In order to adequately evaluate the impact of the project on big game, adequate preconstruction data are needed prior to Phase I construction.
- 120 Page 4-34, ¶3. Impacts to pronghorn on winter/yearlong ranges, including displacement, could be more significant than the DEIS acknowledges. The assumption that impacts would be negligible is purely speculative.
- 121 Page 4-34, ¶4. Moderate impacts to noncrucial winter ranges could cumulatively be significant (*sensu* 40 CFR 1508.27(b)(7)).
- 122 Page 4-34, Last ¶. I believe the DEIS's reference to Yeo et al. (1984) misleads the reader on the findings of this report. These authors made no statement about how "quickly" pronghorn adapted to increased traffic. The DEIS should point out the substantially different nature of the WTGs and the size of the windplant in that study compared to the proposed project. The DEIS failed to mention that Yeo et al. (1984:58) stated that "This does not presume, however, that development of larger windfields would evidence a similar lack of displacement." Authors of this chapter of the DEIS also failed to disclose that Yeo et al. (1984) found that doe-fawn groups "remained sensitive to traffic even though other group types appear habituated" (Yeo et al. 1984:7). Doe-fawn groups comprise a substantial portion of pronghorn populations. Haven't WTGs been constructed within pronghorn range in Montana? Did DEIS preparers contact agency personnel and operators there about any observations on pronghorn responses to windplants?
- 123 Page 4-37, ¶2. I feel that the DEIS attempts to minimize adverse conclusions in Segerstrom (1982). Segerstrom found pronghorn remained significantly farther from disturbances at mine sites than expected at random (Segerstrom 1982:198). The fact that some animals remain in disturbed areas (e.g., Easterly et al., n.d., Segerstrom 1982) does not negate the fact that other animals were adversely impacted by these projects and were displaced from impacted areas.
- 124 Page 4-37, ¶4. For adequate evaluation of impacts, intensive monitoring should commence prior to Phase I construction.
- 125 Page 4-37, ¶5, Page 4-38, ¶2. The assumption that impacts to mule deer would remain negligible is purely speculative.
- 126 Page 4-38, ¶3. Mule deer studied by Easterly et al. (n.d.) were predominantly nonmigratory. Migratory mule deer may be displaced to a greater extent than nonmigratory segments.
- 127 Page 4-39, ¶4. Adequate predisturbance monitoring of elk and mule deer should be conducted prior to construction of Phase I if reactions are to be determined.

- 129 Page 4-40, ¶3. Pronghorn avoid crossing under overhead structures. Is there evidence that pronghorn will move through WTG strings? Is there evidence that elk or mule deer will ignore these structures?
- 130 Page 4-41, ¶2, Alternative A. The assumption that impacts from this alternative would only be 60% of the proposed project depend highly on the location of the WTGs and other structures in relation to important big game habitats. I have already indicated that the DEIS assumptions may not be correct. It may be more likely that impacts may be closer to the proposed action since WTGs and big game habitat components are not uniformly or randomly distributed, and that both probably coincide with landscape features within the project area.
- 131 Page 4-41, ¶3-Page 4-43, ¶1. Cumulative Impacts. I am concerned that displacement and impacts to big game on winter ranges may be cumulatively more significant than anticipated by the DEIS. Project impacts would also occur outside of crucial winter ranges. These impacts are not considered in the DEIS. Significance criteria for big game are not responsive to the concerns and impacts of this windplant project. Will off-site mitigation be provided? There has been a substantial amount of impact to these big game herds from other developments and conditions.
- 132 Page 4-44, ¶2; 4.2.3.3 Legislation Relative to Avian Mortality. Legislation and incidental take permits do not mitigate avian mortality due to the windplant project. The DEIS lacks discussion on what measures KENETECH (and other project operators) has (have) taken at other sites to reduce bird mortalities, whether or not they have been permitted for that take, whether or not KENETECH proposes to implement those measures or recommendations from their avian task force for this project, or other actions to reduce mortalities. Didn't NREL provide funding to KENETECH to scientifically evaluate avian mortalities at other projects?
- 133 Page 4-45, ¶4. It seems inappropriate for the BLM to interpret how the USFWS plans to address avian mortalities of federally protected species unless USFWS provides specific written guidance for this project. The USFWS memo quoted in the DEIS identifies modification of site placement as a means of reducing bird mortalities. The DEIS provides no evidence that WTG strings at Foote Creek Rim have been located to avoid conflicts with raptors and mountain plovers (Map 2.1 vs Maps 3.14-3.17).
- 134 Page 4-45, ¶5. The DEIS should cite research results from the avian task force. As I noted previously, recommendations from the task force (aside from using tubular towers) such as siting away from sensitive areas have not been applied to Phase I at Foote Creek Rim.
- 135 Page 4-46, ¶2. This appears to be the first acknowledgment in the DEIS of the precedent-setting nature of the proposed project and the uncertainty associated with the proposal. The DEIS has not identified how significant impacts to raptors can be mitigated. The DEIS criticizes the lack of marked birds to determine population impacts in the Orloff and Flannery (1992) report. Marking birds is not planned for this project. Will the second part of the significance criteria for this DEIS (declining raptor populations) be moot without that type of study? Did NREL help fund KENETECH's telemetry study of golden eagles in California to determine if windplants are jeopardizing population viability for that species. I understand the first phase of that study has

- 136 **CONT.** been completed. Can information from that study be applied to the proposed project here? Has KENETECH been able to significantly reduce raptor mortalities at other project sites? How have results of other windplant studies been incorporated into the project design and this DEIS?
- 137 The Orloff and Flannery (1992) report also advocates siting windplants to avoid avian concentration areas. Why didn't the DEIS include reference to Estep, J.A. 1989. Avian mortality at large wind energy facilities in California: identification of a problem. California Energy Commission?
- 138 Page 4-46, Last ¶. The statements in the DEIS contrast with Orloff and Flannery (1992: xii), that "Even low mortality rates may be significant for rare or protected bird species."
- 139 Page 4-51, Last ¶. The DEIS should also describe differences in species between California and Wyoming and what this may mean regarding project impacts.
- 140 Page 4-52, Table 4.15. The table should include other species documented in the KPPA (e.g., peregrine falcon, turkey vulture, etc.).
- 141 Page 4-53, ¶2. The statement that facilities "within the KPPA would be constructed to minimize impacts to raptors" does not seem to agree with the WTG layout at Foote Creek Rim in relation to raptor information.
- 142 Page 4-54, ¶5. The DEIS implies that raptor impacts from Phase I would not be mitigated. Is that correct? If not, how will those impacts be mitigated?
- 143 Page 4-55, Last ¶. It again appears that the DEIS has misquoted Yeo et al. (1984). Yeo et al. (1984:12) stated "Since attendance and location of the Site A lek have been erratic, the effects of wind energy development on sage grouse populations can not be deduced." This suggests the DEIS misleads the reader by stating these authors found no decrease in sage grouse lek attendance due to the WTG construction and operation.
- 144 Page 4-57, ¶4. How does mountain plover abundance on Foote Creek Rim compare to surrounding areas? Could Foote Creek Rim be a localized concentration area for this species?
- 145 Page 4-60, ¶5, 4.2.3.7 Passerines. How will the significance criteria related to declining passerine populations be determined?
- 146 Page 4-62, ¶6, 4.2.3.8 Amphibians and Reptiles. How will the significance criteria for these species be determined if there is no monitoring of these populations?
- 147 Page 4-66, ¶5. Peregrine Falcon. Have surveys been adequate to verify that this species is not nesting in the vicinity of the project given year-round observations?
- 148 Page 4-67, ¶5. Mountain Plover. Compare Map 3.17 with Map 2.1 showing the relation of mountain plover observations to WTG strings on Foote Creek Rim.

151 Page 4-87, ¶2, 4.5 Land Use. Significance criteria should also consider whether the windplant would result in changes to the utility of the land. For instance, if recreational opportunities on public access areas like the Wick Brothers Habitat Unit are substantially altered by the windplant, then impacts would be considered significant.

152 Page 4-89, 4.5.2.5 Recreation. Mitigation described in this section is inadequate to address changes that might occur in the utility of conservation easements held by the Wyoming Game and Fish Department as a result of the windplant. Appropriate, in-kind mitigation should be assured.

153 Page 4-97, 4.8 Unavoidable Adverse Impacts. This section of the DEIS is weak and ambitiously assumes mitigation will be adequate and effective for most resources. As noted above, many impacts to wildlife resources will not be compensated through this project.

5.0 MITIGATION AND MONITORING

154 I have noted several areas above where I feel the monitoring and mitigation provisions described in the DEIS are inadequate. The precedent-setting nature of this decision raises significant concerns that adequate mitigation and monitoring programs be established prior to construction. I think mitigation contingencies need to be placed in the EIS rather than be decided in the POD.

155 Page 5-1, ¶2. A range of mitigation measures for the project should be identified in advance, with objective criteria to trigger their adoption in PODs. The precedent-setting nature of the project warrants guidelines for the AO to follow in determining mitigation requirements.

156 Page 5-1, ¶3. I have concerns that the development of a POD prior to the FEIS may not allow for the formulation of the most appropriate project given concerns and analyses that may be required prior to a ROD. This raises concerns that 40 CFR 1506.1(a)(2) and (c)(3) may have been violated during this EIS process. The POD appears to have been developed prior to a fully informed and objective environmental analysis with public review.

157 Page 5-8, 5.1.3.11 Wildlife and Fisheries. It again appears that many impacts to wildlife on high value habitats are not being given adequate consideration and mitigation. This should be corrected. Objective, biological criteria for excepting seasonal stipulations should be identified and included as part of the EIS. BLM has been lax in upholding stipulations on oil and gas projects. I question whether prescribed mitigation will be effective unless safeguards are included.

158 Page 5-9, ¶3: Raptors. Again, it does not appear that current information is being applied to minimize impacts from Phase I of the project. Appropriate control and baseline information in a predisturbance environment will not be adequate to gauge impacts, as described. Very little of the recommendations from KENETECH's avian task force appear to have been applied to this project.

159 Page 5-10, ¶4: Amphibians and Reptiles. Please explain the relation of project odors to mitigation for these species.

APPENDIX B

169 The General Windpower Monitoring Protocols also are designed to obtain inadequate predisturbance data. More than two years of baseline data should be obtained (refer to journals mentioned above). The impact design of Green (1979) as referenced on page B-9 has received considerable criticism in recent years. The protocols do not provide substantiating evidence of their effectiveness and application in previous impact studies. What level of impact can be determined? How are impacts to resident vs. migrant segments of populations sorted out? When were surveys initiated?

170 The "weight of evidence" approach (page B-9) leaves much to discretion and is no substitute for valid scientific evaluations. A table explaining what can and cannot be reliably evaluated with the survey protocols should be prepared for the EIS. Methods should be refined to obtain adequate information to assess the effects of the project.

171 What is the "WGFD Pronghorn Survey Protocol" mentioned on B-31? Is that the obsolete trend count technique? The protocol for using clear window templates is extremely sensitive to measurement error. Has this method been used frequently by project personnel? How accurate is this method? Where was it tested? How high will the plane be flown? Can mule deer be reliably observed during these surveys?

172 How sensitive are the pellet counts at detecting changes (page B-33)? Can consistent use by a few individuals be distinguished from occasional use by larger numbers? How has this monitoring worked elsewhere? Are assumptions of the method reasonably met? Will these be evaluated as part of this project?

173 Will sampling intensity be increased if statistical tests indicate power is low (page B-47)?

APPENDIX F

174 The perspectives of the photographs and visual simulations in this appendix appear to be from a wide angle based upon the identified location where the images were taken. If that is so, the images would tend to minimize the appearance of the WTGs from how they actually would appear. The DEIS should identify the equipment used and whether or not the images are from a "normal" perspective.

In conclusion, I appreciate the opportunity to review the DEIS. I believe there are several areas where the DEIS requires substantial reevaluation, as I've noted (alternatives, data adequacy, etc.). I strongly encourage BLM to perform a substantial reevaluation and provide public review. The project is significant for its scope, nature and precedence setting potential. The public interest is best served by conducting a careful and thorough evaluation. Unfortunately, the DEIS does not

160 Page 5-10, last ¶. The importance of Foote Creek Rim to mountain plovers has already been documented. Avoiding individual nests would not adequately mitigate significant impacts due to the windplant.

161 Page 5-12, 5.1.3.15 Land Use. This section provides no mitigation for recreational uses such as occur on the Wick Brothers Unit. This seems to be an omission of the DEIS.

162 Page 5-13, 5.2 Monitoring. I am still concerned that the DEIS is based upon an inadequate baseline, and that control and monitoring protocols lack sensitivity for a precedent-setting project as this with a large amount of uncertainty. As scheduled, Phase I construction may confound attempts to determine impacts. More than two years of adequate baseline information are needed, yet the DEIS does not provide for this. The reliability and sensitivity of monitoring protocols have not been demonstrated.

163 Page 5-14, 5.2.7 Vegetation. Vegetation monitoring does not appear to be linked to the significance criteria identified elsewhere in the DEIS.

164 Page 5-14, 5.2.8 Wildlife and Fisheries. Adequate baseline monitoring for big game needs to commence well in advance of Phase I construction. When was it started and how frequently have surveys been conducted? Preconstruction and construction activities may confound efforts to determine impacts unless predisturbance information are properly obtained. Impacts to wildlife outside of crucial winter ranges are not being given adequate consideration. Subsequent phases of the project should not be permitted until baseline and control information is considered adequate to assess impacts.

I offer a few general comments on the monitoring protocols in Appendices A and B. I've previously indicated that I have substantial concerns about the design and sensitivity of this monitoring.

APPENDIX A

165 The Avian Studies Protocols suggest that less than two years of intensive predisturbance data will be obtained. This would limit the ability to assess impacts and mitigation success. The monitoring protocols provide limited information about the ability to detect effects and the success of applying such monitoring designs in other areas. Nocturnal use is still not being evaluated as is common in other windplant evaluations. The Simpson Ridge surveys (page A-16) may not provide an adequate baseline. The protocols do not address elements of current impact study designs. I refer BLM to consult recent papers published in the journals, Ecology and Ecological Applications on the design of before/after/control/impact studies. The monitoring procedures should be revised.

fulfill that purpose. Thank you.

Sincerely,



Richard J. Guenzel
4810 Sherman Hill Rd. #C
Laramie, WY 82070

Comment AP1: See Section 8.2.7 in the FEIS.

Comment AP2: Due to concerns raised about the possible major impacts associated with this project, BLM has decided to complete additional NEPA analyses for each subsequent phase of development. BLM prefers to grant a ROW for the full project development to give KENETECH prior rights on public land to prevent nuisance mineral claims.

Comment AP3: See Sections 8.2.3.1, 8.2.4, 8.2.6, and 8.2.7 in the FEIS.

Comment AP4: See Section 8.2.4 in the FEIS.

Comment AP5: The biological assessment is now available from the BLM.

Comment AP6: See Section 8.2.5 in the FEIS.

Comment AP7: See Section 8.2.6 in the FEIS.

Comment AP8: Prior to 1986, CEQ regulations required agencies to conduct a worst-case analysis when information was incomplete or unavailable. In 1986, CEQ revoked the worst-case analysis requirement. See Section 8.2.5 in the FEIS.

Comment AP9: See Sections 8.2.1 and 8.2.11 in the FEIS. You correctly identify the possibility that Alternative A would not always represent a 40% reduction in impacts. In many places in the DEIS (e.g., page 4-9, column 2, paragraph 4) the uncertainty of the 40% reduction is discussed. Depending on the resource being analyzed, factors such as facilities placement would strongly influence the level of impact associated with Alternative A, as it would under the Proposed Action. In general, however, construction of 40% fewer facilities (fewer turbines, roads, substations, etc.) would result in a proportional decrease in impacts (e.g., loss of habitat would be diminished by approximately 40%).

Comment AP10: Opposing views concerning 1) alternatives considered in detail 2) the significance of impacts, 3) the suitability of proposed mitigation measures, and 4) the adequacy of baseline data, and 5) the adequacy of the monitoring program are discussed in the FEIS. See Sections 8.2.1, 8.2.12, 8.2.5, 8.2.4, and 8.2.3, respectively. Opposing views concerning interpretation of available data are addressed as individual responses to comments.

Comment AP11: See Section 8.2.5 in the FEIS.

Comment AP12: See response to Comment AE151 in the FEIS, where Table 8.3 describes the linkage between significance criteria and monitoring.

Comment AP13: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AP14: See Section 8.2.7 in the FEIS.

Comment AP15: See Section 8.2.5 and 8.2.6 in the FEIS.

Comment AP16: See response to Comment AE31 in the FEIS.

Comment AP17: See Sections 8.2.1, 8.2.3, and 8.2.5 in the FEIS.

Comment AP18: There is no inherent contradiction between the two sections; however, a reference to Section 1.1 has been added to page 2-33 for clarification.

Comment AP19: See Section 8.2.1.1 in the FEIS.

Comment AP20: The capacity factor of the Windplant is estimated to be approximately 35% (i.e., the Windplant would produce, on average, 35% of 500 MW, or 175 MW). Capacity factor is estimated based on data such as the estimated number of hours wind speed would be too high or too low such that turbines were idle, the maintenance schedule, etc.

Comment AP21: See response to Comment AE26. Tiering to the GDRA RMP/EIS is appropriate so that the rationale for certain stipulations (e.g., precluding construction in sensitive wildlife habitat during critical periods) does not have to be reanalyzed in the DEIS.

Comment AP22: See response to Comment AP10. See also Sections 8.2.1, 8.2.3, 8.2.4, 8.2.5, and 8.2.12 in the FEIS.

Comment AP23: Mariah provided a statement of no conflict of interest prior to being awarded the contract to prepare the EIS. Western Ecosystems Technology, Inc. (WEST) is under contract with KENETECH to design and implement the monitoring program. Appendix B, a description of the monitoring program, was provided by WEST. However, disclosure statements are required only from EIS preparers, not from other parties submitting background papers (*Sierra Club v. Lynn*, 5th Cir. 1974, 502 F.2d 43, 58-59 *reh'c denied*, 5th Cir. 1974, 504 F.2d 760, *cert denied*, 1975, 421 U.S. 994). As the EIS preparer, Mariah independently reviewed WEST's document prior to including it in the DEIS.

Three other issues concerning conflict of interest can be clarified as follows: 1) WEST's contract with KENETECH does not contain any incentive clauses or guarantees of any future work on the project therefore, no conflict of interest exists (C.E.Q. 1983 Guidance Regarding NEPA Regulations, 48 Fed. Reg. 34263, July 28, 1993 *Northern Crawfish Frog v. Federal Highway Administration*, D. Kan. 1994, 858 F. Supp. 1503, 1525-29). 2) A consulting firm which has been involved in developing initial data and plans for the project need not be disqualified from EIS preparation (Forty Questions Answer 17a). 3) A firm with no interest in the project outcome may later bid for future work on the project if it is approved (Forty Questions, Answer 17b).

Comment AP24: See Section 8.2.1 in the FEIS.

Comment AP25: See Section 8.2.7 in the FEIS.

Comment AP26: See response to Comment AP9 in the FEIS.

Comment AP27: See Section 8.2.1 in the FEIS.

Comment AP28: See Section 8.2.6 in the FEIS.

Comment AP29: See response to Comment W3 and Section 8.2.10 in the FEIS.

Comment AP30: Table captions for Tables 2.1(a) and 2.1(c) have been changed to indicate *surface* disturbance.

Comment AP31: See Sections 8.2.3.1, 8.2.4, 8.2.5, and 8.2.6 in the FEIS.

Comment AP32: See Sections 8.2.3.1, 8.2.4, and 8.2.6 and response to Comment AL24 in the FEIS.

Comment AP33: See Section 8.2.5 in the FEIS.

Comment AP34: See response to Comment AE30 in the FEIS.

Comment AP35: See response to Comment AE31 in the FEIS.

Comment AP36: See Sections 8.2.3.3 and 8.2.6 in the FEIS.

Comment AP37: See Section 8.2.4 in the FEIS.

Comment AP38: See response to Comment AP20.

Comment AP39: See response to Comment AE34 in the FEIS.

Comment AP40: See Section 8.2.5 in the FEIS.

Comment AP41: See Section 8.2.5 in the FEIS.

Comment AP42: It is unlikely that any trees would have to be cleared during Windplant development. If trees used by nesting raptors or other sensitive migratory birds must be cleared, mitigation could include erecting nesting platforms outside of the development area. BLM would consult with the WGFD should this contingency arise.

Comment AP43: The POD for Phase I describes erosion control measures that would be implemented to minimize sedimentation in Rock Creek and Foote Creek. Furthermore, a Stormwater Pollution Prevention Plan will be prepared in accordance with the Clean Water Act.

Comment AP44: See response to Comment W3 and Section 8.2.10 in the FEIS.

Comment AP45: BLM does not require off-site mitigation for impacts that cannot be mitigated on-site. LOP surface disturbance would not be mitigated during the LOP; however, upon Windplant decommissioning, all disturbed areas would be reclaimed (see Section 2.1.10 in the DEIS).

Comment AP46: See Sections 8.2.5 and 8.2.6 in the FEIS.

Comment AP47: See Section 8.2.4 in the FEIS.

Comment AP48: See Section 8.2.5 and responses to Comments AE44 and AE115.

Comment AP49: See Section 8.2.5 in the FEIS.

Comment AP50: See Section 8.2.2 in the FEIS.

Comment AP51: See response to Comment AE44 in the FEIS.

Comment AP52: See Section 8.2.5 in the FEIS.

Comment AP53: See Sections 8.2.5 and 8.2.12 in the FEIS.

Comment AP54: See Section 8.2.5 and response to Comment AE55 in the FEIS.

Comment AP55: See response to Comment AP45 in the FEIS.

Comment AP56: See response to Comment AE100 in the FEIS.

Comment AP57: See response to Comment AP43 and Section 8.2.3.1 in the FEIS.

Comment AP58: Whereas Item 9 refers to general construction practices, for which surface disturbance within 500 ft (152 m) of perennial streams and wetlands would be avoided, Item 12 refers to the permanent placement of transmission line structures; therefore, these stipulations are consistent with one another. See Chapter 5.0 in the DEIS for mitigation measures (including avoidance, where feasible) for sage grouse leks, raptor nests, wetlands, and other sensitive areas.

Comment AP59: See response to Comment AE49 in the FEIS.

Comment AP60: See response to Comment AE77.

Comment AP61: See response to Comment AE55.

Comment AP62: See Section 8.2.5 in the FEIS.

Comment AP63: Lek surveys were conducted in 1994 and 1995 using standard survey methods (described in Appendices A and B in the DEIS). Therefore, lek inventories have been adequate to verify activity at leks. Restrictions would be placed on construction around known lek sites -- text has been modified accordingly. Impacts on private land would be mitigated as described in Section 8.2.5. It is not known how many leks would not be mitigated; please see response to Comment AE55 in the FEIS.

Comment AP64: Because BLM does not require off-site mitigation for impacts that cannot be mitigated on-site, substation construction would result in the loss of approximately 12 ac (for the full Windplant) of wildlife habitat which would not be mitigated. Birds may perch on fences around substations. If this were to become a problem, the technical committee may recommend installing antiperching devices on these fences.

Comment AP65: See response to Comment AE55 in the FEIS. "Water" has been changed to "winter" as requested. See Section 8.2.5 in the FEIS.

Comment AP66: See Sections 8.2.1, 8.2.11, and response to Comment AP9 in the FEIS.

Comment AP67: See response to Comment W9 in the FEIS.

Comment AP68: See Section 8.2.1 in the FEIS.

Comment AP69: See Section 8.2.1.1 in the FEIS.

Comment AP70: See response to Comment AP20.

Comment AP71: Confidence intervals range from 90-95%.

Comment AP72: Text has been revised to ensure consistency with Table 2.9.

Comment AP73: See Section 8.2.1.1 in the FEIS.

Comment AP74: See Section 8.2.1.2 in the FEIS.

Comment AP75: See Sections 8.2.1 and 8.2.12 in the FEIS.

Comment AP76: See response to Comment AE44 and Section 8.2.12 in the FEIS.

Comment AP77: See Section 8.2.5 in the FEIS.

Comment AP78: See Section 8.2.7 in the FEIS.

Comment AP79: The DEIS acknowledges impacts to wildlife on areas outside crucial winter ranges on page 4-34, column 2, paragraph 1, line 5; page 4-34, column 2, paragraph 2, line 1; page 4-37, column 2, paragraph 2, line 1; page 4-37, column 2, paragraph 3, line 13; page 4-38, column 1 paragraph 2, line 8; page 4-38, column 2, paragraph 3, line 8; page 4-39, column 1, paragraph 2, all, and paragraph 3, line 1, to name a few. See Section 8.2.5 in the FEIS.

Comment AP80: See Section 8.2.8 and Section 2.2 in the FEIS.

Comment AP81: See Section 8.2.3.1 in the FEIS.

Comment AP82: See response to Comment AP79. See Section 8.2.5 in the FEIS. Impacts due to displacement and stress are unknown; big game behavior around the development would be monitored (see Appendix B in the DEIS).

Comment AP83: Text in Table 2.11 has been modified to clarify the impact and proposed mitigation. See Sections 8.2.1.3, 8.2.2, 8.2.5, and 8.2.12 in the FEIS.

Comment AP84: Consideration has not been given to sage grouse wintering areas because these areas are not considered critical to sage grouse population dynamics.

Comment AP85: Land use impacts are discussed in Section 4.5 in the DEIS. Because the proposed development is compatible with existing land uses within the KPPA, BLM views the development as an added land use, thereby supporting BLM's mandate for multiple use land management. See Section 8.2.10 in the FEIS for a discussion of impacts and mitigation pertaining to recreation.

Comment AP86: See Section 8.2.1.1 in the FEIS.

Comment AP87: See response to Comment AP43.

Comment AP88: See response to Comment AP79. Noise displacement effects are discussed on page 4-40, column 2, paragraph 3 in the DEIS.

Comment AP89: The methodologies used for avian wildlife surveys, survey schedules, and areal coverage are described in

Appendices A and B in the DEIS. See Sections 8.2.3 and 8.2.4 in the FEIS. Big game surveys were initiated in March 1995; none were conducted prior to release of the DEIS.

Comment AP90: See Section 8.2.4 in the FEIS.

Comment AP91: Text has been modified as requested.

Comment AP92: See response to Comment AE71.

Comment AP93: Standard errors have been calculated and error bars have been added to the figures. Figures 3.2A and 3.2B in the DEIS were based on the total number of raptor species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., golden eagle).

Comment AP94: An overlay of the proposed turbine string locations and associated roads (Appendix H) has been provided for use with Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS. See Section 8.2.12 in the FEIS.

Comment AP95: See response to Comment AE77.

Comment AP96: Because density is computed as number per square mile, the comparison made on page 3-53 is not affected by the different areas surveyed and is therefore valid as stated. Habitat mapping has not been completed within the Simpson Ridge area. No accipiter nests were found. See response to Comment AE83.

Comment AP97: See response to Comment AE77.

Comment AP98: Standard errors have been calculated and error bars have been added to Figure 3.3 in the DEIS. Figure 3.3A in the DEIS was based on the total number of passerine species observed per month divided by the number of survey days for that month. These numbers have been recalculated by averaging the total number of species per survey by month to give a more representative overview of the data. This eliminates the tendency to underrepresent species which were commonly observed (i.e., horned lark).

Comment AP99: An overlay of the proposed turbine string locations and associated roads (Appendix H) has been provided for use with Maps 3.14 A-D, 3.15 A-F, 3.16 A-G, and 3.17 in Section 3.2 of the FEIS. Mountain plovers were not observed during biweekly surveys in 1994-1995 on the Simpson Ridge area, nor have they been observed in the Simpson Ridge area during 1995 monitoring studies. The monitoring plan (Appendix B in the DEIS) proposes intensive surveys for this species to determine the number of birds, number of nesting pairs, clutch size, and number of young hatched within the KPPA. However, it is currently unknown if and to what extent mountain plovers use the Simpson Ridge area.

Comment AP100: The visual impact analysis conducted for this project resulted in a conclusion of significant impact. Since the key observation points, particularly along I-80, are well-traveled and in closer proximity (i.e., a greater proportion of foreground is affected) to the KPPA than areas south of I-80, analysis of visual impacts from south of I-80 would not change the conclusion of significant

impact. Visual classes as defined by the BLM GDRA RMP indicate the degree of acceptable visual change *within a characteristic landscape* (i.e., the actual area to which modifications are proposed), rather than the areas from which proposed changes might be visible. The project area does not extend south of I-80; therefore, visual classes south of the Interstate are not relevant to the discussion.

Comment AP101: See Section 8.2.5 in the FEIS.

Comment AP102: See Sections 8.2.1 and 8.2.7 in the FEIS.

Comment AP103: See Section 8.2.4 in the FEIS.

Comment AP104: See Sections 8.2.3.1, 8.2.4, and 8.2.5 in the FEIS.

Comment AP105: See Section 8.2.5 in the FEIS.

Comment AP106: As stated on page 4-1, column 2, paragraph 2, line 7 in the DEIS, significance criteria were established for those resources for which significance criteria can be reasonably supported by scientific or regulatory considerations. Consideration was given to issues and concerns raised about the level and nature of impacts; for example, the lengthy treatment of legal issues associated with bird mortality and the development of significance criteria for avian wildlife were included in response to scoping comments. See Table 8.3 in the FEIS for a description of the linkage between significance criteria and the monitoring program.

Comment AP107: See response to Comment AP9 in the FEIS.

Comment AP108: All mitigation measures described in the DEIS and FEIS would become a binding part of the ROW grant. Monitoring (wildlife, reclamation, etc.) would also become part of the ROW grant with the caveat that monitoring protocols could be altered if deemed appropriate by the AO (under advisement from the IDT and the technical committee). All mitigation measures would be enforced. See Section 8.2.5 in the FEIS.

Comment AP109: See Sections 8.2.3.1 and 8.2.5 in the FEIS.

Comment AP110: See Section 8.2.7 and response to Comment AP106 in the FEIS.

Comment AP111: See Section 8.2.8 in the FEIS.

Comment AP112: See Section 8.2.8 in the FEIS.

Comment AP113: On page 4-31, column 2, paragraph 2, line 3, the DEIS states that "Windplant owners and/or KENETECH personnel, under BLM supervision, would be responsible for monitoring reclamation success."

Comment AP114: See response to Comment AE55 in the FEIS. The AO would be under advisement from the IDT and the technical committee to determine when it would be appropriate to permit construction within sage grouse nesting habitat. Critical winter periods are defined as periods during which big game utilize crucial winter range as their primary source of forage because other

habitats are unavailable or insufficient to provide adequate forage due to snow cover, access, exposure, etc.

Comment AP115: Mitigations for noise impacts are described in Section 5.1.3.8 in the DEIS. Based on the noise analysis, the proposed mitigation measures should be adequate. If, however, it is determined during monitoring that noise impacts require additional mitigation, the IDT and the technical committee would be responsible for recommending appropriate mitigation.

Comment AP116: Text on page 4-29 has been modified accordingly.

Comment AP117: See Section 8.2.5 in the FEIS.

Comment AP118: See Sections 8.2.3.1, 8.2.4, and 8.2.8 in the FEIS.

Comment AP119: See Section 8.2.4 in the FEIS.

Comment AP120: See Section 8.2.12 in the FEIS.

Comment AP121: See Section 8.2.8 in the FEIS.

Comment AP122: Text has been added as requested.

Comment AP123: See response to Comment AE108.

Comment AP124: Text has been added as requested.

Comment AP125: See Section 8.2.4 in the FEIS.

Comment AP126: See Section 8.2.12 in the FEIS.

Comment AP127: Text has been added as requested.

Comment AP128: See Section 8.2.4 in the FEIS.

Comment AP129: See response to Comment AE108. The literature search presented in Chapter 4.0 of the DEIS presents the best known available evidence concerning how big game would react to the proposed Windplant. BLM is requiring monitoring of big game movements to evaluate development impacts (see Appendix B in the DEIS).

Comment AP130: See response to Comment AP9.

Comment AP131: See Section 8.2.8 and response to Comment AP106 in the FEIS.

Comment AP132: See Section 8.2.2 and response to Comment AE44 in the FEIS. KENETECH has not obtained permits for takes for other projects, but is considering obtaining permits for this project. See response to Comment AE117.

Comment AP133: See Sections 8.2.2 and 8.2.12 in the FEIS.

Comment AP134: See response to Comment AE44 and Section 8.2.12 in the FEIS.

Comment AP135: See Sections 8.2.5 and 8.2.7 in the FEIS.

Comment AP136: See response to Comment AE117 in the FEIS.

Comment AP137: See Section 8.2.5 and response to Comment AE44 in the FEIS.

Comment AP138: Page 5-9 of the DEIS states that mitigation measures for raptors would include placing WTGs away from raptor high-use areas. See also Section 8.2.12 in the FEIS.

Comment AP139: The Estep (1989) citation has been added as suggested.

Comment AP140: This paragraph pertains to "raptors species observed on the KPPA (except for federally listed or candidate species)..." and therefore does not contradict Orloff and Flannery (1992). Section 4.2.4.3 of the DEIS, which discusses project impacts to federally listed and candidate raptor species, concludes that any mortality may be significant for these species, which is in agreement with Orloff and Flannery (1992).

Comment AP141: Table 4.15 describes species distribution differences between California and Wyoming and the last paragraph on page 4-51 discusses how these differences may contribute to higher collision-related mortality at the proposed Wyoming windplant for some species. Also see additions to Table 4.15 in Section 4.2.3.4 of the FEIS.

Comment AP142: Broad-winged hawk, northern goshawk, turkey vulture, peregrine falcon, great horned owl, northern saw-whet owl, osprey, short-eared owl, and sharp-shinned hawk have been added to Table 4.15 in the FEIS.

Comment AP143: See Section 8.2.12 in the FEIS.

Comment AP144: See Section 8.2.5 in the FEIS.

Comment AP145: Text has been added as requested.

Comment AP146: Mountain plovers have not been observed in the Simpson Ridge area, but no regional surveys have been completed. Foote Creek Rim could be a local concentration area for mountain plovers, but there is substantial mountain plover habitat to the east of the rim; therefore it is unlikely that mountain plovers are concentrated on Foote Creek Rim.

Comment AP147: See Sections 8.2.3.1 and 8.2.3.3, and response to Comment AE151 in the FEIS.

Comment AP148: See response to Comment AE129 in the FEIS.

Comment AP149: See response to Comment AE90 in the FEIS.

Comment AP150: See response to Comment AP94.

Comment AP151: Because significance criteria used throughout the DEIS were based on scientific or regulatory provisions, it was not possible to develop criteria pertaining to the utility of land. Overall landscape character changes are discussed in Section 4.5.2.1 in the DEIS. See also Section 8.2.10 in the FEIS.

Comment AP152: See Section 8.2.10 in the FEIS.

Comment AP153: See Section 8.2.5 in the FEIS.

Comment AP154: See Sections 8.2.3.1, 8.2.5, and 8.2.6 in the FEIS.

Comment AP155: See Sections 8.2.5, 8.2.6, and 8.2.7 in the FEIS.

Comment AP156: See Section 8.2.6 in the FEIS.

Comment AP157: See Sections 8.2.5, 8.2.6, and 8.2.12 and response to Comment AE55 in the FEIS.

Comment AP158: See Sections 8.2.3, 8.2.4, and 8.2.12 and response to Comment AE44 in the FEIS.

Comment AP159: The text has been corrected accordingly.

Comment AP160: See Section 8.2.12 in the FEIS.

Comment AP161: See Section 8.2.10 in the FEIS.

Comment AP162: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP163: Text has been changed accordingly. See response to Comment AE116.

Comment AP164: See Section 8.2.4 in the FEIS.

Comment AP165: See Section 8.2.4 in the FEIS.

Comment AP166: See Section 8.2.4 in the FEIS.

Comment AP167: See response to Comment AE71.

Comment AP168: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP169: See Sections 8.2.3.1 and 8.2.4 in the FEIS.

Comment AP170: See Section 8.2.3.1 and Table 8.3 in the FEIS.

Comment AP171: Text has been revised accordingly.

Comment AP172: See response to Comment AE153 in the FEIS.

Comment AP173: See Section 8.2.3.2 in the FEIS.

Comment AP174: The photographs used for the visual simulations in Appendix F of the DEIS were taken with a Noblex 120 panoramic format camera with a 50mm lens. The human eye is comparable to a 48.2mm lens; therefore, the 5 x 12 cm format with a 50mm lens gives a panoramic view which virtually eliminates distortion of the subject (personal communication, May 16, 1995, Ron Fletcher, Visual Simulation Specialist, KENETECH).

AO. Audubon Council of Wyoming

Area Manager
Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301



Dear Manager:

The following comments are submitted by the Audubon Council of Wyoming. There are five Audubon Chapters and approximately 1300 members of the National Audubon Society in Wyoming.

These comments are based upon presentations made by representatives of Kenetech and representatives of the U.S. Fish and Wildlife Service; a field trip to the sites and a cursory examination of the Draft EIS issued in January of 1995.

In the Introduction to the Draft EIS it is stated that: "Utilities throughout the western U.S. are forecasting a marked increase in base load and peak power demands during the next 20 years," and also p. 1-6 "although BPA presently has a surplus of generation capacity, these losses plus the expected growth in the region would eventually create a need for new generating sources". We would like to suggest a much stronger statement on energy conservation in the document especially in line with mitigation which could help lessen the need for more energy and other energy projects. We would in addition suggest that an assessment of how energy conservation could be incorporated in the implementation of this project i. e. combining trips using fewer vehicles etc. be documented and become a part of Kenetech's commitment to a friendlier environmental-energy partnership.

We will concentrate on the 22 project-wide mitigation measures mentioned on p. vi-ix for the remainder of our comments.

In relation to 2) windplant facilities etc. there was an indication at one presentation that in the Foote Creek Rim Area not enough consideration was given in the proposed windplant placement to wildlife considerations especially bird territories. We would suggest that consideration be given to redo windplant placement in the Foote Creek Rim Area with more attention paid to wildlife data collected.

We believe that windpower can be the one of the most environmentally friendly ways of providing our nation's energy needs when it is handled correctly and we would like to continue to be involved with Kenetech and others who are working on this project.

Sincerely,

William C. Edwards, Ph.D.
President, Audubon Council of Wyoming

Comment AQ1: BPA analyzed a conservation alternative in its 1993 Resource Programs FEIS (BPA 1993a), and this EIS is tied to that document. BLM concurs that implementation of conservation programs would decrease the need to build new power plants.

Comment AQ2: See Section 8.2.12 in the FEIS.

Comment AQ3: The POD for each phase would contain site-specific information concerning the feasibility of construction on steep slopes, etc. Each development proposal would be reviewed by the AO, who would determine the type of mitigation required on a case-by-case basis. See also Section 8.2.6 in the FEIS.

Comment AQ4: Text has been added accordingly.

Comment AQ5: Use of the word "would" is in keeping with the parallel verb tense of the sentence and section, and is not meant to deny the possibility of minimal erosion and/or sedimentation. Accordingly, the word "prevent" has been replaced with "minimize" on pages vii (Executive Summary) and 2-30.

Comment AQ6: During construction, contractors would report to an environmental supervisor who would be responsible for ensuring that mitigation measures, such as preventing construction within 0.75 mi (1.20 km) of active raptor nests, would be implemented properly. The need for staking exclusion areas would be determined by the environmental inspector on a case-by-case basis.

Comment AQ7: KENETECH is committed to using a tower design which minimizes raptor perch sites; only solid tubular towers are

3 In 3) and 4) phrases such as "where feasible" and "whenever feasible" leaves this to whose judgment as to "where or wherever" is feasible? We suggest feasibility of these issues be agreed to before the fact rather than be debated after the disturbance has taken place on federal lands.

4 In 6) emphasis should be placed on the least disturbance of topsoil possible. Its structure will be destroyed wherever it is disturbed and it will take decades to be restored.

The same comment applies to 7) the least amount of vegetative disturbance the better. This will undoubtedly mean some re-education of construction workers who have not been schooled in this area in the past.

5 In 8) use word 'will' instead of "would". Let's face it; some erosion and sedimentation will occur, however, the best methods possible should be used to minimize it. Use 'reduce' instead of prevent.

3 9) 10) & 11) again "where feasible" comes into play again. These things need to be documented.

6 In 13) we suggest somehow markings on the ground, maybe stakes around the raptor sites to help avoid them.

7 In 14) does this mean 'all' towers will be tubular and that there will be no perching sites on them? This would be a much more acceptable statement.

8 Start statement 15) with word 'all' and also 'all' after second "would".

9 In 18) also should start should start with the word 'all'.

10 In 20) who makes the judgment on "if deemed appropriate"?

We would like to commend Kenetech, the U.S. Fish and Wildlife Service; the Bureau of Land Management and others involved in the preparation of this EIS. We realize that some of the suggestions we have made, if implemented, may seem to make the project more costly, however, if externalities and total environmental costs are fully considered, we believe the overall cost may be reduced by implementing them.

proposed for this project. Solid tubular towers represent a substantial reduction in the number of perch sites associated with the lattice towers.

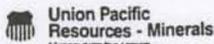
Comment AO8: The text on pages viii and 2-31 has been modified accordingly.

Comment AO9: The text on pages viii and 2-32 has been modified accordingly.

Comment AO10: The AO has authority to grant exceptions to stipulations presented in the DEIS. The IDT and the technical committee for wildlife monitoring would advise the AO on the possible impacts of such actions.

Comment AR1: See Section 8.2.9 in the FEIS.

AR. Union Pacific Resources-Minerals



April 3, 1995

Bureau of Land Management
Rawlins District Office
P.O. Box 670
Rawlins, Wyoming 82301
Attn: Walter E. George, Project Leader

RE: Kenetech Wind Energy Project
Carbon County, Wyoming

Thank you for affording us the opportunity to review the Draft Environmental Impact Statement for the captioned windpower development project.

We note that a 230-kV transmission line is planned to run from Foote Creek Rim to the Miner's substation and that the "Alternate No. 2" transmission line shown on Page 1-3 of Map 1.2 traverses the significant coal resources within the Carbon Basin coal resource area. We would suggest that any facilities within the Carbon Basin coal resource area be located in areas that would not inhibit future coal mining activities.

Very truly yours,

R.A. See

R. A. See
Manager - Land & Industrial Minerals

c: Harry Nagel



BAS:dx
L04NLLR

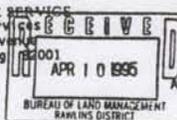
Union Pacific Resources - Minerals
P.O. Box 7
Fort Worth, Texas 76101-0007
817-877-6000

AS. U.S. Fish and Wildlife Service



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Route 4000 Morrill Avenue
Cheyenne, Wyoming 82001



IN REPLY REFER TO
ES-6141

Memorandum
To: Area Manager, Great Divide Resource Area, Bureau of Land Management, Rawlins, Wyoming

From: Field Supervisor, Ecological Services, Cheyenne, Wyoming

Subject: Kenetech/PacificCorp Windpower Project Draft Environment Impact Statement

We have reviewed the subject document (DEIS) and offer the following comments.

1 Based on baseline monitoring done on the site, we are concerned that the project is being proposed for siting in an area used by a large number of birds during both migration and nesting periods. Although data on winter use was not available at the time the DEIS was written, we suspect that the area is used by wintering eagles and rough-legged hawks because of the proximity of crucial big game winter ranges. Please include data on winter use as appropriate in the final environmental impact statement (FEIS). If the project area is a destination for migrating raptors, this should be specifically stated.

2 Evidence that the site is used during migration includes the observations of flocks of birds, perhaps outside their normal habitats, during spring and fall (e.g. white-faced ibis, mountain bluebirds, etc.). The number of raptor observations per survey also peaked during April and August, which is attributed to migratory movement (page 3-47). These and any other relevant observations or data on use of the project site as a migratory corridor should be discussed in the FEIS.

3 The data on nest densities is useful, although the number and location of territories would potentially be more useful. Such information, as available, from the productivity studies being done by WEST, Inc., should be summarized in the FEIS.

4 Raptor nesting activity during 1994 was much lower than normal, due primarily to crashes in the cottontail and jackrabbit populations. This was especially true for golden eagles. Records from adjacent mines indicate that only two golden eagle nests were active in an area that had supported between 15 and 23 active golden eagle nests during the previous five years. Nesting activity by other raptors was down by approximately 50 percent. Jim Orpet of Intermountain Resources in Laramie has monitored these nests for several years. This data should be disclosed in the FEIS, to put the number of active nests in a more accurate perspective, and to underscore the need for an off-site control area in the productivity studies that will be implemented.

5 The context and relevance of the Hanna Raptor Concentration area should be more fully discussed in the FEIS. Was this area designated under the Federal coal unsuitability criteria? Does this designation offer protection or special management consideration? Is construction of facilities known to kill raptors appropriate and in compliance with relevant regulations?

6 The repeated observations of peregrine falcons (30 observations reported in 9 months) suggests that nesting may be occurring nearby, or that the site is used as a migration funnel. The timing of these observations may provide some clue. Further field work should be accomplished to determine if the species is nesting near the project area.

7 We note that Table 4.12 (page 4-47) indicates occurrence of golden eagles approximately 50 percent higher than at the Altamont site in California where golden eagle mortalities have been a notable problem. We are optimistic that tubular towers, as now proposed, will reduce mortalities by reducing the availability of perches. We are concerned, however, that Foote Creek Rim is an important area for eagles.

8 The baseline monitoring done to date indicates that the project site is an important raptor habitat throughout the year, as discussed above. This high level of raptor use warrants a cautious approach, particularly in light of the documented risks that wind turbines pose to raptors and other birds.

9 Alternative project sites in Wyoming may have lower bird populations during some or all of the year and could result in lower bird mortalities. The DEIS dismisses alternative project locations on the basis of winds inadequate to produce electricity that is cost-competitive with coal- or gas-generated energy. We request that the Bureau of Land Management's (Bureau) economists review this rationale carefully. If the data show that alternative project sites will not be economically feasible, the FEIS should specifically explain why windplant sites operated by Kenetech and others, using less efficient turbines, are economically feasible at sites outside Wyoming with much less favorable wind regimes.

10 If alternative project sites are not feasible, the Fish and Wildlife Service (Service) requests that the Bureau consider an additional project alternative. Because Foote Creek Rim has been shown, through baseline monitoring, to be a high-use site, we believe that a reasonable alternative is to site phase one in the least sensitive habitat within the proposed 95-square-mile project area. The Simpson Ridge portion of the project area may have sites with adequate winds that are not used to such a high degree as Foote Creek Rim. Additional survey data will be required to identify the most appropriate site. If thorough surveys indicate that Simpson Ridge is as heavily used by raptors and other birds as Foote Creek Rim, then building phase one at Foote Creek Rim, as proposed, may represent the least sensitive habitat. We believe, however, that less sensitive sites can be located within the Simpson Ridge area.

This approach offers several advantages. It will allow for experimentation and modification where the risks of significant impacts are lower. As improved technology and insight is gained, future phases incorporating safety

cc: ARD, LE, Denver, CO
ARD, ES, Denver, CO
Director, WGF, Cheyenne, WY
Nongame Supervisor, WGF, Lander, WY
Special Agent, LE, Casper, WY
Migratory Bird Office, Denver, CO

10
cont.

advances could expand into the more sensitive sites. Beginning at a site where bird mortalities are expected to be minimized also provides a better opportunity for Kenetech to demonstrate that its equipment does not pose a significant risk to birds. Perhaps there are other resources that would also be protected by this approach (e.g. cultural artifacts, etc.)

By incorporating the Simpson Ridge area into the proposed project area, the Bureau and Kenetech have indicated that the area does have adequate wind resources to support a cost-competitive project. Re-arrangement of the order in which specific sites are developed appears to the Service to be warranted, prudent, and reasonable. Given the seriousness of the predicted impacts, we do not believe that the additional baseline surveys required are an undue burden on either the Bureau or Kenetech.

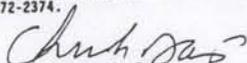
11 The Service is currently working with Kenetech to design long-term research aimed at evaluating specific placement or siting options for their effectiveness in reducing migratory bird deaths. We anticipate issuing a special purpose permit under the Migratory Bird Treaty Act to permit any such take. Incidental take of species listed under the Endangered Species Act (bald eagles and peregrine falcons) will be handled through either section 7 consultation or by a permit. To be most effective, the Service believes that a single variable at a time should be evaluated against a control group, and that as many other variables as possible should be controlled. For example, if painted rotor blades will be evaluated against unpainted blades, the entire phase should be sited at the same relative position on the slope, and a uniform distance from any canyons or steep drop-offs. Other variables thought to play a role in bird mortalities should also be considered and controlled (through siting, etc.) to the extent possible. The status of these negotiations, and any commitments agreed upon, should be summarized in the FEIS.

12 The Bureau has recently requested initiation of formal consultation with the Service under section 7 of the Endangered Species Act. The Bureau may wish to consider incorporation of the biological assessment done by Mariah Associates, Inc., as an appendix to the FEIS.

11 Appropriate procedures for dealing with take under the Bald Eagle Protection Act are under consideration at this time.

13 The potential for increased range fires should be evaluated in the FEIS, particularly in light of experiences at the Altamont site in California. According to the information from the State of California (attached), windfarms were the leading cause of fire in 1988 through 1993.

Thank you for the opportunity to comment on the DEIS. If you have any questions concerning these comments, please contact me at the letterhead address, or phone (307) 772-2374.


Charles P. DAVIS

Attachment

Comment AS1: See the Section 3.2.2 in the FEIS for updated baseline data, including the winter of 1994/1995. Only 36 rough-legged hawk observations were recorded in the Foote Creek Rim area between February 16, 1994 and March 17, 1995 (see Map 3.15F in the FEIS). Two of these observations involved immature birds observed during May and June. Three observations occurred during the fall of 1994 (September 1 - October 31), 19 observations occurred during the winter of 1994-1995 (November 1 - February 14), and seven observations occurred during spring of 1995 (February 15 - March 17). Thirteen of the 36 observations occurred on January 25, 1995; some of these probably represent repeat observations of the same individual(s). It is unknown whether the project area is a destination for migrating raptors.

Comment AS2: See response to Comment AE95.

Comment AS3: Prior to 1994, there had been no complete annual coverage of all raptor nests in the KPPA, making territory history data impossible to accurately present. Implementation of the monitoring protocol (page B-22, Appendix B in the DEIS) over several years will permit determination of territory occupancy. Only two years of nest survey data are available at this time; the data are not yet sufficient to determine territories. Nest densities for the 1994 nest survey area are presented on page 3-53 in the DEIS.

Comment AS4: A discussion of temporal variability in raptor reproduction, and evidence that 1994 appeared to be a poor year for raptor productivity has been added to Section 3.2.2.3.

Comment AS5: Text has been added in Chapter 3.0 as requested.

Comment AS6: See response to Comment AE90 in the FEIS.

Comment AS7: See Section 8.2.12 in the FEIS.

Comment AS8: See Sections 8.2.3.3 and 8.2.12 in the FEIS.

Comment AS9: The issue of the economic feasibility of alternative project locations is discussed in Section 8.2.1.1 in the FEIS. The economic feasibility of a particular site for wind energy generation depends on a myriad of environmental and economic factors, one of which is the price structure under which local utilities are operating. In areas where KENETECH and other wind energy producers operate Windplants using less efficient machines and in less energetic wind regimes, utilities will bear costs of 8 to 12 cents per kWh. In Wyoming, however, costs must be below approximately 5 cents per kWh to be competitive in the Wyoming market, which has an abundance of fossil fuel resources.

Comment AS10: See response to Comment U2 and Section 8.2.1 in the FEIS.

Comment AS11: See Section 8.2.2 in the FEIS.

Comment AS12: The biological assessment for the proposed project is available to any interested party from the BLM. Because few people would be interested in reading the biological assessment, BLM is not including it as an appendix in the FEIS.

Comment AS13: See Section 2.1.5 in the DEIS and modifications to Section 2.1.5 in the FEIS.

AT. Carbon County Coalition

Area Manager
Great Divide Resource Area
Bureau of Land Management
P.O. Box 670
Rawlins, Wyoming 82301

Ruth Shepherd, Coordinator
Carbon County Coalition
P.O. Box 785
Saratoga, Wyoming 82331

Atten: Walter George

Re: Kenetech/PacifiCorp
Windpower Project EIS

Dear Mr. George,

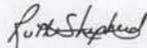
Thank you for the opportunity to comment on the Kenetech Windpower project in Carbon County. I realize that you will receive this correspondence after the comment deadline; however, the responsibility is mine and should not reflect upon the Coalition. We realize it is incumbent upon our organization to participate in a manner that is meaningful to inform the agency of our position concerning the Windpower Project.

The Carbon County Coalition wishes to commend the Bureau of Land Management on the thorough analysis provided in the Draft EIS. It is our belief that the agency will follow the parameters proposed in this document, and subsequent management decisions for mitigation or termination of the project would be transacted based upon monitored data.

Although wind energy is not the most cost effective electrical power supply available in the United States at this time, it is a probable source for future generations. When non-renewable natural resources are no longer available for conversion into energy, the present experimental transition to wind generated power might alleviate a future energy crisis. The monitored data on this project should furnish pertinent information for future populations to determine whether investment in windpower is economically and ecologically viable.

The members of the Carbon County Coalition are not only committed to projects which satisfy our immediate economic needs, we also support research and programs which potentially enhance the future of the County. The Coalition expects to support the Kenetech Windpower Project throughout its various phases.

Cordially,


Ruth Shepherd

AU. State of Wyoming, Office of the Governor



STATE OF WYOMING
OFFICE OF THE GOVERNOR

JIM GERINGER
GOVERNOR

STATE CAPITOL BUILDING
CHEYENNE, WY 82002

April 11, 1995

Mr. Walt George
Bureau of Land Management
P.O. Box 670
Rawlins, WY 82301

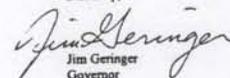
Dear Mr. George:

Late last month you received comments from three state agencies on the Kenetech/PacifiCorp Windpower Project. As you will note, those comments express support and raise some concerns about specific elements. They will, I believe, serve as a constructive component of the final environmental impact statement.

Regardless of the debate on some of these details, I want you to know that the State of Wyoming strongly supports this project. It is innovative, and will harness one of Wyoming's most underutilized natural resources - the wind.

The State of Wyoming looks forward to working with the Bureau of Land Management in moving this important project forward.

Sincerely,


Jim Geringer
Governor



INTERNET: GOVERNOR@WYDPROD.STATE.WY.US • TELEPHONE (307) 777-7434 • FAX (307) 652-5909

AV. Ronald R. Wiggins

APR 18 '95 11:58

P.1

Ronald R. Wiggins
P.O. Box 493
Big Timber, MT. 59011
ph. 406-532-4657
406-532-6711 FAX

April 18, 1995

Walter E. George
Bureau of Land Management
Havilina District Office
P.O. Box 670
Havilina, WY. 82301

Dear Walter,

After a closer look at the Draft EIS for the Kennetech Windpower Project, I almost hesitate to comment. (because I could be wanting my time) mainly because it looks like a statement that was prepared by Kennetech themselves. I feel outraged that this could be taking place, when the facts are: The BLM by law is responsible to the needs of The American People--not Kennetech Windpower Inc.

Why would the benefit of this project in terms of output, be continually and outrageously overstated throughout the draft EIS, from the 201 turbines producing 70.5 MW to the total 1390 turbines producing 500 MW? Why would someone be led to believe on pg.1-6, that this windplant will generate 72.8% of its capacity? (No windplant in the world has even approached SUCH a figure. The Calif. windplants on a whole last year did 20% and themselves 3 yrs. ago referring to their new 1390-70 claimed 72.8% and their competitors, Good and New World Power (Inarcon) just recently were so bold as to claim 13%) Then in the same paragraph someone has the gall to say: "For comparison" hydro electric is 40%. The facts are, Hydro is cheap and on demand power, and Wind is inflexible-- maybe its there and maybe it is not. (And if its not, you must still have all the other generating sources available to come on line for that peak load) In short there is no comparison. None the less, throughout the draft EIS the 500 MW figure is used in all of the "comparisons" of this windplant with other generating sources: when the facts are, this could actually be 60,000 acres of wind turbines producing 125 MW of electricity 'unreliably'. ("in comparison" with other sources) Why in table 1.2 on pg. 1-7 in another "comparison", when referring to wind energy at this site, do they not include transmission costs (this is a very real cost that is part of this project, that consumers will be paying for), but they do include the energy production tax credit (which reduces the comparison price) when consumers are paying for that also?

Walter, it seems that I could go on and on, but time does not permit. Kennetech has simply pumped this Draft EIS full of their comparisons and their one sided spinners from Air Quality (controversial CO₂ impacts stated as fact) Noise impacts (complete omission of low frequency noise impacts, most damaging to wildlife and humans) to no mention of what would happen to the cost per kWh if the Energy Production Tax Credit were to disappear.

The bottom line is: Are the people of Wyoming going to get a true picture of what they are getting for what they are giving up, or are they getting a snow job and being led to believe a lie? In Denmark they say that "windmills stand on lies". This is not an indictment of the BLM, but rather, of an industry and corporation that has painted itself as green, but in reality is blacker than many other industries.

Very Sincerely,
Ronald R. Wiggins
Ronald R. Wiggins

enclosures
letter faxed 4-18-95 J07-221-1111
letter & enclosures sent priority mail 4-18-95

Comment AV1: The discussion on page 1-6 of the DEIS indicates that the expected capacity factor for the Windplant on Foote Creek Rim during on-peak hours would be 72.8%. Text has been added to this paragraph to indicate that the overall capacity factor of the Windplant is expected to be 25-35%. BLM acknowledges that the Windplant thus is expected to produce 125-175 MW annually. Table 1.2 presents costs to the utilities not consumers; therefore inclusion of transmission costs is not appropriate. Since the production tax credit is directly passed on to the utility, it is appropriately used in the table. Table 1.2 has been footnoted for clarification. Tables 4.2 and 4.3 in Section 4.1.1.2 in the DEIS have been footnoted to note that the reductions in emissions of air pollutants shown have not been corrected for the estimated capacity factor and thus reductions would be less than the amounts shown.

Comment AV2: On pages 4-10 and 4-12 in the DEIS, it is stated "The effects of greenhouse gases [e.g., CO₂, nitrous oxide (N₂O)] on the earth's climate is still controversial. Some of the mechanisms by which the earth's ecosystems absorb or convert excess CO₂ are understood, but the long-term effects on climate cannot be determined (Cogan 1992)." See also response to Comment AM1 in the FEIS.

Comment AV3: The noise modeling completed for the DEIS used the full spectrum of noise frequencies emitted by the KVS-33 turbines. The range included frequencies from 63-4,000 hertz.

Comment AV4: See response to Comment N2 in the FEIS.

APPENDIX A:

**AVIAN STUDIES PROTOCOLS FOR THE KENETECH WINDPOWER, INC.
WINDPLANT PROJECT**

Page A-2, line 4. Insert "(0.8 km)" after "0.5 Mile".

Page A-3, paragraph 1, line 12. Replace "The purpose of this report is to document the protocols currently being used for baseline data collection." with "The purpose of this report is to document the protocols used for baseline data collection from October 1993 through March 1995. Additional monitoring would be conducted using protocols described in Appendix B."

Page A-4, paragraph 2, line 4. Add "as described in Appendix B." after "prior to development of subsequent phases".

Page A-11, paragraph 3, line 2. Replace "mitigation" with "migration".

Page A-16, paragraph 1, line 6. Replace "is" with "are". Line 8. Replace "Detailed surveys will be conducted in the turbine string areas 1-2 years prior to development." with "Detailed surveys will be conducted in development areas for three years in the Simpson Ridge area prior to development, unless otherwise approved by the AO (see Appendix B)."

Page A-20, line 1. Delete reference to Biosystems Analysis, Inc. (1992).

APPENDIX B:

GENERAL DESIGN WYOMING WINDPOWER MONITORING PROPOSAL

Page B-6, paragraph 2, line 6. Replace "construction" with "issuing an NTP."

Page B-6, paragraph 2, line 6. Replace "However, if KENETECH decides not to proceed with further development at Foote Creek Rim, due to wildlife or other concerns, then KENETECH may apply for a BLM Notice to Proceed for the Simpson Ridge area." with "However, if KENETECH determines that wildlife, public recreation, or cultural resource concerns at Foote Creek Rim are substantial enough to avoid, then KENETECH may apply for a BLM NTP for the Simpson Ridge area. The application shall thoroughly document the reasons development cannot proceed on Foote Creek Rim."

Pages B-31 and B-32. Replace the last paragraph on page B-31 and the first three paragraphs on B-32 with the following:

"The WGF D Pronghorn Survey Protocol (Johnson and Lindzey n.d.) would be followed with the possible exception that automated data entry/global positioning system equipment could be used. When possible, an aircraft with an on-board computer for data recording would be used. When an on-board computer is unavailable, a laptop computer interfaced to the global positioning system would be used for recording data.

Observer(s) would concentrate their efforts on a 656-ft (200-m) band on each side of the aircraft. Each band would be divided into four distance bands A, B, C, and D, with widths 82, 82, 164, and 328 ft (25, 25, 50, and 100 m) respectively at an altitude of 300 ft (91 m) above ground level. The first distance band would begin 164 ft (50 m) on either side of the aircraft because the fuselage blocks the view in a band approximately 328 ft (100 m) wide directly beneath the aircraft.

Observer(s) would record group size (count of individuals in each group of animals), distance band in which group is observed, and altimeter readings. These data would be recorded by the pilot when an on-board computer is available or by the observer if a laptop computer is being used. Once the survey has commenced, the airplane would attempt to maintain a constant altitude above ground level. Altimeter readings would be used to adjust the actual width of distance bands."

Page B-39, paragraph 1, line 2. Add this sentence to the end of the paragraph: "To obtain adequate replication, the transect in the reference area would be surveyed on three separate nights."

Pages B-51 and B-52. Insert the following references:

Collins, W.B. and P.J. Urness. 1981. Habitat preferences of mule deer as rated by pellet-group distribution. *Journal of Wildlife Management* 45:969-972.

Johnson, B. and F. Lindzey. n.d. Guidelines for estimating pronghorn numbers using line transects. Wyoming Game and Fish Department Coop. Fish and Wildlife Res. Unit. 30 pp.

Leopold, B.D., B.R. Krausman, and J.J. Hervert. 1984. Comment: the pellet group census technique as an indicator of relative habitat use. *Wildlife Society Bulletin* 12:325-326

Neff, D.J. 1968. The pellet-group count technique for big game trend, census, and distribution: a review. *Journal of Wildlife Management* 32:597-614

Rowland, M.M., G.C. White, and E.M. Karlen. 1984. Use of pellet-group plots to measure trends in deer and elk populations. *Wildlife Society Bulletin* 12:147-155.

White, G.C. 1992. Do pellet counts index white-tailed deer numbers and population change?: a comment. *Journal of Wildlife Management* 53:611-612.

APPENDIX D:

ANIMAL SPECIES LIST

Page D-12, footnote 3. Add "and 1995" after "1994".

Page D-4, line 10. Insert "3" after "Ruddy duck".

Page D-7, line 1. Delete "3" after "Red-headed woodpecker".

Page D-10, line 14. Delete "3" after "Clay-colored sparrow".

APPENDIX G:

**PALEONTOLOGIC RESOURCE EVALUATION,
KENETECH WINDPOWER PROJECT AREA,
CARBON COUNTY, WYOMING**

**PALEONTOLOGIC RESOURCE EVALUATION
KENETECH WINDPOWER PROJECT AREA,
CARBON COUNTY, WYOMING**

Prepared for

**TRC Mariah Associates Inc.
605 Skyline Drive
Laramie, Wyoming 82070**

By

**Erathem-Vanir Geological Consultants
816 West Figueroa Street
Santa Barbara, California 93101**

Principal Investigator

**Gustav F. Winterfeld, Ph.D.
WPG No. 2224, BLM Paleontological
Collecting Permit No. 137-WY-PA92**

**Original 18 January 1995
Revised 19 June 1995**

INTRODUCTION

Investigative Methods, Data Sources

To establish existing conditions for paleontologic resources in the KENETECH Windpower Area, Carbon County, Wyoming, pertinent scientific references and maps on the geology and paleontology of the area were identified by a GEOREF and CURRENT CONTENTS database search. The GEOREF database, available through most university library systems, indexes the world's publications in the geosciences. Coverage is from 1785 to current and is updated monthly. Materials covered include journal articles, conference publications, reports, theses, maps, books, and book chapters. CURRENT CONTENTS indexes current scientific information published in 6,500 scholarly journals during the past five years and contains over 5.6 million references.

A paleontologic records search was also conducted for the project area at universities or museums known or suspected to have staff with a research interest in the area. The search was conducted at the Geology Museum, University of Wyoming, Laramie, Wyoming by Mr. Brent Breithaupt. The Department of Geology and Geophysics at the University of Wyoming (Dr. Jason A. Lillegraven), U.S. Geological Survey (Dr. Thomas M. Bown), and Denver Museum of Natural History (Dr. Richard Stucky) were also queried about possible localities in their records and information about fossils in the area. These searches supplement the principle investigator's more than 19 years field experience in Wyoming geology and paleontology.

Paleontologic Resources-Defined

Paleontologic resources include the remains or traces of any prehistoric organism which has been preserved by natural processes in the Earth's crust (Bureau of Land Management (BLM) Information Bulletin WY-93-371, 1993). Energy minerals such as coal, oil shale, lignite, bitumen, asphaltum, and tar sands, as well as some industrial minerals such as phosphate, limestone, diatomaceous earth, and coquina, while of biologic origin, are not considered fossils in themselves. However, fossils of scientific interest may occur within or in association with such materials. Fossils of scientific interest include those fossils of particular interest to professional paleontologists and educators. Vertebrate fossils are always considered to be of scientific interest; other kinds of fossils may be placed in this category by the State

Director and District or Area Managers, in consultation with BLM staff paleontologists or other experts. Professional paleontologists generally consider scientifically significant fossils to include those that are unique, unusual, or rare, diagnostically or stratigraphically important, or those which add to the existing body of knowledge in specific areas of geology and evolutionary biology.

Applicable Laws, Regulations and Policies

Scientifically significant fossils are protected by a variety of federal laws, regulations, and policies, and considered nonrenewable resources by the BLM and other federal land agencies. Inclusion of fossil resources by federal land agencies in the environmental review process has been haphazard in the past, dependent largely on the knowledge and experience of local agency personnel. This situation, however, changed in 1993, when the BLM hired a lead paleontologist for their Wyoming State Office. The state office has since developed and implemented standard procedures for evaluating paleontologic resources as part of the environmental process as authorized by the National Environmental Policy Act of 1969 (NEPA), the Federal Land Policy and Management Act of 1976 (FLPMA), and other related regulations and guidelines. The BLM has also established specific criteria for the qualifications of paleontologists conducting work on lands under their jurisdiction. Other federal agencies have adopted or are in the process of adopting similar guidelines (Lazerwitz 1994).

As a result, the BLM and other federal agencies now require that a Class I survey (literature and records search) be conducted by a qualified paleontologist for areas known to contain, or that are suspected to contain, scientifically significant fossil resources, as part of the environmental process. Potential adverse impacts of project implementation to fossil resources must be addressed in environmental documents and appropriate procedures for mitigating those impacts must be developed prior to construction in order to satisfy environmental requirements. Appropriate mitigation measures can include any or all of the following: (1) worker education; (2) monitoring of excavation; (3) collection and sampling of significant fossils; or (4) relocation of excavation to avoid fossils of significance.

A Class III survey (field survey) to identify and quantify fossil resources is required prior to construction disturbance in areas identified by the Class I survey as having high or undetermined paleontologic potential, as defined below. The Class III survey can be completed any time prior to surface disturbance at specific sites within a project area. A report of findings is completed following the completion of the

Class III survey. The report details the results of the survey, including a discussion of any fossils collected during the survey, and either sets forth a plan to implement the mitigation of adverse impacts to scientifically significant fossil resources (as defined below) or details the steps taken if mitigation was conducted as part of the Class III survey. Mitigation measures may include any or all of those listed above. A qualified supervising paleontologist is responsible for the assessment and development of the program for mitigation during the initial planning phase, the adequacy of the mitigation measures, and the report of findings.

Significance Criteria for Fossils

Although all fossils contain some scientific information, few paleontologists consider all fossils to have scientific significance. The scientific significance of fossils can only be evaluated by a qualified paleontologist. There is no precise definition of what constitutes a significant fossil or fossil resource, even among paleontologists. Wyoming BLM guidelines (Information Bulletin WY-93-371, 1993) consider all vertebrate fossils to be of scientific interest; other types of fossils may also be placed in this category. The BLM provides no guidance on evaluating the significance of fossil resources, but professional paleontologists generally recognize fossils and their containing deposits to be of scientific value or significance if they provide taphonomic, taxonomic, phylogenetic, ecological, or stratigraphic information. Paleontologic resources are considered to be older than recorded history and/or greater than 5,000 years old [Society of Vertebrate Paleontology (SVP) 1995]. Remains of animals currently inhabiting an area under consideration are usually excluded from being considered fossil, unless it can be clearly demonstrated by geologic or other scientific information that such remains are older than Recent. Recent remains should not be collected and treated as fossils.

Paleontologic Potential Criteria for Geologic Formations

Criteria used to describe the paleontologic potential of geologic deposits in this investigation are consistent with those embodied in Wyoming BLM Information Bulletin WY-93-371 (1993). These criteria are as follows:

High Potential. Sedimentary units with high potential for containing significant paleontologic resources are those which are shown by literature or museum records and field surveys to have produced (or to be

very likely to produce) vertebrate fossils or significant invertebrate or plant fossils. Units with high potential may be so designated throughout their extent, or only in areas/lithologies that are especially productive. Areas need not be uniformly productive; they may produce only a few highly significant fossils that provide new taxonomic, phylogentic, ecological, and/or stratigraphic data.

Low Potential. Sedimentary units that have been studied may be found through literature, museum records, and field surveys to have produced few significant fossils. These units are judged by a qualified paleontologist to be unlikely to produce significant fossils in the course of surface disturbance.

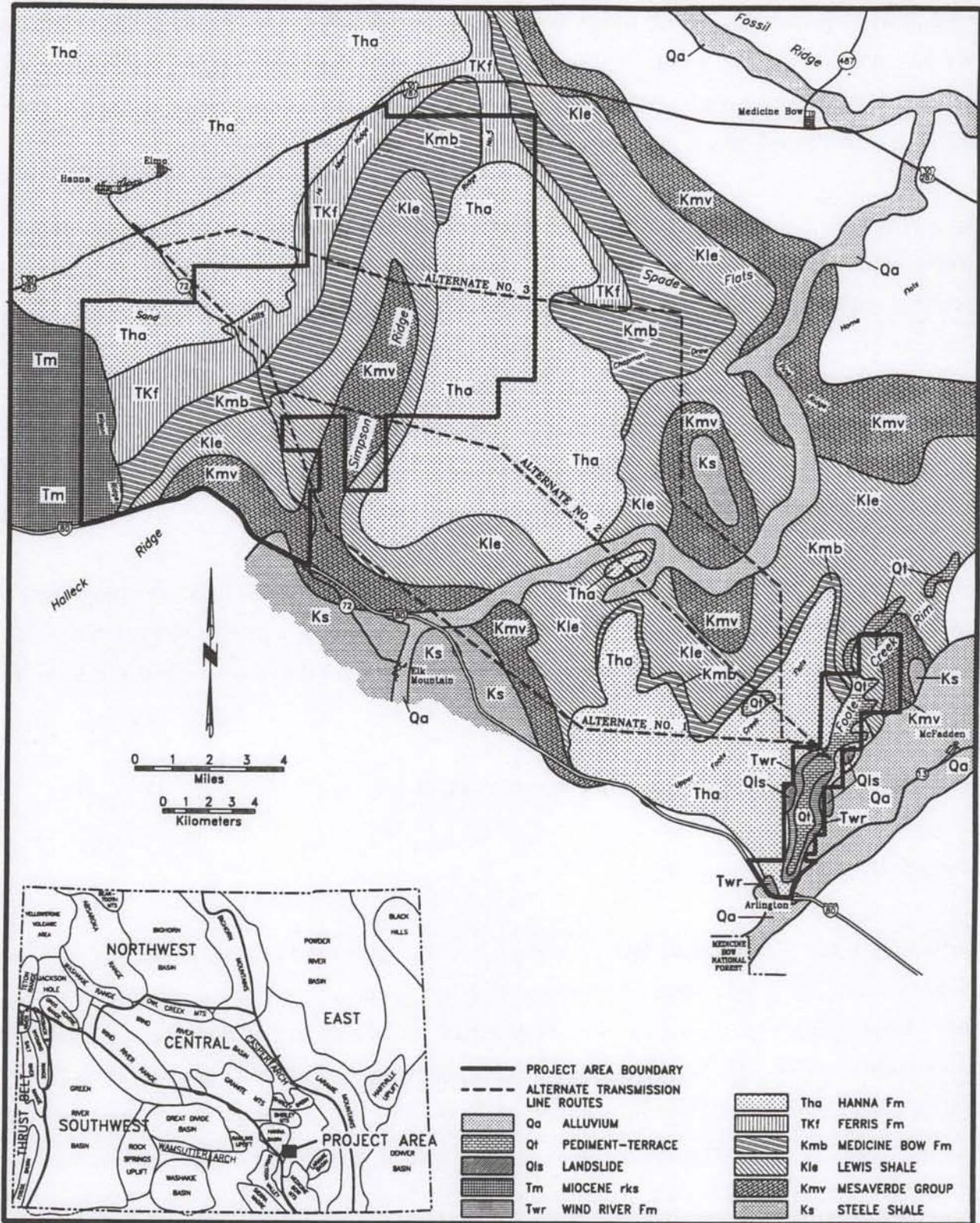
Undetermined Potential. Sedimentary units for which no known published or unpublished information exists have undetermined potential for producing significant paleontologic resources. Field survey should be performed by a qualified paleontologist to make a specific determination of high or low potential and to develop a program of mitigation as necessary.

Although BLM guidelines do not specifically recognize geologic deposits as having no paleontologic potential, some deposits, such as non-fossil-bearing intrusive or extrusive igneous rocks, metamorphic rocks, and modern sediments that are clearly too young to contain fossils effectively have no paleontologic potential.

PALEONTOLOGIC OVERVIEW OF PROJECT AREA

Geologic Deposits

Geologic mapping (Dobbin et al. 1929, Lowry et al. 1973, Love and Christiansen 1985, Love et al. 1993) shown in Figure 1 documents the presence of at least 10 different geologic deposits in the project area. These include, from youngest to oldest: (1) unnamed deposits of late Holocene age, including unconsolidated eolian sands, stream gravels, alluvium, colluvium, and landslide material; (2) unnamed older alluvial and terrace deposits of late Holocene to possibly late Pleistocene age; (3) Browns Park Formation of middle Miocene age; (4) Wind River Formation of early Eocene age; (5) Hanna Formation of Paleocene age; (6) Ferris Formation of Late Cretaceous to Paleocene age; (7) Medicine Bow Formation of late Cretaceous age; (8) Lewis Shale of Late Cretaceous age; (9) Mesaverde Group of Late Cretaceous age; and (10) Steele Shale of Late Cretaceous age.



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Figure 1 Geologic Map of Project Area.

Paleontologic resources within these sedimentary deposits record the history of animal and plant life in Wyoming during parts of the Mesozoic and Cenozoic Eras. The record represented by Mesozoic age deposits includes parts of the late Cretaceous. The record represented by Cenozoic age deposits includes parts of the Tertiary and Quaternary Periods. It is particularly important that the formations in the area preserve the continuous depositional record of events spanning the Cretaceous/Tertiary boundary. Areas preserving such a complete record are relatively rare and have a high potential to yield scientifically significant information about events associated with the extinction of the dinosaurs at the end of the Cretaceous and subsequent adaptive radiation of mammals in the succeeding Tertiary. The extinction of the dinosaurs is one of the most debated topics of modern paleontology and any area that can add knowledge to this event is of great scientific interest.

Paleontologic Potential Rating

With the exception of the Holocene and Pleistocene age sediments, geologic deposits that occur in the area are rated as having either a high or undetermined paleontologic potential rating, indicating a potential to produce scientifically significant fossils resources. Information on the geologic deposits exposed in the project area and their paleontologic potential is summarized in Table 1. Additional information on geologic deposits having a high or undetermined paleontologic potential is provided below. Geologic deposits are rated as having a high paleontologic potential if they are known to produce scientifically significant fossils anywhere in their known distribution. They are rated as having a low potential if they are not known to, or are unlikely to, contain such fossils. They are rated as having an undetermined paleontologic potential if not enough is known about the particular deposits in the area to either rate them as having a low or high potential.

The unnamed deposits of Late Holocene age that occur within the project area are too young to contain fossil remains. Terrace deposits of early Holocene to possibly latest Pleistocene in age that occur in the southeastern part of the area along Upper Foote Creek and Foote Creek Rim may be old enough to contain significant fossils. Similar terrace gravels of Pleistocene age are known to produce significant fossils at widespread localities throughout the western United States, but such fossils are relatively rare. For that reason, these deposits in the project area are accorded an undetermined, but probably low paleontologic potential.

Table 1 Summary of Surface Geologic Deposits and Paleontologic Resources, KENETECH Project Area.

Geologic Deposit	Geologic Age	Type of Deposit/ Environment of Deposition	Fossil Resources	Paleontologic Potential	Area(s) Present
Alluvial sediments (including alluvium, colluvium, and landslide debris)	Recent	Unconsolidated silts, sands of valleys and plains; terrestrial-fluvial, eolian.	None	Low	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Terrace deposits	Early Holocene to Pleistocene (?)	Gravels, silts, and sands that predate current erosional cycle; terrestrial- fluvial.	None	Undetermined, probably low	Foote Creek Rim, Alternate 1, Alternate 2
Browns Park Formation	Middle Miocene (Arikareean- Barstovian)	White sandy tuff and tuffaceous sandstone, mudstone, conglomerate, limestone; terrestrial, fluvial, air-fall volcanic ash, lacustrine.	Vertebrates, invertebrates	Undetermined, probably high	Simpson Ridge area
Wind River Formation	Early Eocene (early Wasatchian)	Drab to varicolored sandstone, mudstone, coals; terrestrial, fluvial, floodplain, locally swamp and pond.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Alternate 1, Alternate 2, Alternate 3
Hanna Formation (includes Dutton Creek Formation)	Paleocene (Torrejonian to Tiffanian)	Drab colored conglomerates, sandstones, arkose, mudstones, coals; terrestrial, alluvial fan, alluvial plain, lake, pond, swamp and fluvial.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge Area, Alternate 1, Alternate 2, Alternate 3
Ferris Formation	Cretaceous to Paleocene (latest Cretaceous to Puercan)	Lower part: conglomeratic sandstone, sandstone and shale of late Cretaceous age; Upper part: gray, brown, and yellow sandstone, mudstone, and coal beds; terrestrial, alluvial fan, alluvial plain, pond, swamp, and fluvial.	Vertebrates, invertebrates, plants, trace fossils	High	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3

Table 1 (Continued)

Geologic Deposit	Geologic Age	Type of Deposit/ Environment of Deposition	Fossil Resources	Paleontologic Potential	Area(s) Present
Medicine Bow Formation (includes Foote Creek Formation)	Late Cretaceous (Maastrichtian)	Yellow, gray and carbonaceous shale, coal, gray and brown sandstone, conglomerate; marine-terrestrial, nearshore, estuarine, shoreline, swamp, alluvial plain.	Vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Lewis Shale (includes Fox Hills Sandstone)	Late Cretaceous (Campanian to Maastrichtian)	Dark colored shale, siltstone, and sandstone, minor limestones; marine, transgressive shelf, delta-front, nearshore to offshore marine floor, and shoreline.	Marine vertebrates, invertebrate, trace fossils	Undetermined, possibly high	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Mesaverde Group (includes Haystack Mountains, Allen Ridge, Pine Ridge, and Almond Formations)	Late Cretaceous (Campanian)	Sandstone, siltstone, mudstone, shale, and coal; marine to terrestrial, nearshore, shoreline, deltaic, fluvial, estuarine, swamp.	Marine and nonmarine vertebrates, invertebrates, plants, trace fossils	High	Foote Creek Rim, Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3
Steele Shale	Late Cretaceous [Santonian(?) to Campanian]	Dark gray shale, thin sandstone and limestone; marine, muddy shelf nearshore to offshore.	Marine vertebrates, invertebrates	Undetermined, possibly high	Simpson Ridge area, Alternate 1, Alternate 2, Alternate 3

Paleontologic Potential vs Paleontologic Sensitivity

As described above, geologic deposits are rated as having a high paleontologic potential if they produce scientifically significant fossils anywhere in their aerial distribution based on review of literature and records. This should be differentiated from paleontologic sensitivity, which is a more specific rating of the likelihood that particular geologic deposits will contain scientifically significant fossils, based on field survey. Because it is based on field survey, sensitivity is a more specific measure of the likelihood of an area to yield scientifically significant fossils than paleontologic potential.

It is important to distinguish between paleontologic potential and paleontologic sensitivity because usually only a small fraction of an area of high paleontologic potential proves to be fossil-bearing, and hence, to have high paleontologic sensitivity. As described above, geologic formations, by definition, are assigned a high paleontologic potential if they have yielded scientifically significant fossils anywhere in their distribution. Formations, however, may contain several lithologies that differ in the degree to which they preserve fossils. Some lithologies may be very fossiliferous, whereas others may be entirely unfossiliferous. As a result, a formation known to produce spectacular fossils in some areas may prove to be fossil-barren in others. The practical result is that paleontologic resource inventories, based on literature and museum records searches alone will usually identify large areas of high paleontologic potential, whereas field surveys will usually more specifically identify areas of high paleontologic sensitivity. Areas of high paleontologic sensitivity rather than high potential should be the focus of proposed impact mitigation.

High or Undetermined Paleontologic Potential Deposits

Browns Park Formation

The Browns Park Formation of middle Miocene age occurs in the western part of the project area south of Wyoming State Highway 30 near Hanna. The deposits consist of a white, brown, and gray volcaniclastic sandstone, conglomerates, and air-fall tuffs and limestones, which are the remnants of more widespread deposits that once blanketed south-central Wyoming and are more widely exposed in the Saratoga Basin. Lithologically, the formation has been subdivided into a lower unit that is dominated by volcanic sandstone and pumiceite beds, and an upper unit which is dominated by limestones and other

lacustrine deposits (Montagne 1991). Fossils from the lower part of the formation are of Arikarean to Hemingfordian age, whereas those from the upper part appear to be chiefly of Barstovian age. Limestone and lake deposits appear to dominate the formation in the Carbon and Hanna Basins (Lillegraven 1995), suggesting that the deposit may correlate with those of the upper Browns Park in the Saratoga Basin and that it is Barstovian in age.

No fossils have been reported from the formation in the Hanna and Carbon Basins, but significant finds of fossil invertebrate and vertebrate remains have been made in the formation in south-central Wyoming and north-central Colorado. In Browns Park of northwestern Colorado, the formation has produced the remains of a variety of fossil mammals including those of a mastodont, rhino, procyonid, chalicothere, camel, oreodont, and antelope of middle Miocene age (McGrew 1951, Bradley 1964). Abundant fossil vertebrates have also been found in the formation in the Saratoga Valley, including the remains of horses, camels, oreodonts, merycodonts, rabbits, bears, antelope, and a beaver (McGrew 1976, Montagne 1991). In addition to the fossils of mammals, the formation has produced the remains of freshwater algae, gastropods, diatoms, and pollen. The lack of fossils in the Browns Park in Carbon County appears to be the result of the lack of paleontologic study, rather than an indication of a lack of fossil potential. For that reason, the formation is rated as having an undetermined, but probably high paleontologic potential.

Wind River Formation

The Wind River Formation of the early Eocene occurs in the southeastern part of the project area along the Foote Creek drainage, immediately north of the town of Arlington, Wyoming. The formation consists of drab to varicolored sandstones and mudstones that accumulated in floodplain and fluvial environments during early Eocene time over most of the Cooper Lake Basin, Shirley Basin, and northern part of the Laramie Basin. Similar deposits, which are unnamed, occur in the Hanna Basin (Blackstone 1993). Fossils of terrestrial vertebrates, invertebrates, and plants have been noted in the formation at several localities in the Cooper Lake Basin (Prichinello 1971, Eaton et al. 1976-1978, Davidson 1987). Vertebrate specimens from these localities are curated into the collections of the Geology Museum at the University of Wyoming and include the remains of two extinct species each of fish, turtle, lizard, and crocodile, the giant ground bird *Diatryma*, and at least 27 species of mammals (Table 2). The mammalian species include multituberculates, marsupials, insectivores, primitive hoofed condylarths, primates, oreodonts, carnivores, horses, tapirs, artiodactyls, rodents, and pantodonts. The wide diversity

Table 2 Fossil Vertebrates from the Wind River Formation (from Davidson 1987).

Class Osteichthyes	Class Mammalia	
Order Amiiformes	Order Multituberculata	Family Omomyidae
Family Amiidae	Family Neoplagiulacidae	<i>Tetonius</i> sp.
<i>Amia</i> sp.	<i>Ectypodus</i> sp. cf. <i>E.</i>	Order Creodonta
Order Lepisosteiformes	<i>tardus</i>	Family Hyaenodontidae
Family Lepisosteidae	<i>Parectypodus</i> sp. cf.	<i>Prototomus</i> sp.
<i>Atractosteus</i> sp.	<i>P. lunatus</i>	cf. <i>Prolimnocyon atavus</i>
Class Reptilia	Order Marsupialia	Family Oxyaenidae
	Family Didelphidae	<i>Oxyaena</i> sp.
	<i>Peradectes protinnominatus</i>	Order Carnivora
Order Testudinata	Order Proteutheria	Family Didymictidae
Family Baenidae	Family Pantoletidae	<i>Didymictis</i> sp.
cf. <i>Baena</i> sp.	<i>Palaeosinopa</i> sp.	Genus and species indet.
Family Dermatemydidae	Order Insectivora	Family Miacidae
<i>Adocus</i> sp.	Family Dormaaliidae	<i>Miacis exiguus</i>
Order Sauria	<i>Macrocranion</i> sp. cf.	Order Perissodactyla
Family Anguidae	<i>M. nitens</i>	Family Equidae
<i>Melanosaurus</i> sp.	Family Incertae sedis	<i>Hyracotherium angustidens</i>
incertae sedis	cf. <i>Talpavoides dartoni</i>	Family Isectolophidae
Order Crocodylia	Order Condylarthra	<i>Homogalax protapirinus</i>
Family Crocodylidae	Family Phenacodontidae	Order Artiodactyla
cf. <i>Leidyosuchus</i> sp.	<i>Phenacodus primaevus</i>	Family Diacodexidae
<i>Allognathosuchus</i> sp.	<i>P. vortmani</i>	<i>Diacodexis secans</i>
Class Aves	<i>P. brachypternus</i>	Order Rodentia
	<i>Ectocion osbornianum</i>	Family Ischyrdmyidae
Order Diatrymaiformes	Family Hyopsodontidae	<i>Paramys copei</i>
Family Diatrymatidae	<i>Hyopsodus</i> sp. cf.	Family Sciuravidae
<i>Diatryma</i> sp.	<i>H. miticulus</i>	<i>Sciuravus</i> sp.
	<i>Haplomylus speirianus</i>	Order Pantodonta
	Order Primates	Family Coryphodontidae
	Family Adapidae	<i>Coryphodon eocaenus</i>
	<i>Cantius</i> sp. cf. <i>C. mckennai</i>	<i>C. oweni</i>
	<i>Cantius</i> sp. cf. <i>C. trigonodus</i>	

of scientifically significant fossils known from the Wind River Formation in Carbon County and throughout Wyoming document the high paleontologic potential of the formation.

Hanna Formation

The Hanna Formation of Paleocene age occurs in the area along the southeastern edge of the Hanna Basin and is widespread in the Carbon Basin along I-80 near the town of Arlington. The formation includes sediments previously referred to as the Dutton Creek Formation, a term now abandoned, by Hyden et al. (1965). The Hanna Formation consists of drab-colored conglomerates, sandstones, arkose, mudstones, and coals that accumulated in terrestrial environments during the Paleocene (Bowen 1918, Dobbin et al. 1929, Knight 1951, Gill et al. 1970, Hansen 1986, Blackstone 1993). In the Hanna Basin, coarse-grained conglomeratic deposits of the formation accumulated adjacent to ancient highlands to the north in alluvial fan environments. These deposits become finer-grained southeastward away from the highlands into the Carbon Basin where they are replaced by sediments that accumulated in fluvial, floodplain, and swamp environments.

Fossils known from the Hanna Formation include the remains of terrestrial vertebrates, invertebrates, and plants (Gill et al. 1970, Ryan 1977, Lillegraven 1995). The plant fossils include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains. Invertebrate fossils of the Hanna Formation have been described by Kirchsner (1984), and include a variety of freshwater gastropods and bivalves. With the exception of fish scales, turtle fragments, a fragmentary jaw of a possible condylarth reported by Bowen (1918), and the unpublished discovery of a nearly complete mandible of the phenacodont condylarth *Tetraclaenodon* (collected by J.A. Lillegraven and J.G. Eaton in the late 1970s), little was known of the vertebrate fossils of the Hanna Formation until recently. That situation has changed over the past few years as the result of new discoveries made by field parties under the direction of Dr. Jason A. Lillegraven and his students, Ms. Jaelyn Eberle and Mr. Ross Secord at the University of Wyoming (UW). The newly discovered fossils (as yet unpublished) include the dental and skeletal remains of a wide variety of vertebrates, including many extinct mammalian species known from the Torrejonian to Tiffanian North American Land Mammal ages (Eberle 1994, Lillegraven 1995). These recent discoveries document the high paleontologic potential of the formation.

Ferris Formation

The Ferris Formation of late Cretaceous to Paleocene age occurs in the northern part of the project area, north of I-80 along the northern flanks of Halleck and Simpson Ridges and eastward along Spade Flats at the base of the Saddleback Hills. The formation includes sediments previously referred to as the Foote Creek Formation, a term now abandoned, by Hyden et al. (1965). The Ferris Formation consists of a thick sequence of continental rocks that have been traditionally subdivided into an upper and a lower part (Gill et al. 1970), based on age and lithology. The lower part of Late Cretaceous age consists of conglomeratic sandstone, sandstone, and shale, and is equivalent in age to the Lance Formation, which is well known for its fossil vertebrates, including dinosaurs. The upper part of Paleocene age consists of gray, brown, and yellow sandstone and thick beds of coal.

Fossils known from the Ferris Formation include the remains of terrestrial vertebrates, invertebrates, and plants (Gill et al. 1970, Ryan 1977, Hansen 1986, Lillegraven 1995). The plant fossils include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains of late Cretaceous to Paleocene age. The invertebrates include the remains of freshwater gastropods, bivalves, and ostracods. Dinosaur bone fragments have long been known from the lower part of the Ferris Formation (Bowen 1918, Lull 1933, Breithaupt 1985, 1994). Until recently, fossil vertebrates from the formation have included remains identified only as the ceratopsian *Triceratops* and an undescribed genus and species of turtle. In recent years, UW field parties under the direction of Dr. Jason A. Lillegraven have discovered additional fossils from both the lower and upper parts of the Ferris Formation. Fossils from the lower part of the formation include the diverse remains of a wide variety of dinosaurs and crocodylians of late Cretaceous (Lancian) age. These fossils are currently being studied by Mr. Anton Wroblewski, a student at UW (Breithaupt 1994). Additional fossils from the upper part of the formation include the diverse remains of a wide variety of early Paleocene (Puercan) age mammals (Lillegraven 1995). These recent discoveries document the high paleontologic potential of the formation.

Medicine Bow Formation

The Medicine Bow Formation of late Cretaceous age occurs in the northern part of the project area, where it is exposed beneath the Ferris Formation in the same areas as the latter formation. The Medicine Bow Formation consists of dark gray carbonaceous shales, sandstones, and coals that accumulated in

marine, brackish water, and terrestrial environments in and along the last regression of the Bearpaw Seaway from Wyoming in latest Cretaceous time (Bowen 1918, Gill et al. 1970, Fox 1971, Ryan 1977, Blackstone 1993).

Fossils known from the formation include the remains of terrestrial plants, marine and freshwater invertebrates, and terrestrial vertebrates. The plants include microfossil (pollen) and megafossil (leaf and stems imprints, and petrified and carbonized wood) remains of Late Cretaceous age. Well-preserved leaf floras have been described from the formation by Dorf (1942). The invertebrates include the remains of marine foraminifera and brackish-water bivalves and gastropods represented by at least 21 different species (Gill et al. 1970). Dinosaur bone fragments have long been known from the lower part of the formation (Bowen 1918, Lull 1933, Breithaupt 1985, 1994) and include the remains of the ceratopsian *Triceratops*. The formation has also produced the remains of a small number of mammals of late Cretaceous (Lancian) age (Lillegraven 1995). These recent discoveries establish the high paleontologic potential of the formation.

Lewis Shale

The Lewis Shale of Late Cretaceous age occurs widespread in the project area, along the edges of the Hanna and Carbon Basins. The formation consists of a thick sequence of shale, siltstone, and sandstone that accumulated in deltaic, interdeltic, and marginal marine to deep-water marine environments (Winn et al. 1985a, b). The Fox Hills Sandstone which accumulated in shoreline environments above the Lewis Shale during the retreat of the Lewis Sea is often lumped with the Lewis on maps because it is too thin to map separately at conventional map scales.

The Lewis Shale contains a large and varied marine invertebrate fauna, including many genera of bivalves, baculites, scaphites, and ammonites (Gill et al. 1970). Isurid shark teeth have also been recovered from the formation at localities in Carbon County (Breithaupt 1985). The Fox Hills Sandstone contains a shallow water marine fauna including a large variety of clams and snails, as well as three distinctive types of ammonites, a species of bryozoan, and burrow trace fossils. The remains of marine fish, sharks, rays, bony fish, and marine crocodiles and lizards (mosasaurs) have been reported from the Fox Hills Sandstone in Sweetwater and Converse Counties of Wyoming (Winterfeld 1978, Breithaupt 1985).

Fossils are known from the Lewis Shale and Fox Hills Sandstone in Carbon County, but no significant vertebrate finds have been made there to date. These formations have produced significant vertebrate fossils in other areas of Wyoming, and for that reason, the formations are rated as having an undetermined, but possibly high paleontologic potential.

Mesaverde Group

The Mesaverde Formation of Late Cretaceous age occurs widespread in the project area along the basin edges and in the core of the Big Medicine Bow Anticline. The formation consists of alternating sandstone, shale, carbonaceous shale, and coal of varying thickness that accumulated in marine, marginal marine, shoreline, and terrestrial environments. It includes in descending order, the Almond Formation, Pine Ridge Sandstone, Allen Ridge Formation, and Haystack Mountain Formation (Gill et al. 1970, Martinsen et al. 1993).

The Almond Formation consists of a sequence of interbedded carbonaceous shale, shallow-marine sandstone, and lenticular coal. The marine sandstones contain abundant marine and brackish-water fossils, including reef-like beds of oysters, other types of bivalves, ammonites, baculites, worm tubes, and burrow trace fossils (*Ophiomorpha*).

The Pine Ridge Sandstone consists primarily of white to gray nonmarine sandstone with thin interbeds of carbonaceous siltstone, carbonaceous shale, and coal. Apart from the burrows of marine and brackish-water organisms, no fossils have been reported from the Pine Ridge Formation.

The Allen Ridge Formation consists of a lower nonmarine unit of fluvial sandstone, shale and carbonaceous bed, a middle unit of marine shale and sandstone, and an upper unit of brackish-water origin. Fossils are scarce in the nonmarine member, but include vertebrate bone fragments and the isolated teeth of a few mammals (Lillegraven 1995). Fossil invertebrates are plentiful in the marine units of the formation and include the remains of several genera of bivalves, bryozoans, baculites, and ammonites.

The Haystack Mountain Formation consists of a sequence of thick units of marine sandstone interbedded with thick units of marine shale. The sandstone accumulated in nearshore and shallow offshore

environments, whereas the shale accumulated in deeper water environments. Fossils of marine invertebrates are abundant in the sandstone and shale of the formation. At least 17 genera of invertebrates have been reported from the formation, including the remains of bivalves, bryozoans, baculites, scaphites, and ammonites. Trace fossils, including the burrows of marine bivalves and worms, are also abundant.

The Mesaverde Group has produced diverse vertebrate fossils from many widely dispersed localities in central Wyoming, and although fossils from the group are not widely published on, they appear to be reactively common in parts of the formation (Winterfeld 1989). Not many fossils have been reported from deposits of the formation in Carbon County. Fossils from the group from nearby areas of Wyoming include the remains of plants, a wide variety of marine invertebrates, and marine and terrestrial vertebrates. Non-mammalian vertebrates known from the formation include nine species of shark, two of ray, nine of bony fish, six of amphibians, three of turtle, 14 of lizards, five of lizard, three of crocodile, four of ornithischian dinosaur, three of saurischian dinosaurs, and one each of champsosaur, pterosaur, snake, unidentified marine reptile, and bird (Breithaupt 1985). The Mesaverde Group has also produced the fossils of 12 species of mammals (Clemens and Lillegraven 1986, Lillegraven and McKenna 1986) in Natrona County and a few in Carbon County (Lillegraven 1995). The marine part of the formation has produced the abundant remains of invertebrates, including ammonites, baculites, bivalves, and planktonic foraminifera (Keefer 1972, Kauffman 1977, Shapurji 1978). A varied fauna of fossil sharks is also known from marine beds in the formation in the southern part of the Bighorn Basin (Case 1987). Dinosaurs from the Mesaverde include the more popularly known genera *Edmontosaurus* and *Albertosaurus*. Mammals from the formation include species of multituberculates, primitive marsupials and placental mammals, and primitive mammals which can neither be classified as being either placental or marsupial, based on dental anatomy.

Significant fossils are known from the Mesaverde Group in Carbon County and elsewhere in Wyoming. The scarcity of fossils from the formations in the group in Carbon County is probably more a measure of the lack of work on the deposits than of its true potential, and for that reason, the group is rated as having a high paleontologic potential.

Steele Shale

The Steele Shale of Late Cretaceous age occurs in the south-central part of the project area along I-80 and in the core of the Big Medicine Bow Anticline. The formation consists of dark gray shale that contains sparse layers of gray weathering limestone concretions and thin beds of very fine sandstone and siltstone. Fossils are abundant in limestone concretions and thin sandy beds of the Steele Shale with a wide variety of marine invertebrates recorded, including the remains of at least 15 genera of bivalves, scaphites, and ammonites. Shark teeth have also been noted in the formation in Natrona and Carbon Counties (Wegemann 1911, Lillegraven 1995). The remains of marine reptiles, plesiosaurs, and crocodiles are known from equivalent strata (Cody Shale, Pierre Shale, Niobrara Formation) at widely dispersed localities in eastern and northern Wyoming (Weishampel 1992), and similar remains may yet be found in the Steele Shale as well. Although few fossils have been reported from the Steele Shale in Carbon County, the remains of significant vertebrate fossils are known from nearby areas of Wyoming. For that reason, the formation is rated as having an undetermined, but possibly high, paleontologic potential.

PROJECT IMPACTS

Introduction

Inventory of paleontologic resources in the KENETECH Windpower project area documents the presence of sedimentary deposits of Late Cretaceous, Paleocene, Eocene, and Miocene age that are known to contain plant, invertebrate, and vertebrate fossils of scientific interest and significance. Of particular importance are fossils from geologic deposits spanning the Cretaceous/Tertiary boundary which record the extinction of the dinosaurs and rise of modern orders of mammals. Impacts due to the proposed project would be potentially significant but would be reduced to less than significant via mitigation.

It is very likely that ground disturbance associated with construction of the project will encounter fossils of scientific significance. Direct damage or destruction of these fossils, as a result of construction, with subsequent loss of scientific information, is of primary concern as an adverse impact of the project. Adverse impacts indirectly associated with construction are of additional concern.

Not all impacts of construction are adverse to paleontology, however. Excavation can reveal fossils of significant scientific interest that would have otherwise remained buried and unavailable for scientific study, and in this way, can be beneficial. The mere revelation of fossils of scientific importance is in itself not a beneficial impact. To have beneficial impacts, such newly discovered fossils must be properly collected and catalogued into the collections of a museum repository so that associated geologic data is preserved and the fossils are available for future scientific study.

Impact Assessment

The relative magnitude of potential construction impacts to paleontologic resources is related to the paleontologic potential of the sedimentary deposits disturbed during construction, the nature and extent of the disturbance, and the significance of the fossils disturbed. Paleontologic potential, as described above, is a measure of the probability that a deposit will contain not just fossils, but fossils of scientific significance. Criteria to describe scientific significance are given below.

Impact Significance Criteria

Adverse impacts to fossils resources occur when fossils of scientific significance are damaged or destroyed by construction. Significant impacts occur when scientifically significant nonrenewable fossil resources are damaged or destroyed as a result of project implementation. Scientifically significant fossils may occur anywhere within the project area, but are most likely to be encountered in areas of high paleontologic potential.

As described above, Wyoming BLM guidelines (Information Bulletin WY-93-371) consider all vertebrate fossils to be of scientific interest; other types of fossils may also be placed in this category. The BLM provides no guidance on evaluating the significance of fossil resources, but professional paleontologists generally recognize fossils and their containing deposits to be of significant scientific value if they provide taphonomic, taxonomic, phylogenetic, ecologic, or stratigraphic information.

Direct and Indirect Impacts

Direct damage or destruction of these fossils as a result of construction, with subsequent loss of scientific information, is of primary concern as an adverse impact of the project. Adverse impacts indirectly associated with construction are of additional concern. For example, fossils may be subject to damage or destruction by erosion that is accelerated by construction disturbance. In addition, improved access and increased visibility as a result of construction may cause fossils to be damaged or destroyed as a result of unauthorized collection or vandalism.

Adverse impacts to fossil resources are most likely and could be significant at known fossil localities or in places where geologic deposits with a high paleontologic potential are exposed at or near the surface. Deposits are considered to have a high paleontologic potential if they are known to yield scientifically significant fossils anywhere in the region. Adverse impacts to fossil resources are less likely and potentially less significant in places where geologic deposits with an undetermined paleontologic potential are exposed at or near the surface. Deposits are considered to have an undetermined paleontologic potential if either not enough information is known about their fossil-producing nature in the area, or their lithology, age, and depositional environment suggest they should be fossil-bearing, but fossils have yet to be reported from them. Adverse impacts to fossil resources are unlikely to be significant in areas underlain at the surface or near surface by geologic deposits with a low paleontologic potential. Deposits are considered to have a low paleontologic potential if they have been documented to lack significant fossils.

Beneficial and significant positive construction impacts, including the unanticipated discovery of previously undetermined scientifically significant fossils, are possible anywhere in the project area.

Cumulative Impacts

No cumulative impacts to fossil resources are anticipated from implementation of the project or alternatives if the prescribed mitigation measures are implemented.

Mitigation Summary

Paleontologic inventory of the KENETECH Windpower project area documented the presence of high and undetermined paleontologic potential in geologic deposits within the project area. A high paleontologic potential was documented in the Browns Park Formation, Wind River Formation, Hanna Formation, Ferris Formation, Medicine Bow Formation, and Mesaverde Group. An undetermined, but possibly high, paleontologic potential was documented in the Lewis (including Fox Hills Sandstone) and Steele Shales. An undetermined but probably low, paleontologic potential was documented in unnamed terrace sediments of Quaternary age.

To reduce the potential for significant adverse impacts to fossil resources in the project area to insignificant levels, the following mitigation measures should be implemented. Implementation of mitigation measures such as those described here are specifically designed to reduce adverse impacts of construction to fossil resources to nonsignificant levels. Mitigation measures include both general and specific measures. General measures mitigate impacts that may occur anywhere in the project area and specific measures are designated specifically for areas identified as having high or undetermined paleontologic potential.

General Mitigation Measures

General measures mitigate adverse impacts to fossil resources that may occur anywhere in the project area, including areas of low paleontologic potential. These measures are consistent with standard practice for paleontologic work within the professional paleontologic consulting community. The following measures are considered standard practice and should be applied to the entire KENETECH area:

Worker instruction. Qualified paleontologists instruct construction personnel about the types of fossils they could encounter and the steps to take if they uncover fossils anywhere during construction of the project. This information can be conveyed in a short brochure/handout to be made available to construction personnel. This measure is particularly important in areas of low paleontologic potential that are unlikely to produce significant fossils and that are not likely to be monitored by qualified paleontologists.

Discovery contingency. Contingency is made for the unlikely event that significant fossils are discovered in areas that are not monitored during construction. Usually construction activities which could adversely affect the fossils are redirected until a qualified paleontologist has determined the importance of the uncovered fossils, the extent of the fossiliferous deposits and made, and implemented recommendations regarding further mitigation, if any, are warranted.

Specific Mitigation Measures

Specific measures are usually enacted to mitigate adverse impacts to fossil resources in areas of high and undetermined paleontologic potential on a project-by-project basis. Areas of high paleontologic potential include any area underlain at the surface, or within a few feet of the surface, by formations having a high paleontologic potential. These measures are consistent with standard practice for paleontologic work within the professional paleontologic consulting community and include the following:

Class III field survey. Prior to construction, areas of high or undetermined paleontologic potential should be surveyed by a qualified paleontologist to identify the location and extent of fossil resources, thereby defining areas of high paleontologic sensitivity.

Development of a mitigation and monitoring plan. A mitigation and monitoring plan is prepared for projects affecting geologic deposits of high paleontologic sensitivity (where scientifically significant fossils are likely to occur). Paleontologic sensitivity is a more specific measure of the likelihood of a geologic deposit to yield scientifically significant fossils than paleontologic potential. The plan is based on the Class III field survey and details the following:

- 1) results of the Class III survey, including the types of fossils identified and recovered, if any were found, their locality of discovery, and scientific significance;
- 2) procedures for preconstruction mitigation (mitigation may include any or all of the following: (a) avoidance of significant resources, (b) collection of significant resources, and (c) construction monitoring);
- 3) construction phase procedures if scientifically significant fossils are encountered during construction (Usually if fossils of significance are discovered during monitoring, construction activities are redirected until a qualified paleontologist has determined the

- importance of the uncovered fossils, the extent of the fossiliferous deposits, and made and implemented recommendations regarding further mitigation.); and
- 4) procedures for curation of specimens collected during the Class III field survey. Fossil specimens collected during the field survey and subsequent construction mitigation, if any is conducted, must be curated into the collections of a museum repository acceptable to the lead agency. Curation as used here includes specimen preparation to the extent of identification; and preparation of accompanying catalogue tags and entry of locality and specimen data into archive records.

Submission of a final technical document. Adverse impacts to paleontologic resources are usually not considered reduced to insignificant levels until a final technical report is prepared and submitted following completion of the mitigation program, if one was implemented. If a mitigation program was implemented, the report should contain the results of the surveys and mitigation work conducted, including an accession list of fossil specimens collected listed by locality. If no mitigation was conducted because no significant fossil resources were identified, the report should contain the results of the survey. The report should also contain a discussion of the scientific significance of the specimens and geologic and paleontologic setting of any discovered fossils and their localities. A confidential appendix containing copies of locality maps and standard locality data sheets for each locality, if any specimens were discovered and collected, should be appended to the report, and copies of the report should be filed with the project proponent, agencies involved, and the repository where the fossils are curated.

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APPENDIX H:
**OVERLAY OF PROPOSED PHASE I WINDPLANT FACILITIES LOCATIONS
FOR USE WITH FIGURES 3.14 THROUGH 3.17 IN THE FEIS**

**APPENDIX J:
HAZARDOUS MATERIALS SUMMARY**

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1.0 INTRODUCTION

This Hazardous Materials Summary (HMS) provides specific information regarding the types and quantities of hazardous and extremely hazardous materials that would be used during project development, operations, maintenance, and reclamation.

This HMS is was prepared pursuant to BLM Instruction Memoranda Nos. WO-93-344 and WY-94-059 which require that all NEPA documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of project activities. Hazardous materials are those substances listed in the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, and extremely hazardous materials are those identified in the EPA's *List of Extremely Hazardous Substances* (40 C.F.R. 355).

2.0 HAZARDOUS MATERIALS

Lists of hazardous and extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of the proposed project were obtained from KENETECH and PacifiCorp, along with Material Safety Data Sheets (MSDS) for all chemicals, compounds, and/or substances that may be used during the construction, operation, maintenance, or reclamation of the proposed project. All hazardous and extremely hazardous substances known to be present within these materials are summarized in Table J.1. Where possible, the quantities of these materials have been estimated, and their use, storage, transport, and disposal methods identified.

2.1 WINDPLANT, TRANSMISSION LINE, AND SUBSTATION CONSTRUCTION, OPERATION, MAINTENANCE, AND RECLAMATION

2.1.1 Concrete

Concrete would be used in the construction of building foundations (quantity unknown), turbine foundations (70.5-MW Phase I, 3,000 yd³; 500-MW Windplant, 18,000 yd³), meteorological tower foundations (70.5-MW Phase I, 40 yd³; 500-MW Windplant, 400 yd³), transformer pads (quantity unknown), communications structures (2 yd³/structure) and in anchoring overhead collection and communication line poles. Concrete and additives used for these purposes may contain the hazardous material classes of fine mineral fibers, polynuclear aromatic hydrocarbons (PAHs), and polycyclic organic matter (POM), though these substances would be bound in solidified concrete. No extremely hazardous materials are known to be present in the concrete or additives proposed for use on this project. Concrete would be transported to the project area by qualified concrete contractors in appropriate vehicles.

2.1.2 Explosives

Dynamite or a mixture of ammonium nitrate and diesel fuel may be used to facilitate the construction of foundations, overhead collection and communication line support structure installation, or communication line trenches. Nitroglycerin is a known hazardous material present in dynamite; ammonium nitrate and some components of diesel fuel (see Section 2.1.3.1, Fuels) are also considered hazardous. No known extremely hazardous materials are present in the types of explosives typically used during construction.

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Table J.1 Hazardous and Extremely Hazardous Materials Proposed for Use in KENETECH-PacifiCorp Windplant, Transmission Line, and Substation Construction, Operation and Maintenance, Carbon County, Wyoming.

Source	Hazardous ¹ and Extremely Hazardous ² Constituents	CAS Number
Concrete	fine mineral fibers	--
	PAHs ³	--
	POM ⁴	--
Explosives	ammonium nitrate	6484-52-2
	nitroglycerin	55-63-0
Gasoline	benzene	71-43-2
	ethylbenzene	100-41-4
	methyl tert-butyl ether	1634-04-4
	m-xylene	108-38-3
	o-xylene	95-47-6
	PAHs	--
	POM	--
	p-xylene	106-42-3
	tetraethyl lead ⁵	108-88-3
Diesel	benzene	71-43-2
	ethylbenzene	100-41-4
	methyl tert-butyl ether	1634-04-4
	m-xylene	108-38-3
	naphthalene	91-20-3
	o-xylene	95-47-6
	PAHs	--
	POM	--
	p-xylene	106-42-3
	toluene	108-88-3
Lubricants/oils	barium	7440-39-3
	cadmium	7440-43-4
	copper	7440-50-8
	lead	7439-92-1
	manganese	7439-96-5
	nickel	7440-02-0
	PAHs	--
	POM	--
	zinc	7440-66-6
Coolant/antifreeze	ethylene glycol	107-21-1

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Table J.1 (Continued)

Source	Hazardous ¹ and Extremely Hazardous ² Constituents	CAS Number
Paints	barium	7440-39-3
	cobalt	7440-48-4
	lead	7439-92-1
	manganese	7439-96-5
	PAHs	--
	POM	--
	sulfuric acid	7664-93-9
	xylene (mixed isomers)	1330-20-7
Wood preservative	pentachlorophenol	87-86-5
Miscellaneous	ethyl ether	60-29-7
	hexane	110-54-3

¹ As defined under the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, as amended.

² As defined in 40 C.F.R. 355.

³ Polynuclear aromatic hydrocarbons.

⁴ Polycyclic organic matter.

⁵ Extremely hazardous material.

The quantity of explosives required for construction would be dictated by specific construction needs and is not known at this time.

2.1.3 Fuels, Lubricants, Coolant/Antifreeze

Vehicles and equipment typically used during construction, operation and maintenance, and reclamation require various fuels, lubricants, and coolant/antifreeze solutions, though the specific quantities of these products used, transported, or stored is not known. Windplant operation and maintenance (O&M) vehicles would include three pickups for the first phase of development and 15-20 pickups for the full 500-MW Windplant. Transmission line O&M would require two inspections per year by a single pickup, and reclamation efforts would probably require the use of a pickup, a grader, and a tractor.

2.1.3.1 Fuels

Gasoline would be used as a fuel for transport vehicles and miscellaneous machinery powered by internal combustion engines. The volume of gasoline required through the LOP is unknown due to the variability in vehicle fuel efficiencies, distance traveled to and within the project area, etc. Gasoline would be stored in 1,000-1,500 gal above ground storage tanks and transported primarily in vehicle gas tanks. Small quantities (approximately 5 gal) may be stored in appropriately designed and labeled containers for supplemental use as vehicle and machinery fuel. Hazardous materials present in gasoline include benzene, ethylbenzene, methyl tert-butyl ether, m-xylene, o-xylene, PAHs, POM, p-xylene, and toluene. Leaded gasoline, which contains the extremely hazardous material tetraethyl lead, may be required as fuel for some older equipment. Unleaded gasoline contains no known extremely hazardous materials.

Diesel fuel would be used, transported, and stored in a manner similar to gasoline including an above ground storage tank (1,000-1,500 gal). The quantity of diesel required for the LOP is not known. Diesel potentially contains hazardous materials including benzene, ethylbenzene, methyl tert-butyl ether, m-xylene, naphthalene, o-xylene, PAHs, POM, p-xylene, and toluene. No extremely hazardous materials are known to be present in diesel fuel.

2.1.3.2 Lubricants

Various lubricants and oils, including motor oil, hydraulic oil, gear oil, transmission oil, and grease, would be used for vehicles, turbines, and other equipment and machinery needed for the project. Specific lubricants include, but are not limited to, Mobil DTE 13M, Mobil Synthetic, Mobil HC 100, Mobil SHC 632, Mobil SHC 460, Chevron Delo 400, Chevron Dexron, Chevron EP Industrial Oil 46X, Chevron SRI2, Chevron VISTAC 150, Stihl 50:1 2-Cycle Oil, High Performance Gear Lube 80W90, Gear Oil #150, Valvoline Hydraulic Fluid, and WD40. Some of these lubricants would likely contain PAHs and POM, and some may additionally contain compounds of barium, cadmium, copper, lead, manganese, nickel, and zinc. No known extremely hazardous materials are present in the lubricants proposed for use in conjunction with this project. Though specific quantities are not known, lubricants would be stored at the construction site as well as within vehicle and other equipment reservoirs, and would be used, transported, stored, and disposed of following manufacturer's guidelines. No unauthorized disposal of lubricants would occur as a result of project-related activities.

Lubricating oils in turbines would be checked biannually, filled as needed, and changed annually. Accidental spills or leaks would be contained within the nacelle to minimize risk of site contamination. Each KVS-33 turbine uses less than 64 gal of lubricants per year, therefore a maximum of 12,864 gal and 88,960 gal per year would be used for the 70.5-MW Phase I and the 500-MW full Windplant respectively. All waste oil would be transported off-site and recycled by a certified waste contractor.

2.1.3.3 Coolant/Antifreeze

Coolant/antifreeze would be utilized in combustion engines associated with construction, operation, maintenance, and reclamation efforts. Ethylene glycol is the principle component of these fluids and is classified as a hazardous material. No extremely hazardous materials are known to be present in engine coolant/antifreeze. The quantity of coolant/antifreeze to be stored or transported in vehicle radiators during construction of the Windplant is unknown, however, its use, storage, transport, and disposal would be in accordance with manufacturer's recommendations.

2.1.4 Paints

Turbine towers would be painted prior to their arrival on-site, and repainting would be required approximately every 10 years. Communications and O&M buildings would also be prepainted and may require repainting at 10-year intervals. Small quantities of aerosol spray paints may be used to mark stakes, etc. during activities associated with construction. Hazardous materials contained in paints potentially include barium, cobalt, lead, manganese, PAHs, POM, sulfuric acid, and mixed isomers of xylene. No extremely hazardous materials are known to be present in the paints that would be used during construction and O&M of the proposed Windplant, transmission lines or substations. Small quantities of paints may be stored on-site in the O&M building.

2.1.5 Transformer Oils

Transformer oils would be required for the operation of the Windplant and substations. Oils proposed for use in this project would not contain polychlorinated biphenyls (PCBs), though PAHs and POM are potential hazardous constituents of these fluids. Approximately 34,200 gal of transformer insulating oil would be required for the 70.5-MW Phase I; the full 500-MW Windplant would require approximately 236,300 gal. Transformer insulating oils would be completely contained within sealed transformer units.

Additionally, approximately 10,000 gal of non-PCB dielectric oils would be required for use in substation equipment. These oils may contain PAHs and POM which are considered hazardous materials. No known extremely hazardous constituents occur in the dielectric oils to be utilized in this project.

2.1.6 Miscellaneous Hazardous Materials

Engine starting fluid is likely to be present during Windplant and transmission line construction, O&M, and reclamation activities, and is known to contain the hazardous materials ether and hexane. Engine starting fluid would be stored in vehicles and other equipment on-site.

Transmission and distribution line structures would consist of wooden poles which have been treated with pentachlorophenol, a hazardous material. Approximately 384 structures would be required for Phase I; 2,034 structures would be required for the full Windplant. Poles would be pretreated prior to their

arrival on-site, and no additional pentachlorophenol would be stored or used in conjunction with the construction or O&M of the Windplant or transmission line. Structures may be replaced at approximately 20-year intervals. Treated poles that have been replaced would be transported to an approved disposal facility.

Fertilizers may be used during reclamation within the proposed Windplant and along the transmission line corridor. Site-specific reclamation procedures would be developed by KENETECH and PacifiCorp in consultation with the BLM. Although the quantities and specific hazardous constituents of the fertilizers to be used on the project are unknown at this time, the use, storage, transport, and disposal of these products would be consistent with manufacturer's guidelines.

Some herbicides may be used in the proposed Windplant for vegetation control around buildings and turbine pads. Specific brands, quantities, and hazardous constituents of these herbicides are unknown at this time. Herbicides would be stored in accordance with BLM stipulations and state and county regulations.

2.1.7 Emissions

Hazardous emissions would occur as a result of this project (Table J.2). These emissions would originate from two sources: internal combustion engines and transmission lines.

2.1.7.1 Combustion Emissions

Combustion emissions from gasoline and diesel engines would consist of unburned hydrocarbons, particulate matter, nitrogen oxides, and sulfur oxides. Secondary contaminants would likely include the formation of ozone from the photolysis of nitrogen oxides.

Unburned hydrocarbons may contain potentially hazardous PAHs and POM; particulate matter may contain metal-based particulates from lead anti-knock compounds in the fuel, metallic lubricating oil additives, and engine wear components. Hazardous materials in particulate matter may include fine mineral fibers and compounds of barium, cadmium, copper, lead, manganese, nickel, and zinc.

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Table J.2 Potential Combustion and Transmission Line Emissions Produced by the Proposed KENETECH-PacifiCorp Windplant and Transmission Line, Carbon County, Wyoming.

Source	Hazardous ¹ and Extremely Hazardous ² Constituents	CAS Number
Hydrocarbons	PAHs ³	--
	POM ⁴	--
Particulate matter	barium	7440-39-3
	cadmium	7440-43-9
	copper	7440-50-8
	fine mineral fibers	--
	lead	7439-92-1
	manganese	7439-96-5
	nickel	7440-02-0
	zinc	7440-66-6
Gases	nitrogen dioxide ⁵	10102-44-0
	ozone ⁵	10028-15-6
	sulfur dioxide ⁵	7446-09-5
	sulfur trioxide ⁵	7446-11-9

¹ As defined under the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986*, as amended.

² As defined in 40 C.F.R. 355.

³ Polynuclear aromatic hydrocarbons.

⁴ Polycyclic organic matter.

⁵ Extremely hazardous material.

Nitrogen dioxide, sulfur dioxide, sulfur trioxide, and ozone are probable combustion emissions, each of which is classified as an extremely hazardous material in their gaseous form. These materials would be directly released in minor quantities from internal combustion engines or formed through photolysis (e.g., ozone).

No releases of these or other materials would occur in excess of those allowed for Prevention of Significant Deterioration Class II areas, WDEQ-Air Quality Division Implementation Plan, or National Ambient Air Quality Standards for the project area. Particulate matter and larger unburned hydrocarbons would eventually settle to the surface of the ground, whereas gaseous emissions would react with other air constituents and integrate into the nitrogen, sulfur, and/or carbon cycles.

2.1.7.2 Transmission Line Emissions

Nitrogen oxides and ozone, which are classified as extremely hazardous, are naturally formed as a by-product of electromagnetic radiation from transmission line conductors. The quantity of these materials potentially released is not known; however, the quantities released would be very insignificant making it extremely unlikely that releases would exceed allowable levels for Prevention of Significant Deterioration Class II areas, WDEQ-Air Quality Division Implementation Plan, or National Ambient Air Quality Standards.

3.0 MANAGEMENT POLICY AND PROCEDURE

Windplant and transmission line construction, O&M, and reclamation would be in compliance with regulations promulgated under the Resource Conservation and Recovery Act, Federal Water Pollution Control Act (Clean Water Act), Safe Drinking Water Act, Toxic Substances Control Act, Occupational Safety and Health Act, and the Federal Clean Air Act. Additionally, project operations would comply with all attendant state and local rules and regulations pertaining to hazardous material reporting, transportation, management, and disposal. All project-related activities involving the production, use, and/or disposal of hazardous or extremely hazardous materials would be conducted to minimize potential environmental impacts.

KENETECH, PacifiCorp, and other Windplant owners would comply with emergency reporting requirements for releases of hazardous materials. Any release of hazardous or extremely hazardous materials in excess of reportable quantities, as established in 40 C.F.R. 117, would be reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980*, as amended. The materials for which such notification must be given are the extremely hazardous substances listed under the *Emergency Planning and Community Right to Know (EPCRA) Section 302* and the hazardous substances designated under Section 102 of CERCLA, as amended. If a reportable quantity of a hazardous or extremely hazardous substance is released, immediate notice would be given to the BLM's AO and all other appropriate federal and state agencies. Additionally, notice of any spill or leakage (i.e., undesirable event) would be immediately given by KENETECH, PacifiCorp, or other Windplant owners to the AO and other federal and state officials as required by law.

KENETECH and PacifiCorp have evaluated field operations in the project area and would prepare and implement a Spill Prevention and Control Countermeasure Plan, an Emergency Response Plan, and inventories of hazardous chemical categories to ensure environmental protection from hazardous and extremely hazardous materials. These plans/policies shall be available for review at the BLM Great Divide Resource Area in Rawlins prior to construction of Phase I. Other future Windplant owners would also be responsible for preparing these plans prior to development of future phases.

APPENDIX I:
**RESULTS OF INDEPENDENT ANALYSIS OF POTENTIAL ALTERNATIVE
WIND DEVELOPMENT LOCATIONS IN SOUTHERN WYOMING**

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19 Jun 95

Ms Karyn Classi
Mariah Assoc, Inc
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Dear Karyn,

I have received the following manuscript from KENETECH Windpower, Inc, and have carefully reviewed it. I offer the following comments as per your request:

"Assessment of the Windplant™ Production Potential at Other Wyoming Locations with Respect to the Foote Creek Rim 70.5 MW Windplant" by Bob Baker dated 19 April 1995.

In this manuscript Mr Baker has compared the wind energy potential at Foote Creek Rim with about 25 other locations in Wyoming. Some of these locations were based on data collected by Kenetech, some by UW and some by the National Weather Service. The potential at Foote Creek was estimated based on recent wind data collected at 19 sites located on Foote Creek Rim. The 1994 wind speed frequency data at hub height (85 ft) on Foote Creek along with a windplant power curve were used to estimate the gross wind energy which would have been generated if that windplant had been installed and operating. The gross wind energy was discounted to net wind energy by assuming various losses. These losses were estimated to be 17%. The wind speed frequency data for the 25 other locations were adjusted to hub height based on an assumed wind speed profile. Again, using a windplant power curve along with these adjusted wind speed frequencies, the gross wind energy was estimated for each location. The gross wind energy was also discounted to net wind energy for each location based on assumed losses. The results indicate that the Foote Creek Rim and Hanna/Simpson Ridge are the two best wind energy locations of the 26 locations.

The analysis provided by Baker is straight forward and typical for the wind energy industry. My major concern has to do with the assumed 1/7th power law profile used to adjust the observed wind speed to hub height. An extensive analysis of vertical wind speed profiles was done by two of my colleagues (Martner and Gilmer 1981) based on tower data collected near Medicine Bow at 33, 200, and 350 ft. The results indicate that during the day from March to November the power law parameter, α , is about 60% of 1/7 and during the night α is about 140% of 1/7. In December and January α is always less than 1/7. When α is less than 1/7, then wind speed increases slowly with height and when α is greater than 1/7, then wind speed increases rapidly with height. Half of the comparative locations were based on UW data. The UW data was collected at 13 ft and was adjusted to hub height at 85 ft using the 1/7th power law profile. A small error in α combined with the approximate wind speed squared relation between wind speed and wind energy can result in a large error in the estimated wind energy potential.

It appears that there may be significant compensating errors in the procedure because the net wind energy potential at the Arlington site (UW data collected at 13 ft) was 1075 MWh [1250 x (1-0.14)]. This site is very close to the Foote Creek site where the net wind energy potential was 1300 MWh. The only other location which competes with Foote Creek and Arlington was the Hanna/Simpson locations where the net wind energy potential was 1175 MWh. All other locations have a net wind energy potential of < 1000 MWh.

My major concern still remains with the assumed $1/7$ power law profile. Does the Kenetech tower data, collected at multiple heights, support the $1/7$ th power law profile? If not, does it agree with the seasonal and diurnal varying profile described by Martner and Gilmer 1981? Is there a better α which should be used to estimate the wind energy potential at the other locations? Perhaps Mr Baker was lucky and the compensating errors were just right?

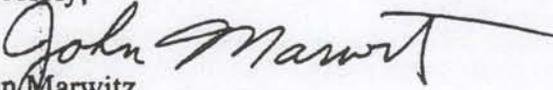
Some minor comments are as follows:

1. Rather than using Cheyenne Airport as the long term station I would think that the nearby Rawlins Airport data would be more highly correlated with the UW and Kenetech wind data.
2. Why was the wake loss assumed to be zero for the other locations when it was assumed to be 3% for the Foote Creek location?
3. On page 3, first paragraph, the mean annual wind speeds for Medicine Bow and Arlington are given as 14.5 mph and 19.2 mph, respectively. These values don't agree with the values listed in Table 8.
4. Out of the 19 sites available, why was site #202 selected to represent the Foote Creek location?

I have long contented that the Foote Creek location is one of the best sites in the world in terms of gross wind energy potential. The winds are steady, unidirectional, and strong. The hazards of major wind gusts, turbulence, and icing are small. Mr Baker's analysis supports this contention.

If you have any questions, please feel free to ask.

Sincerely,



John Marwitz
Professor

cc: Bob Baker, Kenetech
Kenneth Whitting, Kenetech