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September 24, 1999

Mr. John Surmeier, Chief URB  
Division of Waste Management, NMSS (T-7-J9)  
U.S. Nuclear Regulatory Commission  
11545 Rockville Pike  
Rockville, MD 20852

RE: Docket No. 40-8857  
SUA-1511  
Gas Hills Amendment  
Response to Request for Additional Information

Dear Mr. Surmeier:

Power Resources, Inc. is in receipt of your letter dated May 21, 1999 requesting additional information concerning our request to amend the above referenced license to include a satellite operation at our Gas Hills Project. It is our understanding that the comments submitted with the May 21 cover letter are from your contractor, Argonne National Laboratories (ANL). A copy of these responses have been forwarded to ANL for their review.

As discussed with Ms. Jane Gunn of your staff, responses to several of the comments have not yet been completed and will be forwarded to you at a later date. Specifically, responses remaining to be submitted include "General Comments", Issue 3, "Geology/Seismology", Issues 4 and 5 and "Ecology", Issues 15 and 16.

Attachment 1 contains responses to the comments and Attachment 2 contains revised application pages. Please call me should you have any questions regarding this submittal.

Sincerely,

Paul R. Hildenbrand  
Manager of Environmental  
and Regulatory Affairs

Attachments: as stated

cc: F. Newton, w/o att R. Knode File GH-7  
S. Collings E. Pentecost, ANL

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PDR ADOCK 04008857  
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Drawing located in Central  
Files

## **ATTACHMENT 1**

## **Comments on PRI's Gas Hills Application**

### **General Comments**

#### **1. ISSUE: Locations of Ion Exchange Facilities**

##### **DISCUSSION:**

The fourth paragraph of Section 1.5, Page 1-3 indicates that ion exchange facilities will be housed in the Carol Shop and/or at either of two potential satellite locations shown on Plate 1-1W. When will the decision be made on the location of the ion exchange facilities? It is important that the location be defined to enable the team to assess impacts of new construction.

##### **ACTION:**

State when a decision will be made on the location of all ion exchange satellite facilities and give locations of facilities if possible.

##### **PRI RESPONSE:**

No response necessary, based on discussions at the June 8-9, 1999 visit and meeting.

#### **2. ISSUE: Reference to Contact with the US Fish and Wildlife Service**

##### **DISCUSSION:**

PRI indicates in Section 3.2.1.6, Page 3-10, that to protect threatened or endangered species, the Endangered Species office of the U.S. Fish and Wildlife Service will be notified if a threatened or endangered species begins to use the Amendment Area. The statement should be revised to indicate that the Wyoming Field Office of the U.S. Fish and Wildlife Service will be notified instead of the Endangered Species Office. The Wyoming Field Office is the initial point of contact for all threatened and endangered species questions or issues.

##### **ACTION:**

Confirm point of contact for threatened and endangered species issues.

##### **PRI RESPONSE:**

The Wyoming Field Office of the U.S. Fish and Wildlife Service is the point of contact for Threatened and Endangered species issues on this Project. The statement on page 3-10A of Section 3.2.1.6 has been revised accordingly.

#### **3. ISSUE: Storage of Excavated Material for Evaporation Ponds**

##### **DISCUSSION:**

In Section 3.2.5.6 (para. 1, page 3-21) PRI indicates that about 5,000 cu yds of the 54,000 cu yds of material excavated to construct the evaporation pond would be used for construction of a five-foot, above-grade berm and that the remaining material will be stockpiled locally, seeded and stabilized. How large an area would be needed to stockpile the remaining 49,000 cu yds of material? What is the seed mixture planned for revegetation of the stockpiles?

**ACTION:**

Identify the area needed to store unused excavated materials.

**PRI RESPONSE:**

PRI's response is being prepared and will be provided upon completion.

**Cost-Benefit**

**1. ISSUE: Clarification Concerning Number of Mine Units**

**DISCUSSION:**

Mine Unit 5 is mentioned in some places (e.g., Section 2.9.4, page 2-14; Section 3.2.9.6, page 3-34; Section 3.3.2.5, page 3-42; Section 6.1.3, page 6-8) and appears on some figures (e.g., Plate D7-1E; Plate D8-1E), but is absent elsewhere (e.g., Table 3-7; Section Addendum 3-2, Page Addendum 2-10; Table Add 2-1; Figure 1-4).

**ACTION:**

Clarify plans for development of Mine Unit 5 to ensure consistency in the number of mine units discussed.

**PRI RESPONSE:**

Mine Unit No. 5 is proposed as a potential area for production beginning in Project Year No. 10. There is currently insufficient geologic and hydrologic data available at this time to provide effective reserve estimations or reliable hydrologic modeling. This fact is stated on page 3-52, Section 3.4.3 of the application: "To estimate the flow rates which can be expected during production at the Gas Hills Project flow models have been developed and run for each of the first four mine units, WHERE THERE IS ADEQUATE DATA TO EFFECTIVELY MODEL THE HYDROLOGY" (emphasis added). This fact is reiterated in Section 2.1 of Addendum 3-2, which states: "Mine Unit No. 5 is not currently adequately defined for hydrologic modeling". This is why Mine Unit No. 5 was not included in the flow modeling discussions and tables in Chapter 3 and Addendum 3-2.

Figure 1-4 has been revised to show the development, operation and restoration/reclamation schedule for Mine Unit No. 5 as well as final decommissioning and reclamation activities.

**2. ISSUE: Presentation of Additional Population Data**

## **DISCUSSION:**

The data presented in Section 2.3, pages 2-5 through 2-6, generally are from the 1990 census. Although the *Standard Review Plan* requires population data from the most recent census (1990 in this case), it also allows for the presentation of population projections (along with the basis of those projections; see Sections 2.3.1, 2.3.2, and 2.3.3 of the *Standard Review Plan*). Given that the most recent decennial census is nine years old, it would be useful to present more recent population figures, in the form of estimates or projections, to bring the license application more up to date. Moreover, the fluctuating populations of Fremont and Natrona counties and key communities are discussed in Section 2.3, page 2-5 (including the decline of population since the 1970s), without any data to support these statements.

## **ACTION:**

Decennial census data for the two host counties and key associated communities should be added in a table associated with Section 2.3, extending back to about 1940, to support the claims made in that section. Population data, probably in the form of estimates or projections prepared by state or local agencies and dating to the 1990s, should be added to Section 2.3, although the lack of geographic detail likely will require that Table 2.2 continue to present 1990 data (table should be labeled appropriately as to the year that it reflects). Population projections beyond 1999 and pertaining to the life of the project (presumably through about 2020, in 10-year increments) should be presented if available.

## **PRI RESPONSE:**

Table 2-2 has been revised to show that the source of the information is 1990 Census data from the US Bureau of the Census. New Tables 2-2a, 2-2b, 2-2c, 2-2d and 2-2e have been added to show decennial population of the state, counties and towns from 1940 to 1990, population estimates between 1991 and 1998, and projections through 2008. No data is available to project population figures beyond 2008.

## **3. ISSUE: CLARIFICATION OF AREA TO BE DISTURBED**

### **DISCUSSION:**

As presented in Section 7.2.1, page 7-2, the relationship between the 140 acres of the Amendment Area already disturbed by conventional mining activities and the 1,275 acres that will be disturbed by the proposed project is unclear.

### **ACTION:**

Clarify Section 7.2.1, page 7-2, and other places as appropriate to clarify the relationship between previously disturbed sections of the Amendment Area and the portions of the Amendment Area to be disturbed by the proposed project. For example, is the proposed disturbance to include the entire previously disturbed area, meaning that the newly disturbed area will be  $1,275 - 140 = 1,135$  acres, or some part thereof?

### **PRI RESPONSE:**

No response necessary, based on discussions at the June 8-9, 1999 site visit and meeting.

#### **4. ISSUE: CLARIFICATION OF NON-MONETARY COSTS, AS DISCUSSED IN BENEFIT-COST ANALYSIS**

##### **DISCUSSION:**

The only discussion of costs of the project expressed in non-monetary terms appears to be confined to Section 9.1, page 9-1 (as opposed to Section 9.3 on pages 9-2 and 9-3). The costs of ground water quantity or quality effects are not addressed (apart from stating the effects to be minor).

##### **ACTION:**

Discuss groundwater effects, their ultimate cost (including non-monetary), and their relative importance.

##### **PRI RESPONSE:**

No response necessary, based on discussions at the June 8-9, 1999 site visit and meeting.

#### **5. ISSUE: ADDITION OF ANCILLARY BENEFITS TO BENEFIT-COST DISCUSSION**

##### **DISCUSSION:**

The potential benefits of the project in terms of enhancement of recreational values, environmental enhancement in support or protection of wildlife habitats, the improvement of local roads, and increased environmental knowledge of the project area are not mentioned.

##### **ACTION:**

Review the noted potential benefits and take credit as appropriate.

##### **PRI RESPONSE:**

A new Section 9.2.4 entitled "Ancillary Benefits" has been added to the application which describes project benefits such as improving public access and enhancing wildlife habitats and the area's recreational value.

#### **6. ISSUE: CLARIFICATION OF EMPLOYMENT AND INCOME DISCUSSION UNDER BENEFIT-COST ANALYSIS**

##### **DISCUSSION:**

Employment figures presented in Section 9.1, page 9-1, note "direct employment of approximately 30 people" and contractor employment of "an additional 12 to 24 persons." This seems to contradict the mention of "approximately 40 full time employees and a similar number of contractor personnel" cited in Section 1.1, page 1-1. Section 9.2.2 notes that payroll would

represent a "direct benefit" to *the community* without citing the community by name and without acknowledging that there would be indirect financial benefits as well (calculation of indirect benefits is not necessary due to the small size of the project).

**ACTION:**

State which employment figures are considered most likely. Specify the community to receive the benefits of the project, if they would be concentrated largely on one community. Also include a statement regarding indirect benefits, in terms of multiplier effects, without quantifying those effects.

**PRI RESPONSE:**

Section 1.1 on page 1-1 has been revised so that the project employment estimates are consistent with those described in Section 9.1 on Page 9-1.

Section 9.2.2 has been revised to provide an estimate of the number of workers that will be employed at the project during construction and operations and the communities they are expected to come from.

**7. ISSUE: AUGMENTATION OF COST DISCUSSION IN BENEFIT-COST ANALYSIS**

**DISCUSSION:**

Presentation of cost issues in Section 9.3, pages 9-2 and 9-3 ignores costs (either monetary or non-monetary) associated with restrictions on access to land or water (including any income that would be lost), aesthetic impacts, decreased real estate values, and disruption of peoples' lives (e.g., ranching).

**ACTION:**

Above cost issues should be mentioned, even if negligible, to demonstrate that they have been considered rather than overlooked.

**PRI RESPONSE:**

Section 9.3 of the application has been expanded to discuss these cost issues.

**Cultural Resources**

**1. ISSUE: National Historic Landmarks, National Register, and State Register Properties**

**DISCUSSION:**

National Historic Landmarks or properties listed on the *National Register of Historic Places* or the *State Register* that may be within the general vicinity of the Amendment Area are not

mentioned in the application. PRI does not discuss the presence or absence of National Historic Landmarks or National or State Register properties within nearby areas.

**ACTION:**

Provide a listing of National Historic Landmarks and properties listed on the *National Register of Historic Places* or State Register within Fremont and Natrona Counties near the Amendment Area and provide distances (miles) to the properties nearest the Amendment Area.

**PRI RESPONSE:**

The closest NRHP listed site is the Castle Gardens Petroglyph Site, approximately 14 miles northwest of the Project site. The nearest unique State National Land Mark is Hell's Half-Acre, located approximately 27 miles northeast of the Project Site. There are no federal or state listed historic sites or natural land marks within five miles of the Project Site. A new Section 2.4.2 has been added to the application which discusses the location of, and impacts to, listed historic sites and natural landmarks.

**2. ISSUE: Letters from the WY SHPO**

**DISCUSSION:**

No SHPO letters responding to the survey results or the BLM Section 106 letter have been included in Addendum 2-2 (Archaeological Correspondence). Also, the letters provided in Addendum 2-2 do not provide adequate indication of the areas being consulted on since no enclosure maps are included in the Addendum.

**ACTION:**

Provide sign-off letters from the SHPO on the 1992 survey and the 1997 survey indicating which sites are listed, eligible, or potentially eligible and a concurrence letter on the no adverse effect determination for the proposed Amendment Area. (The text indicates that there is a concurrence letter from the WY SHPO dated March 13, 1998, but that letter was not provided in Addendum 2-2). Include maps of the areas under consideration for each of the above letters to show consistency with the Amendment Area.

**PRI RESPONSE:**

As discussed with Mr. Ed Pentecost of Argonne National Laboratories, PRI will avoid disturbing sites that are eligible or unknown. As committed in Sections 2.4.1.3 (formerly section 2.4.3) and 3.2.1.7 of the application, prior to disturbing any sites, PRI will contact the USBLM and WDEQ and receive proper clearance or develop a mitigation plan.

**3. ISSUE: Map Indicating Sites Relative to Areas of Construction/Ground Disturbance**

**DISCUSSION:**



Figures 2-3 and 2-4, showing archaeological sites recorded during the 1992 and 1997 surveys, depict the survey area boundaries and site locations, but not with respect to the Amendment Area boundary or specific locations likely to be affected by the proposed action. Such a map is specified in the "Standard Review Plan for In Situ Leach Uranium Extraction License Applications" as one of the acceptance criteria. The maps provided also show all recorded sites without differentiating between those that are and are not eligible (or potentially eligible) for listing on the *National Register of Historic Places*. Since the entire survey area is delineated on Figures 2-3 and 2-4 and all recorded sites within that survey area have been evaluated for eligibility, only those properties that are listed, determined eligible, or determined potentially eligible are truly relevant to the proposed action.

**ACTION:**

Provide a figure showing survey area boundaries, eligible or potentially eligible sites, the Amendment Area boundary, and locations of facilities and any other areas of anticipated ground disturbance.

**PRI RESPONSE:**

Plate D3-1 of the May 1996 Application document shows the location of eligible and unknown sites relative to areas of potential disturbance. Section 2.4.1.2 (formerly Section 2.4.2) of the application has been revised to include this plate by reference into the current application.

**4. ISSUE: Native American Issues and Concerns**

**DISCUSSION:**

In Section 2.4.1, PRI mentions an assessment that was conducted by Native American Elders in February 1998 of several stone circles and hearth features that constitute an eligible archaeological site (Site 48FR3232). A buffer zone of 50 ft surrounding the site boundary (determined by the presence of surface features) was identified and the agreement by all parties (Native American Elders, PRI, BLM, and WY SHPO) was to keep all surface disturbance outside that buffer area. The Addendum 2-2 letter from BLM (March 4, 1998) also documents this visit. However, there is no documentation indicating that the Native American Elders were consulted concerning other aspects of the proposed project.

**ACTION:**

State whether Native American Elders were consulted regarding areas of the site other than the stone circles and hearth features already noted.

**PRI RESPONSE:**

During their site visit the proposed project and its potential impacts were explained to the Native American Elders. All aspects of the project, including ground water restoration and final reclamation were discussed with them in the field. The US BLM representative pointed out the other archaeological sites within the proposed project area on a map and in the field. They felt that the only sites of major importance to their ancestry were the stone circle and hearth sites.

As stated in Sections 2.4.1.3 (formerly Section 2.4.3) and 3.2.1.7 of the application, PRI will avoid disturbing archaeological sites. Additionally, prior to development in areas when sites could be disturbed, PRI will contact the US BLM and WDEQ and receive clearance or develop appropriate mitigation plans that will be performed prior to developing the area.

## **5. ISSUE: Architectural, Scenic, and Natural Landmarks**

### **DISCUSSION:**

PRI does not mention the presence or absence of any architectural, scenic, or natural landmarks in the application.

### **ACTION:**

Indicate whether any such landmarks have been identified within or near the Amendment Area.

### **PRI RESPONSE:**

This comment has been addressed with PRI's response to Cultural Resources Comment No. 1.

## **Geology/Seismology**

### **1. ISSUE: Other Natural Resources**

#### **DISCUSSION:**

Only one brief reference in Section 1 of the License Application is made to other minerals or natural resources in the vicinity of the proposed mine units. A discussion on this topic is warranted.

#### **ACTION:**

Discuss other minerals and natural resources in the vicinity of the project area (within approximately 5 miles)

#### **PRI RESPONSE:**

The only other resource activities in the Gas Hills area has been small quarries and oil and gas drilling. Most of the past oil and gas activity has taken place on the Dutton Basin anticline approximately 2 to 3 miles northeast of the Project Site. To our knowledge, none of these wells are producing today. One wildcat well was drilled within the Amendment boundary in June of 1997. No economic oil recovery resulted from this effort. PRI now utilizes this well as a water well for drilling and construction purposes. There is no oil and gas activity within two miles of the Amendment boundary. The only other natural resource that has been developed in the vicinity of the Gas Hills Project are limestone and shale quarries, operated by conventional uranium mine/mill operators to provide material for their tailings reclamation projects. The two most recent quarry operations are a limestone quarry located approximately five miles north of the project site and a shale quarry located approximately 10 miles north of the Project Site.

Section 2.2 of Chapter 2 (page 2-2) has been revised to provide additional information on oil and gas production and limestone and shale quarries in the vicinity of the Amendment area.

## **2. ISSUE: Isopach Maps**

### **DISCUSSION:**

NUREG-1569 requires isopach maps of the ore-containing formations and their respective confining units. In Section 2.6 (Page 2-10), an argument is presented that the construction of an isopach map would be difficult to interpret and construct because of multiple ore zones and confining units. Instead, a series of geological cross sections is provided in Appendix D5.

### **ACTION:**

Although constructing an isopach map for the entire application area is difficult because of the geology of the ore-containing formation and confining units, it should be possible to provide isopach maps for each of the five mine units individually using existing data. This information will be valuable for impact assessments.

### **PRI RESPONSE:**

The May 1996 application provided isopach maps of the Project Site which NRC has accepted as suitable for this application. Section 2.6 of the application has been revised to incorporate, by reference, these isopach into the current application document.

## **3. ISSUE: Map of Historic Seismic Events**

### **DISCUSSION:**

NUREG-1569 requires a map showing the locations of previous seismic events in the vicinity of the license application area. Presently, there is a discussion on historic seismic events, but no figure depicting relative locations of the earthquakes to the Amendment Area.

### **ACTION:**

Provide a figure showing the locations of historic seismic events.

### **PRI RESPONSE:**

Plate D5-23 of the May 1996 application provides a seismic epicenter location map. Section 2.6 of the current application has been revised to incorporate, by reference, this plate into the current application document.

## **4. ISSUE: Average Peak Acceleration**

### **DISCUSSION:**

On Page D5-16, the average peak ground acceleration is "reasonably" assumed to be equal to 7.5%g. For a range of 5-10%g, use of a 7.5%g value assumes that the distribution of events is flat. A more conservative (and protective) assumption would be to use the upper end of the range, i.e., 10%g.

**ACTION:**

Additional discussion (or references) should be provided to defend the 7.5%g assumption made in the text, or 10%g should be used.

**PRI RESPONSE:**

PRI's response is being prepared and will be provided upon completion.

**5. ISSUE: Horizontal Acceleration Produced By An Intensity 6.25 Earthquake**

**DISCUSSION:**

No reference is given in the text on Page D5-18 for the estimated 15%g acceleration that would be produced by an earthquake that has an Intensity of 6.25 15 km from the Gas Hills Permit Area. It is not clear what calculation was used to estimate the ground acceleration produced by a magnitude 6.25 earthquake 15 km from the Gas Hills Permit Area.

**ACTION:**

Add a reference on the method used to calculate the maximum horizontal ground acceleration that would be produced by an earthquake that has a magnitude of 6.25 at a distance of 15 km from the Gas Hills permit Area.

**PRI RESPONSE:**

PRI's response is being prepared and will be provided upon completion.

**Uses of Adjacent Lands and Waters**

**1. ISSUE: Impacts to Land Use**

**DISCUSSION:**

In Section 2.3, page 2-6, PRI indicates that the Philp Sheep Company has the current grazing allotment that includes the Amendment Area. The Amendment Area would affect 22% of this allotment (i.e., 57 cattle and 733 sheep). The discussion provided in Section 7.2.1 (Land Impacts) is concerned with preventing livestock from damaging wells and other facilities. A statement is made that fence construction will not affect grazing activities, but this is inadequate to cover the scope of activities proposed within the Amendment Area. A discussion is needed within the document as to the impacts of the wells and facilities and their operation on the livestock and the grazing allotment.

**ACTION:**

Discuss the potential impacts to livestock grazing within the Amendment Area.

**PRI RESPONSE:**

Although the Amendment Area covers 22% of the current grazing allotment impacts at any one time will be minimal. The total fenced wellfield area (Mine Units 1 through 5), will be relatively small (approximately 15 per cent or less of the total Amendment Area). Additionally, because of the sequential nature of ISL wellfield development, production and restoration/reclamation, not all of the proposed wellfield areas will be excluded from grazing during the entire life of the Project. For example, proposed Mine Unit No. 1 encompasses approximately 80 acres. The entire 80 acres will not be fenced all at one time, as development and wellfield installation within the entire mine unit will take place over an approximate two year period. In other words, the 80 acres would be incrementally fenced over the two year period. These fenced areas will be incrementally released back to grazing use as ground water restoration and final wellfield reclamation activities are completed and approved by NRC, BLM and the State of Wyoming. (See project schedule at Figure 1-4).

Section 2.2 and 7.2.1 have been revised to clarify the total acreage that will be removed from grazing at any one time and their impacts on wildlife and livestock grazing use.

**2. ISSUE: Impacts to Recreation****DISCUSSION:**

In Section 2.2, page 2-2, PRI indicates the area within and near the Amendment Area "is used by the general public for recreational purposes including hunting and other outdoor activities." However, in Section 7.2.1, there is no discussion of how or if the recreational use of the area would be impacted by construction or operation of the well facilities.

**ACTION:**

Provide a statement regarding impacts to recreational use of the Amendment Area and its immediate vicinity.

**PRI RESPONSE:**

Impacts to recreational use of the Gas Hills due to the proposed Project will be negligible because:

1. The Amendment Area is very small in relation to the entire Gas Hills area;
2. Deer and antelope hunting in the Gas Hills area is limited by quota to 40 licenses over a two week period for deer and 75 licenses over one month for antelope. The area encompassing the Amendment Area is closed to Elk hunting; and
3. PRI's Wellfield revegetation practices will actually attract more large game animals into the area thereby enhancing the overall big game habitat of the Gas Hills.

Section 7.2.1 has been revised to address recreational impacts of the proposed Project.

## **Ecology**

### **1. ISSUE: Summary of Ecological Information**

#### **DISCUSSION:**

In Section 2.8, Page 2-10, a presentation is provided regarding the required baseline ecological studies. The studies conducted for this application are listed and described and reference made to relevant appendices containing the study information. This presentation is not at a level of detail consistent with other topics in this chapter on site characteristics.

#### **ACTION:**

Include a summary of pertinent ecological information at a level of detail sufficient to understand the ecology of the Amendment Area. Included should be a presentation of (1) soil types and characteristics, (2) major vegetation communities including dominant species, (3) important game and non-game wildlife species and their habitats, (4) aquatic ecology of surface waters, (5) characteristic of wetlands on the site, and (6) threatened, endangered, or sensitive species and critical habitat that could occur or are known to occur in the project area.

#### **PRI RESPONSE:**

Appendix D7 of the application provides a description of soil types and characteristics (see Tables 1 through 5 and Addendums D7-3 through D7-5). This appendix is referenced in Section 2.8. It should be noted that neither the Draft ISL SRP nor Regulatory Guide 3.46 require a description of soils as requested.

Appendix D8 provides a detailed description of the vegetation types and composition including T&E species and species of special concern. The dominant species varies from location to location depending on topography and soil type. Cover summary and percentages for the different vegetation communities is provided in Table D8-1a and Tables D8-2 through D8-11 of Appendix D8.

Game and non-game wildlife species and their habitats are described in Appendix D9, especially see pages D9-7 through D9-13 and D9-17 through D9-19.

As stated on Page D9-13 of Appendix D9, surface water aquatic ecological surveys were not required by the Wyoming Game and Fish Department for this permit application.

Appendix D11 describes the potential jurisdictional wetlands within the Amendment Area. Specifically, there are two. Cameron Spring will not be disturbed by the operation. Portions of West Canyon Creek are within proposed Mine Unit No. 4 and may have crossings constructed across it. The US COE has performed a jurisdictional wetlands determination at the Gas Hills site and has concluded that no wells can be installed within the wetland (ie; the West Canyon Creek channel bottom) and that stream crossings can be constructed under Nation Wide Permit No. 12. The US COE correspondence has been added to Chapter 3 as Addendum 3-5.

Sections 3.11 and 4.3 of Appendix D8 discuss threatened and endangered plant species. Sections 5.7 and 5.8 of Appendix D9 describe migratory birds of high federal interest and threatened and endangered species respectively. Section 2 of Appendix D9 describes the habitat for the animals present at or near the Amendment Area. As stated on Page D9-4 of Appendix D9, no crucial or critical habitats were identified within or near the Amendment area.

## **2. ISSUE: Radiological Impacts to Flora and Fauna**

### **DISCUSSION:**

In Section 2.9, Page 2-12, Paragraph 3, a statement is made that "since the proposed activities will not produce particulate emissions, there will be no impact on flora and fauna. Therefore, flora and fauna baseline characterization is not needed." This statement is too general to accurately represent impacts. It implies that no other pathways (e.g., direct disturbance, surface water, gamma radiation) are possible for impacts to flora and fauna.

### **ACTION:**

Revise paragraph in Section 2.9 to provide a more complete description of potential radiological impacts to flora and fauna. Included should be a discussion of all pathways including exposure to gamma radiation, radon, and surface water pathways (e.g., evaporation pond and discharges at NPDES discharge points).

### **PRI RESPONSE:**

Section 2.9 of Chapter 2 contains a discussion of background radiological characteristics. Radiological impacts are discussed in Chapter 7. Flora and fauna species were not collected and analyzed for baseline radionuclide contaminants because they were not identified as a significant pathway to man (Section 2.1.4 of Regulatory Guide 4.14). The Gas Hills Project will not have a precipitation and drying circuit. Therefore, radionuclide particulate emissions or foliar deposition and uptake will not be a factor. The only radionuclide air emission will be radon-222 from the Satellite and Wellfield facilities. Background concentrations of radon and gamma in the air have been collected and the data is presented in Chapter 2 of the application. Radon-222 is not expected to be a significant pathway to man through the food chain, as total emissions will be dispensed rapidly in the atmosphere and will be indistinguishable from background at short distances from the point of release. Impacts from radon releases are discussed in Chapter 7.

## **3. ISSUE: Wetland Delineation**

### **DISCUSSION:**

In Section 3.2.1.4, Page 3-9, potential wetlands are discussed and a statement is made that "prior to disturbance of any potential wetland area, the COE will be contacted for a jurisdictional wetland determination". A jurisdictional wetland delineation is required prior to development to ensure that all wetland areas are avoided during construction of facilities.

### **ACTION:**

A wetland determination following the 1987 guidelines for jurisdictional wetland delineation should be prepared for the Amendment Area and included in the Source Material License Amendment Application. The delineation should include data on soils, vegetation, and hydrological characteristics of each potential wetland area on the site. Indicate the status of wetlands on the site and mitigation that would be used to protect them.

#### **PRI RESPONSE:**

The original mapping of potential wetlands, based solely on the presence of facultative and obligate vegetation, is provided on Plates D8-1E and D8-1W of Appendix D8. A jurisdictional wetlands determination would likely delineate less acreage due to additional soil and hydrological criteria that would be applied. With the exception of West Canyon Creek, all potential wetlands are located outside of the proposed production areas. A representative from the U.S. Corps of Engineers (COE) visited the Project on October 6, 1998. In a letter dated October 30, 1998, the COE recommended that avoidance be used to protect wetlands, and that if avoidance was not possible (e.g., pipeline and road crossings), Nationwide Permits 12 and 14 could be used to complete these activities.

The October 30, 1998, correspondence from the COE has been added to Chapter 3 as Addendum 3-5. In addition, Section 3.2.1.4 of Chapter 3 (Page 3-9) has been revised to provide additional information on the COE's concurrence with potential wetlands and proposed mitigation plans.

#### **4. ISSUE: Operational Definition of Topsoil**

##### **DISCUSSION:**

In Section 3.2.1.9, Page 3-12 and Section 3.5.2.1, Page 3-64, a description is provided of topsoil management in project areas. Page D7-6 states that topsoil removal will be directed by qualified personnel utilizing soils mapping and other data. These discussions do not include a definition (e.g., a horizon or top 6 inches) of topsoil and how the topsoil layer will be identified and salvaged in the field.

##### **ACTION:**

Provide the operational definition for topsoil that will be used to guide topsoil salvage during construction activities. Specify the depth that would be excavated or indicate that soil horizons would be examined to determine site-specific topsoil conditions.

##### **PRI RESPONSE:**

The Wyoming Department of Environmental Quality/Land Quality Division regulations at Chapter I, Section 2 (bn) define topsoil as "the A and E horizons or any combination thereof." Since the depth of available topsoil can vary significantly over short distances, utilizing a standard stripping depth will result in too much soil removal in some areas and not enough in other areas. The baseline soil characterization provided in Appendix D7 provides a guideline for "average" thickness of topsoil in certain areas to ensure proper topsoil removal from building sites, access roads, etc. PRI will perform site specific testing, using backhoe pits, to determine exactly how much topsoil should be removed. The determination will be primarily visual and made by a person experienced



in soils characterization. Color, texture and the presence of organic material, roots, etc. will be the primary field identifiers utilized in determining topsoil salvage depths.

## **5. ISSUE: Topsoil Management**

### **DISCUSSION:**

In Section 3.2.1.9, Page 3-12 and Section 3.5.2.1, Page 3-64, a description is provided of topsoil management in project areas. This discussion does not include a discussion of the measures that will be used to protect topsoil from erosion once it has been stockpiled. The text also mentions that once stockpiled soil is replaced in an area to be reclaimed, revegetation would occur at the first available seeding window (usually spring or fall). This plan could result in a fairly long period of time when the topsoil is unprotected from wind and water erosion. A plan for topsoil erosion protection during these periods is needed.

Section 3.5.2.4, Page 3-68, Paragraph 3 presents, as a typical example, a brief discussion of topsoil management activities that would occur on Mine Unit 1. Additional details are needed including: (1) a description of the species that would be used to revegetate disturbed areas, (2) a description of measures used to protect topsoil prior to establishment of a vegetative cover, (3) design slopes of topsoil stockpiles, and (4) berm material to be used and methods to protect erosion of earthen berms. It should be noted that the description of stockpile protection in this section is not specified in the section on reclamation and revegetation (Section 6.4, Page 6-15).

**ACTION:** Provide PRI's topsoil protection plan, including mulching or other approaches used to protect topsoil from erosion. Stockpiled topsoil should be seeded with a native seed mix as soon as possible.

### **PRI RESPONSE:**

The Wyoming Department of Environmental Quality/Land Quality Regulations Chapter III, Section 2 (c) ( i) (B) and (D) provide the requirements for siting, constructing and protecting stockpiled topsoil. 1. The primary topsoil protection methodology will be revegetating as soon as possible after disturbance. Revegetation practices will be in accordance with Wyoming Department of Environmental Quality/Land Quality Division Regulations, Chapter III, Section 2 (d).

## **6. ISSUE: Weed Control**

### **DISCUSSION:**

Section 3.2.1.11, Page 3-14, mentions noxious weed control actions that would occur on an annual basis by spraying during operations and following surface reclamation. Noxious weeds that would be the target of this program are not listed and the types of herbicides that would be used are not mentioned. In addition, the area that would be subject to weed control activities are not specified. It is unclear whether or not activities would be focused on areas disturbed by mining activities or would occur across the entire site.

### **ACTION:**

List plant species that are considered noxious weeds by the State of Wyoming and that would be the subject of weed control activities. The herbicides that would be used and their environmental characteristics should also be presented. In addition, the area that would be subjected to weed control and the application approach (e.g., hand application of limited areas or wide-spread aerial spraying) should be specified.

**PRI RESPONSE:**

Section 3.2.1.11 (Page 3-14) has been revised accordingly.

**7. ISSUE: Waterfowl Use of Evaporation Ponds**

**DISCUSSION:**

Evaporation ponds will contain concentrations of a number of constituents (including selenium) that could be hazardous to waterfowl that rest, nest, or forage at the ponds. It seems likely that waterfowl will be attracted to these ponds given the shortage of surface water in the area. Some measure will be necessary to prevent the use of ponds by waterfowl. Section 3.2.5.2, Pages 3-18 to 3-23 discusses design of evaporation ponds, but does not mention any preventative measures that would be used to ensure waterfowl do not use these ponds as foraging or resting sites. Netting of the ponds is one option that should be considered. Section 7.2.1 mentions that ponds would be fenced to prevent access from deer, antelope, and livestock.

**ACTION:**

Include a description of design measures (e.g., netting) that would be used to prevent waterfowl use of the evaporation ponds. Also include a discussion of the impacts of evaporation ponds on waterfowl, and the approach that will be used to mitigate these effects. If waterfowl use is not expected provide a statement to that effect.

**PRI RESPONSE:**

PRI considers that any use of the evaporation ponds by water fowl would be very short term and would not present a hazard to them because 1) the ponds will be lined with synthetic liners, and will not provide any nesting or forage habitat for them; 2) there will be no food in the water for them to ingest; and 3) there are other more attractive bodies of water in the Gas Hills area that provide nesting and forage habitat and food.

PRI will monitor water fowl activities at the evaporation ponds and, should it become necessary, will evaluate measures to prevent their use, such as netting, etc.

**8. ISSUE: Species of Hawk Nesting on Mine Unit 1**

**DISCUSSION:**

In Section 3.5.2.2, Page 3-65, mention is made of a hawk nest located near wellfield development in Mine Unit 1. The hawk species should be identified and the status of the nest should be specified.

**ACTION:**

Identify the species of hawk nesting on the Mine Unit, when the nest was last active, and the number of young fledged from the nest (if known). The habitat in which the nest is located should be specified as well.

**PRI RESPONSE:**

No raptor nests are known to exist within Mine Unit No. 1. Several ferruginous hawk nests, a great horned owl nest, and a prairie falcon nest, all of which were inactive during the 1999 Raptor Survey, are located within 0.5 miles of the Mine Unit No. 1 boundary. Section 3.5.2.2, Page 3-65, has been revised to provide clarification on nest sites in the vicinity of Mine Unit No. 1. Additional information on the activity and habitat associated with these nest sites is provided in Appendix D9.

**9. ISSUE: Reclamation and Revegetation Practices****DISCUSSION:**

The reclamation and revegetation activity description in Section 6.4 of the Source Material License Amendment Application is not of sufficient detail and contains some inconsistencies with Wyoming DEQ guidelines. Items of concern include:

1. DEQ recommends premining plant community characteristics be considered in developing revegetation plans. Revegetation practices (especially seed mixes) should be specific to different vegetation communities; for example revegetation practices for disturbed bottomland sagebrush communities should be different than those for upland grass. Table 6-3 presents a single seed mix that would presumably be used for all sites. This mix does not include any native shrubs that are present on the site but does include two species of shrubs (Gardner saltbush and shadscale saltbush) and two species of forbs (cicer milkvetch and yellow sweetclover) that are not found on the site.

2. Native plants should be used exclusively for revegetation of disturbed areas. The seed mix shown in Table 6-3 includes a non-native species (yellow sweetclover) that can become weedy. According to DEQ guidelines, naturalized, introduced species should only be used if native species are unavailable.

3. The reclamation plan should provide detailed information on topsoil management practices that would be used in all phases of mine operations. The plan should include how topsoil will be identified in the field (e.g., based on physical characteristics or depth), removed from areas to be disturbed, where stockpiles would be placed, how stockpiles would be protected from erosion, topsoil replacement practices after operations at a site are completed, and protection of replaced topsoil prior to establishment of a vegetative cover. Some of this information is presented in Section 6.4.2, but additional details are needed.

**ACTION:**

Provide additional details requested above.

**PRI RESPONSE:**

The seed mix for the Project has been approved by the WDEQ/LQD and US BLM. Therefore, no changes to the application document have been made as a result of items 1 and 2 discussed above. As discussed during the June 8 field visit, the revegetation and reclamation plan presented in the application was developed in accordance with WDEQ/LQD requirements and guidelines. Topsoil management practices (item 3) have been addressed in PRI's response to Ecology Comment No. 5.

**10. ISSUE: Reclamation Success Measures****DISCUSSION:**

Wyoming DEQ has established reclamation success standards that include goals related to species composition and diversity of the re-established vegetative cover. No mention of species composition is included in the plan presented in Section 6.4.5 (Page 6-17, Paragraph 3).

**ACTION:**

Provide a discussion of goals related to establishment of species composition and measures of reclamation success.

**PRI RESPONSE:**

WDEQ/LQD must approve the reclamation success at the Project prior to releasing the bond. Cover and composition are two of the items they consider during this process. Revegetation success criteria are detailed in Wyoming Department of Environmental Quality/Land Quality Division Regulations Chapter III, Section 2 (d) (vi).

**11. ISSUE: Tree Replacement****DISCUSSION:**

Section 6.4.5 (Page 6-17, Paragraph 4) states that trees would be replaced in the unlikely event that any would be removed. The species of trees that would be used for replacement and protection measures that would be used are not specified.

**ACTION:**

The section should be revised to indicate that replacement trees would be of the same species. Additionally, the size of trees that would be planted and protection measures to prevent herbivory should be specified.

**PRI RESPONSE:**

PRI has committed to the WDEQ-LQD that no trees will be disturbed. If necessary, based on changes to the mine plan, any disturbed trees will be inventoried and replaced in kind, subject to

approval by the WDEQ-LQD. Section 6.4.5 (Page 6-17) has been revised to incorporate this commitment.

## **12. ISSUE: Impacts to Aquatic Ecology**

### **DISCUSSION:**

Section 7.2 (Page 7-2) includes a presentation of construction and operational impacts to various resources, but does not include a presentation of impacts to aquatic ecology. A number of surface water features (perennial streams, ponds, and reservoirs) are present in the Amendment Area and their ecological characteristics should be described. Such a section is required by the NRC (Draft Standard Review Plan Section 2.8). Section 5.10 of Appendix D9 (Page D9-11) includes a statement that natural habitats for fish species do not exist within the study area. This seems at odds with other statements on surface water. If natural habitats are not present, any fish habitat and populations should still be discussed, even if those habitats are man-made.

### **ACTION:**

A presentation of the anticipated impacts to aquatic ecological resources on the Amendment Area should be provided. This discussion should include a presentation of any direct (e.g., disturbance) or indirect (e.g., sedimentation) effects on aquatic organisms including aquatic and emergent plants, macroinvertebrates, and fish.

### **PRI RESPONSE:**

Section 7.2.8 has been added to Chapter 7 to provide information on the potential impacts to aquatic ecological resources in the Project area.

## **13. ISSUE: Impacts to Wetlands**

### **DISCUSSION:**

Section 7.2 (Page 7-2) includes a presentation of construction and operational impacts to various resources, but does not include a presentation of impacts to wetlands.

### **ACTION:**

A presentation of the anticipated impacts to wetlands on the Amendment Area should be provided.

### **PRI RESPONSE:**

Section 7.2.9 has been added to Chapter 7 to provide information on the potential impacts to wetlands within the Project area.

## **14. ISSUE: Impacts to Threatened and Endangered Species**

### **DISCUSSION:**

Section 7.2 (Page 7-2) includes a presentation of construction and operational impacts to various resources, but does not include a presentation of impacts to threatened and endangered species.

**ACTION:**

A presentation of the anticipated impacts to threatened and endangered species on the Amendment Area should be provided.

**PRI RESPONSE:**

Section 7.2.10 has been added to Chapter 7 to provide information on the potential impacts to threatened and endangered species within the Project area.

**15. ISSUE: Impacts to Vegetation**

**DISCUSSION:**

Section 7.2.2 (Page 7-2) includes a brief presentation of construction and operational impacts to vegetation, but this assessment does not include quantification of the nature or areas of disturbance or the vegetation communities that would be affected.

**ACTION:**

Provide greater detail on the anticipated impacts to vegetation. Included should be: (1) types of activities resulting in impacts, (2) nature of impacts to vegetation (e.g., crushing, removal, soil removal, sediment deposition), (3) area of disturbance broken down by vegetation community type, and (4) mitigation measures used to reduce impacts.

**PRI RESPONSE:**

PRI's response is being prepared and will be provided upon completion.

**16. ISSUE: Concentration of Contaminants in Evaporation Pond Water**

**DISCUSSION:**

The evaporation ponds will be used for disposal of waste water from the reverse osmosis units. The waste stream entering the ponds will have concentrations of numerous constituents considered toxic to wildlife. An estimate of the concentrations discharged to the pond and present within the pond after evaporation is needed to assess potential impacts to wildlife.

**ACTION:**

Section 7.4.2, Page 7-6, should be modified to include a presentation of the concentration of contaminants in wastewater disposed of in the evaporation ponds and the resulting concentrations of these contaminants following evaporation.

**PRI RESPONSE:**

PRI's response is being prepared and will be provided upon completion.

#### **17. ISSUE: Pipeline Burial Depth**

##### **DISCUSSION:**

It is stated in Section 7.5.2 (Page 7-6, Paragraph 1) that pipelines would be buried to prevent freeze damage. The depth at which they will be buried will affect the amount of surface disturbance that would occur during burial activities.

##### **ACTION:**

Specify the expected depth that pipes will be buried.

##### **PRI RESPONSE:**

Pipelines will be buried below the frost line to prevent freeze damage, at a minimum depth of six feet. Section 7.5.2 (Page 7-6) has been revised accordingly.

#### **18. ISSUE: Threatened and Endangered Species Survey**

##### **DISCUSSION:**

In Section 3.2 of Appendix D8 (Page D8-3, Paragraph 2) it is stated that threatened and endangered species, state plants of concern, noxious weeds, and primary selenium indicators were identified if present. Since many are rare, a concerted effort to detect would be necessary including specific habitat searches. A list of potential species that could occur on the site would be useful. Section 3.11 (Page D8-6, Paragraph 3) mentions that such a list was developed for this project.

##### **ACTION:**

Provide further description of the specific survey approach used for these species and provide a list of species that could occur on the site.

##### **PRI RESPONSE:**

Section 3.11 of Appendix D8 contains a description of the methodology used to generate a list of plant species of special concern, based on consultation with the WDEQ. This list has been incorporated into the application document as Addendum D8-5 of Appendix D8. Page D8-7 has also been revised to provide the appropriate reference to Addendum D8-5.

In addition, Section 5.8 of Appendix D9 (Page D9-11) has been revised and Table D9-8 has been added to provide information on the techniques used to identify threatened, endangered, and candidate wildlife species in the permit area.

#### **19. ISSUE: Time of Sampling for Vegetation Communities**

##### **DISCUSSION:**

Many plants have limited periods of time when they are either above the surface or in bloom, leaf, fruit or seed. As a consequence, the timing of surveys is critical for identification of plants and could affect the documented species composition of a site. For threatened and endangered species or other species of concern, if surveys were not appropriately timed, they could easily be missed. It is not clear that the stated dates of July 28 - August 1 and August 19-22 include the appropriate dates for surveying all species of concern.

**ACTION:**

Provide information to indicate the appropriateness of the timing of surveys.

**PRI RESPONSE:**

The timing of the surveys was appropriate to document species composition at the site. The duration of the growing season in the Gas Hills area is generally less than 100 days. The sampling period was designed to obtain maximum cover values as outlined in WDEQ Guideline 2, which suggests sampling after July 1. The 1997 vegetation survey was conducted from July 28 to August 1 and August 19 to 22, 1997. Precipitation that year was above average during that time period.

**20. ISSUE: Number of Transects Used in Reference Areas**

**DISCUSSION:**

Section 3.8 of Appendix D-8 (Page D8-4, Paragraphs 2 and 3) presents the minimum and maximum number of transects sampled in affected areas and reference areas. The numbers between the two types of areas differ (20 minimum, 50 maximum in affected areas; 15 minimum, 30 maximum in reference areas). The rationale behind these differences is not clear.

**ACTION:**

Provide a statement that indicates the reasoning behind the differences in transect numbers.

**PRI RESPONSE:**

The methodology used to determine the number of transects sampled was based on WDEQ Guideline 2, which is generally used for non-coal sites in Wyoming. The smaller sample number for the reference area generally reflects the smaller size of the reference area vs. the remaining portion of the study or affected area. Section 3.8 of Appendix D8 (page D8-5) has been revised to indicate the appropriate methodology used.

**21. ISSUE: Prime Farmland**

**DISCUSSION:**

Section 3.10 of Appendix D8 (Page D8-6) states that prime farmland is not found in the project area, but a reference is not provided. It is unclear how this determination was made.

**ACTION:**



Provide a reference for the lack of prime farmland.

**PRI RESPONSE:**

In order to provide the appropriate reference, Section 3.10 of Appendix D8 (page D8-6) has been revised and Addendum D8-4 has been added to the application document.

**22. ISSUE: Description of Vegetation Types**

**DISCUSSION:**

In Section 4.1 of Appendix D8 (Page D8-7), major vegetation communities are described. These descriptions include environmental setting and dominant species. Some further differentiation of bottomland sagebrush, mixed sagebrush grassland, and upland grass should be provided, because these communities apparently intergrade.

**ACTION:**

Indicate how vegetation communities were distinguished from each other and dominant species in mixed sagebrush and grassland should be provided.

**PRI RESPONSE:**

The dominant species in mixed sagebrush grassland and upland grassland are provided in Sections 4.1.2 and 4.1.4, respectively, of Appendix D8. Section 4.1 of Appendix D8 (Page D8-8) has been revised to provide a description of the methods used to differentiate vegetation communities.

**23. ISSUE: Vegetation of Reservoirs**

**DISCUSSION:**

Section 4.1.7 of Appendix D8 (Page D8-8) states that 17 acres of reservoirs occur in the project area, but vegetation characteristics of these reservoirs are not provided.

**ACTION:**

Include statements regarding the presence and nature of vegetation of these reservoirs including submerged, emergent, and shoreline vegetation.

**PRI RESPONSE:**

Section 4.1.7 of Appendix D8 (page D8-9) has been revised accordingly.

**24. ISSUE: Wetland Vegetation**

**DISCUSSION:**

Section 4.1.8 of Appendix D8 (Page D8-8) presents a brief discussion of potential wetlands of the project area, but the species found in these areas are not presented. It is also stated that a formal wetland delineation was not conducted. The characteristics of these areas should be more fully described including hydrologic and soil characteristics. The soil map of the project area should be examined to determine if soils of these locations are considered hydric.

**ACTION:**

Include a list of dominant species found in these wetland areas as well as information on hydrologic and soil characteristics.

**PRI RESPONSE:**

Section 4.1.8 of Appendix D8 (Page D8-10) has been revised to indicate the dominant hydrophytic species found in wetlands areas and reference the appropriate appendices for information on hydrologic and soil characteristics.

**25. ISSUE: State Species of Special Concern**

**DISCUSSION:**

Mention is made in Section 4.3 of Appendix D8 (Page D8-9) of several species that are considered rare in the State that have been found in the region. The distance of known populations to the site should be provided. If any observations of these species on the project site have been made in the past, information should be provided on population status and dates when these plants were observed. An explicit statement regarding the absence of federally listed species on the project site is made; if applicable, such a statement should be made for state ranked species.

**ACTION:**

Include more information on state ranked species on the project site and in the region.

**PRI RESPONSE:**

Section 4.3 of Appendix D8 (page D8-10) has been revised to include a statement indicating that no State plants of concern have been identified within the Amendment area. Although the distance to known populations of sensitive plants is unknown, Addendum D8-5 has been added to Appendix D8 to show the probability of occurrence within the permit area.

**26. ISSUE: t-test Comparisons**

**DISCUSSION:**

Section 4.8 of Appendix D8 (Page D8-14) presents information on t-tests, but does not indicate what specific statistical tests were made. It should be made clear that t-tests were used to test differences between affected area and reference area for each community type.

**ACTION:**

Indicate how t-tests were used.

**PRI RESPONSE:**

Section 4.8 of Appendix D8 (Page D8-15) has been revised to clarify that t-tests were used to compare vegetation data between the affected and reference areas.

**27. ISSUE: t-test Formula**

**DISCUSSION:**

The formula for the t-test is provided in Section 4.8 of Appendix D8 (Page D8-14), but the abbreviations for variables are not defined.

**ACTION:**

Indicate the abbreviations of variables used in the t-test formula.

**PRI RESPONSE:**

Section 4.8 of Appendix D8 (Page D8-15) has been revised to include a description of the variables used in the t-test formula.

**28. ISSUE: Width of Drainage Bottoms**

**DISCUSSION:**

Section 5.0 of Appendix D8 (Page D8-15) states that drainage bottoms are narrow, but does not present a value for the width of these topographic features.

**ACTION:**

Provide the average width or a range of widths for drainage bottoms in Section 5.0.

**PRI RESPONSE:**

The width of drainage bottoms ranges from two to four feet. Section 5 of Appendix D8 (page D8-16) has been revised accordingly.

**29. ISSUE: Vegetative Parameters**

**DISCUSSION:**

Table 25 of Appendix D8 (Page D8-57) uses the terms "Total Veg" and "Total Cover". The difference between these two values is not presented. Values presented in Tables 25 and 26 do not fit the WDEQ guideline 2 formula for total cover.

**ACTION:**

Provide differences in and use of the terms "Total Veg" and "Total Cover" if different from definition in WDEQ guideline 2. Also, provide calculation or correction for Total Cover values in tables 25 and 26.

**PRI RESPONSE:**

Total Vegetation, is defined in WDEQ Guideline 2, as "% vegetation cover is the vertical projection of the general outline of plants (ignoring minor gaps between branches and holes in the canopy) to the ground surface." Total Cover, is defined in WDEQ Guideline 2, as "% total ground cover is the sum of the cover values for % vegetation, % litter, and % rock."

Minor errors in the "Total Cover" column of Table 26 are due to the fact that the data was directly transferred from individual cover Tables 2 through 11. The data provided in the individual cover tables was generated using the vegetation software Rima, Version 2, and is subject to minor rounding errors.

Minor differences between individual cover Tables 6, 9, and 11, and the summary of those tables in Tables 25 and 26 have been corrected and are included with this submittal.

**30. ISSUE: Consistent Names for Vegetation Communities**

**DISCUSSION:**

The wildlife appendix (Appendix D9, Section 2, Page D9-3) uses different names for vegetation communities than presented in other sections of the document. New community names include rough breaks shrubland and pine-rough breaks shrubland. Rough breaks-east and rough breaks-west are not presented separately as in earlier sections.

**ACTION:**

Provide equivalent community names where appropriate.

**PRI RESPONSE:**

Discrepancies exist in the vegetation community designations within Appendices D8 and D9 because D9 is the result of an earlier study completed for PRI. Appendix D-8 is a result of the 1997 field work, and use of the vegetation types in that study are preferred due to the shrubland/grassland definitions contained in WDEQ Guideline 2. In addition, rough breaks was broken into east and west since those two communities were considered sufficiently different in terms of cover and species composition.

**31. ISSUE: Definitions of Crucial and Critical Habitat**

**DISCUSSION:**

Some confusion could result with the use of crucial and critical habitat to describe wildlife habitat on the project site.

**ACTION:**

Provide definitions of these two terms.

**PRI RESPONSE:**

Definitions of the terms "crucial" and "critical" have been incorporated into Section 2 of Appendix D9 (Page D9-4).

**32. ISSUE: Mammal, Passerine Bird, Reptile, and Amphibian Surveys**

**DISCUSSION:**

Section 5.2 of Appendix D9 (Page D9-8) states that specific surveys for non-game mammals were not required for this project "as agreed upon by the Wyoming Game and Fish Department (P. Diebert, WG&FD, pers. comm. Oct. 1996)". Similar statements are made in Section 5.6 for passerine birds and Section 5.9 for reptiles and amphibians. The memo provided as an attachment to Appendix D9 does not explicitly make such statements.

**ACTION:**

Provide appropriate justification for not surveying for non-game mammals, passerine birds, reptiles, and amphibians. Relevant correspondence from WG&FD should be attached.

**PRI RESPONSE:**

Vern Stelter, WG&FD staff biologist (who replaced Pat Deibert) in Cheyenne, and Pat Hnilicka, WG&FD regional biologist in Lander, were contacted by Real West Natural Resource Consulting to confirm wildlife baseline data requirements for the Gas Hills Project. The WG&FD outlined the survey requirements in a letter dated May 13, 1999, from Mr. Thomas Collins, WG&FD Habitat Protection Program Coordinator, to Real West.

The required surveys include crucial seasonal ranges for big game species, sage grouse leks, and raptor nesting sites. Sage grouse brood surveys are not required; amphibian and reptile surveys are also not required. The letter noted that small mammal and passerine bird surveys are not required.

The WG&FD correspondence, dated May 13, 1999, has been incorporated into the application document as Addendum D9C of Appendix D9. In addition, appropriate references to this correspondence have been added to Section 5 of Appendix D9.

**33. ISSUE: Sage Grouse Surveys**

**DISCUSSION:**

Section 5.3 of Appendix D9 (Page D9-8, Paragraph 2) states that 1993 surveys did not record any new sage grouse strutting grounds. Additional information should be provided and should include the months that these surveys were conducted and whether or not these surveys focused on sage grouse or were incidental to other surveys. Also, more recent surveys are needed to determine the current population of sage grouse and the nature of their habitat use. It is assumed 1997 surveys for sage grouse were not conducted since these are not mentioned. The attached memo

from P. Deibert dated October 14, 1996 recommends consultation with P. Hnilicka regarding the need for conducting sage grouse brood surveys. It is unclear if these surveys were ever conducted.

**ACTION:**

Section 5.3 should be modified to indicate the dates and nature of sage grouse surveys in the project area.

**PRI RESPONSE:**

Sage grouse brood surveys were not conducted. Communication with WG&FD biologist Pat Hnilicka indicated the brood surveys were not necessary. Confirmation of this decision is provided in the letter from WG&FD Habitat Protection Program Coordinator Thomas Collins (see Addendum D9C of Appendix D9) where sage grouse strutting ground (lek) surveys are listed as a requirement, but brood surveys are not.

Section 5.3 of Appendix D9 (Page D9-8) has been revised to provide specific dates for the lek surveys, which were focused on known and potential sage grouse strutting ground areas during the morning hours.

**34. ISSUE: Sage Grouse Habitat Use**

**DISCUSSION:**

Section 5.3 of Appendix D9 (Page D9-8, Paragraph 2) states that "all sage grouse were recorded in association with sagebrush shrublands". It is unclear which of the vegetation communities delineated on the project site are included in this statement since three communities have sagebrush as a dominant (bottomland sagebrush, mixed sagebrush-grass, and rough breaks).

**ACTION:**

Specify the vegetation communities used by sage grouse on the site. Vegetation community names used in this description should be consistent with the major vegetation types identified elsewhere in the report.

**PRI RESPONSE:**

Sage grouse would be expected in mixed sagebrush grassland and bottomland sagebrush. Section 5.3 of Appendix D9 (page D9-8) has been revised to provide clarification on the types of vegetation used by sage grouse in the permit area.

**35. ISSUE: Waterfowl Use of the Project Site**

**DISCUSSION:**

Section 5.4 of Appendix D9 (Page D9-9) presents a brief discussion of waterfowl and shorebird use of the site but does not state the time of year or nature of waterfowl use. It is important to note whether or not the site is used for breeding of any species or merely as layover areas during spring

and autumn migrations. It is also important to specify whether or not species are found on the site during the winter. A statement should also be provided regarding use of the site for foraging purposes and the types of foods used should be indicated. Water bodies used preferentially should be identified. This information will be important for determining likely impacts of mining operations on these species.

**ACTION:**

Provide pertinent details on waterfowl and shorebird use of the site.

**PRI RESPONSE:**

Additional information on waterfowl and shorebird habitat has been added to Section 5.4 of Appendix D9. (Page D9-9).

**36. ISSUE: Raptor Nest Survey Approach**

**DISCUSSION:**

Section 5.5 of Appendix D9 (Page D9-9, Paragraph 2) describes raptor surveys conducted in the project area, but lacks some necessary detail. Additional information should be provided on the survey technique used (including traversal of site by walking vs automobile, number of observers, use of binoculars, time of day, area covered). It is also unclear if each new survey date included survey of the entire site plus any additional "expansion" or "buffer" areas. Based on the information presented in Tables D9-5 to D9-7, it appears that the core project area was not resurveyed each year. Thus, the project area appears to have been last surveyed for raptors in 1993. It cannot be assumed that these nests are still in existence or that new nesting activity did not occur on the project area after 1993.

**ACTION:**

Provide additional information on the raptor survey technique and the areas surveyed each year. New surveys may be needed of the main project site if these were last conducted in 1993.

**PRI RESPONSE:**

Section 5.5 of Appendix D9 has been revised to provide additional information on raptor survey techniques and clarification on the areas surveyed each year. Section 5.5 and Plate D9-1 have also been updated with information obtained during the 1999 raptor survey.

**37. ISSUE: Diversity of Birds in Different Habitats**

The comment seeks additional information on the diversity of birds in different habitats of the project site.

**DISCUSSION:**

Section 5.6 of Appendix D9 (Page D9-10) states that the greatest diversity of bird species was observed in the scattered pine-rough breaks shrublands due to the high diversity of plant species

and topography. The basis of this statement is not provided, but it is implied that some additional level of analysis was applied to the bird data collected. The magnitude of any differences between habitats is not indicated.

**ACTION:**

Indicate the basis of the statement on bird diversity as related to habitat. Data should be presented regarding diversity indices or the number of bird species found in different habitats.

**PRI RESPONSE:**

The stated increased diversity of birds in the pine-rough breaks shrubland is a subjective observation made by the field biologist. No quantitative analysis of diversity was taken. No changes have been made to the application document as a result of this comment.

**38. ISSUE: Mountain Plover Status**

**DISCUSSION:**

The U.S. Fish and Wildlife Service recently completed a status review of the mountain plover (Pers. Conv. with USFWS, Wyoming Field Office, May 1998) and found that sufficient information exists to list this species as either threatened or endangered. The Service recommends that the likely listing of this species in the near future should be included in project planning. Current text in Section 5.7 of Appendix D9 (Page D9-10) does not specify the current status of the mountain plover (candidate) or the recent status review.

**ACTION:**

Provide discussion of recent changes to the mountain plover status.

**PRI RESPONSE:**

Section 5.8 of Appendix D9 (Page D9-12) has been revised to provide a discussion of the proposed listing of mountain plover as "threatened" under the Endangered Species Act.

**39. ISSUE: Bald Eagle Use of the Site**

**DISCUSSION:**

Section 5.7 of Appendix D9 (Page D9-10, Paragraph 3) states that the bald eagle is a winter resident and migrates through the project area. Additional information is needed regarding the number of bald eagles that use the site, the nature of that use (e.g., roosting, foraging), and the habitats and areas of the site used. Survey techniques used for the bald eagle are not discussed and it is unclear if specific surveys were conducted.

Section 6 of Appendix D9 (Page D9-12, Paragraph 7) states that bald eagles use the site only during migration. This statement is counter to statements made earlier that bald eagles use the site during the winter.



**ACTION:**

Provide the additional information identified.

**PRI RESPONSE:**

Section 5.7 of Appendix D9 (Page D9-11) has been revised to provide clarification on the bald eagle's use of the site. In addition, it should be noted that Section 5.8 of Appendix D9 states that although the bald eagle has been observed in the study area, winter concentrations and roost areas have not been documented.

No changes have been made to Section 6 of Appendix D9 as a result of this comment.

**40. ISSUE: Mountain Plover Survey****DISCUSSION:**

Mountain plover surveys were conducted on the site in April and May of 1997 (Section 5.7, Appendix D9, Page D9-10, Paragraph 4). Additional information regarding the survey techniques used should be provided. An appropriate survey approach would follow mountain plover survey guidelines developed by the U.S. Fish and Wildlife Service (Wyoming Field Office, May 1998).

**ACTION:**

Provide additional information on survey techniques. The survey approach should be compared to the U.S. Fish and Wildlife Service mountain plover survey guidelines and the need for additional surveys should be considered.

**PRI RESPONSE:**

Section 5.7 of Appendix D9 (Page D9-11) has been revised to provide additional information on survey techniques.

According to USFWS guidelines, mountain plover surveys should be conducted no more than 14 days prior to the date that actual ground disturbance activities begin. Therefore, additional surveys of suitable grassland habitat should be conducted just prior to ground disturbance activities.

**41. ISSUE: Swift Fox and Ute Ladies'-Tresses****DISCUSSION:**

The swift fox (*Vulpes velox*) is currently considered a candidate for listing by the U.S. Fish and Wildlife Service (50 CFR Part 17, September 19, 1996) and Ute ladies'-tresses (*Spiranthes diluvialis*) is listed as threatened (50 CFR Part 17.12). It appears that habitat for both species occurs on the site. Section 5.8 of Appendix D9 (Pages D9-10 and D9-11) mentions neither species.

**ACTION:**

Indicate the current status of the swift fox and Ute ladies'-tresses on the site and in the project area. The need for specific surveys for these two species should be considered.

**PRI RESPONSE:**

Section 4.3 of Appendix D8 (Page D8-10) has been revised to indicate the current status of Ute ladies'-tresses and other candidate and/or proposed federally designated plants in the Amendment area. As previously noted, Addendum D8-5 has also been added to Appendix D8 to provide a summary of the occurrence potential for federal and state plants of concern within the Amendment area. Section 5.8 of Appendix D9 (page D9-12) has been revised to indicate the current status of the swift fox in the Amendment area.

**42. ISSUE: Size of Prairie Dog Towns****DISCUSSION:**

Section 5.8 of Appendix D9 (Page D9-11, Paragraph 2) states that the small size and wide spacing of prairie dog towns in the region would make survival of black-footed ferret populations difficult. The size of towns, distance between them, and a supporting reference is needed to substantiate this statement.

**ACTION:**

Provide the size and spacing of prairie dog towns in the project area. A reference that gives a minimum required size for towns to support black-footed ferrets should be provided.

**PRI RESPONSE:**

There are no prairie dog colonies within the Amendment area or within the half-mile buffer. No changes were made to the application document as a result of this comment.

**43. ISSUE: State-listed Species in the Project Area****DISCUSSION:**

Section 5.8 of Appendix D9 (Pages D9-11, Paragraph 4) states that "no state-listed species other than those species already discussed previously in this report were recorded on the study area." No previous discussion could be found.

**ACTION:**

Provide a listing of state-listed species found on the site. The locations of these species, their population status, and habitats used also should be specified. If none are found there or could potentially occur on the site, a statement to that effect should be provided.

**PRI RESPONSE:**

Section 5.8 of Appendix D9 (Page D9-12) has been revised and Table D9-9 has been added to provide additional information and/or clarification on state-listed species of concern.

#### **44. ISSUE: Estimate of Pronghorn and Mule Deer Disturbance**

##### **DISCUSSION:**

It is stated in Section 6 of Appendix D9 (Page D9-12) that 20-30 pronghorn and 1 or 2 mule deer would be disturbed by mining activities. It is unclear how this estimate was obtained, but it seems some area of disturbance was applied to the density of these species on site. If this is the case, it is an oversimplification of how disturbance would occur since disturbance would occur over an area beyond the footprint of facilities and would be dependent on the timing and nature of activities. The area affected by noise and human presence would extend beyond immediate disturbance areas.

##### **ACTION:**

Indicate how these estimates were obtained. The estimates should be revised if needed to indicate the areas affected by noise and harassment during mining operations.

##### **PRI RESPONSE:**

Section 6 of Appendix D9 (Page D9-14) has been revised to provide additional information on the estimated impacts to big game species (i.e., pronghorn, mule deer) from mining activities.

#### **45. ISSUE: Sage Grouse Nesting and Foraging Habitat**

##### **DISCUSSION:**

Section 6 of Appendix D9 (Page D9-12, Paragraph 2) indicates that a limited amount of nesting and foraging habitat for the sage grouse will be affected by mining operations. This habitat was not described earlier in the document and it is unclear where this habitat is in relation to mining activities. In addition, the attached memo from P. Deibert dated October 14, 1996 recommends consultation with P. Hnilicka regarding the need for conducting sage grouse brood surveys. It is unclear if these surveys were ever conducted.

##### **ACTION:**

Provide a more thorough discussion of the amount of habitat that would be disturbed and the likely affect of the disturbance on the sage grouse population. Include a description of sage grouse nesting and foraging habitat.

##### **PRI RESPONSE:**

Section 6 of Appendix D9 (Page D9-14) has been revised to provide additional information on sage grouse habitats and the potential affects caused by disturbance during mining activities.

#### **46. ISSUE: Impact of Operations on Raptor Nests**

**DISCUSSION:**

Section 6 of Appendix D9 (Page D9-12, Paragraph 4) presents a brief discussion of the impacts of mining operations on raptor nests, but does not specify the species that are likely to be affected nor the number of raptors that would be affected.

**ACTION:**

Identify the number of nests and the species of raptors that would be affected by mining operations.

**PRI RESPONSE:**

The specific number of nests and species of raptors that will be affected by mining operations is unknown. In response to Ecology Comment No. 36 above, the results of the 1999 raptor survey have been incorporated into Section 5.5 of Appendix D9 to provide information on the status of all raptor nests within the Amendment area and buffer zone. In addition, raptor nest surveys will be conducted annually at the request of WDEQ and BLM. Section 6 of Appendix D9 (Page D9-12) has been revised to provide additional information on the anticipated impacts to nesting raptors.

**47. ISSUE: Area of Wildlife Habitat Affected by Mining Operations****DISCUSSION:**

Section 6 of Appendix D9 (Page D9-12, Paragraph 5) states that various wildlife species will be affected but no estimate is provided for the amount of wildlife habitat that would be disturbed. Wildlife may be attracted to recently revegetated sites and this potential impact should be mentioned in the application as well.

**ACTION:**

Provide an estimate of the amount of wildlife habitat that would be disturbed relative to the amount available on the project site.

**PRI RESPONSE:**

Section 6 of Appendix D9 (Page D9-14A) has been revised and Table D9-10 has been added to provide additional information on wildlife habitats that may be affected during mining activities.

**48. ISSUE: Habitats Used by Threatened and Endangered Species****DISCUSSION:**

Section 6 of Appendix D9 (Page D9-13, Paragraph 2) states that the majority of anticipated disturbances will occur within sagebrush-grass habitats and that habitats required by threatened and endangered species either do not exist on the site or are limited in extent and will not be disturbed. Habitat for threatened and endangered species is not specifically identified in the report and their locations relative to, or inclusion in, proposed disturbance areas cannot be verified.

**ACTION:**

Indicate which specific vegetation communities will be affected by mining operations. Threatened and endangered species habitats also should be identified and the spatial relationship of these habitats to mining facilities indicated.

**PRI RESPONSE:**

Section 6 of Appendix D9 has been revised to provide additional information on threatened and endangered species habitats.

**49. ISSUE: Mitigation of Impacts to Nesting Raptors****DISCUSSION:**

Section 7 of Appendix D9 (Page D9-14) provides a discussion of several mitigation measures that would be employed during mining operations to avoid impacts to nesting raptors. There is no discussion of the possibility of avoidance of mining activities near active nests during the nesting season.

**ACTION:**

Discussion should encompass all mitigation measures considered, including avoidance of mining activities in close proximity to active nests during the nesting season and prior to fledging of young.

**PRI RESPONSE:**

Section 7 of Appendix D9 (Page D9-14C) has been revised to include avoidance of mining activities near active raptor nests as a possible mitigation measure.

**Air Quality, Meteorology, Noise****1. ISSUE: Access Roads from Highland Uranium Project Site to Gas Hills Project Site****DISCUSSION:**

In Section 1.2, Page 1-2, Para. 2, the types and lengths of access roads between the Gas Hills Project site and nearby major cities are provided. The same information for the roadways from the Highland Uranium Project site to the Gas Hills Project site needs to be provided. This information is necessary to comment on potential nonradiological air quality and noise impacts due to the operation of trailer trucks that transport uranium-laden ion-exchange resin.

**ACTION:**

Provide information on the types and lengths of access roads between the Highland Uranium Project site and the Gas Hills Project site that will be used by the trucks transporting uranium-laden ion-exchange resin.

**PRI RESPONSE:**

The preferred route for the resin trailer will be through Riverton, via State Highway 136. From Riverton the route will be via US Highway 26, 121 miles, where the route will intersect Interstate 25 just north of Casper. The trucks will then travel 31 miles over Interstate 25 to Glenrock and then approximately 40 miles to the Highland Uranium Project via State Highways 95 and 93, county and private paved roads.

Verbal Communication with the Wyoming Highway Department indicated the following 1998 use statistics for the roads and highways that would be used to transport ion exchange resin:

Highway 136 (Gas Hills to Riverton): 1998 average in a 24-hour period was a total of 150 vehicles of which 20 were trucks.

Highway 20/26:(Fremont/Natrona County Line): 1998 average in a 24-hour period was a total of 1860 vehicles of which 270 were trucks.

Highway 95 (Glenrock to Highway 93): 1998 average in a 24-hour period was 340 vehicles of which 50 were trucks.

## **2. ISSUE: Information on Existing Conditions of Nonradiological Air Quality and Noise**

### **DISCUSSION:**

Construction, operation, decommissioning, and reclamation of wellfields, utilities, surface facilities, and access roads, as well as transporting uranium-laden ion-exchange resin to the Highland Uranium Project site will involve operation of vehicles, including trucks, and use of heavy equipment and other machinery. Operation of these vehicles, equipment, and machines that run on gasoline and diesel fuel will result in engine exhaust emissions and fugitive dust emissions from road surfaces, affecting nonradiological air quality. In addition, noise will be generated, which will affect ambient noise levels. To assess potential impacts of these activities on nonradiological air quality and ambient noise levels at and around the Project site, it is necessary to provide information on existing conditions of nonradiological air quality and ambient noise levels in the vicinity of the Project site.

### **ACTION:**

Provide information on existing conditions of nonradiological air quality and ambient noise levels in the vicinity of the Project site.

### **PRI RESPONSE:**

There is currently no activity taking place within the Amendment area. To the west and north of the Amendment Area, Pathfinder Mines Corporation is reclaiming a conventional mine/mill site using a fleet of diesel powered scrapers, dozers and ancillary equipment. To the east of the Amendment Area, Umetco Minerals is performing similar activities with similar equipment. Currently, and for the next two to three years, Pathfinder will be operating two eight hour shifts per day from May through October and one eight hour shift from November through April. The type of equipment and quantity are provided in the table below:

Equipment Type	Number of units May through October	Number of Units November through April
D9 & D10 Dozers	5	3

651 Scrapers	10	5
Motor Graders	4	2
Heavy Diesel Trucks	3	2
245 Backhoe	1	1
Light Gas Trucks	25	15

It can be assumed that Umetco will operate on a similar schedule and with a comparable fleet of equipment.

There is no ambient dust or noise data available for the Amendment area or adjacent areas.

### **3. ISSUE: Information on Existing Traffic Conditions on the Roads to Be Used by the Vehicles Operated for Gas Hills Project**

#### **DISCUSSION:**

Operation of vehicles to support Gas Hills Project activities on existing roadways and access roads to be constructed will not only result in increases in vehicular emissions and noise, but also increases in potential for vehicular accidents. To be able to assess potential impacts of these additional vehicles on air quality and noise as well as on traffic accidents, it is necessary to provide road characteristics, traffic volumes, and accident statistics for the existing and new roadways to be utilized by the Project activities.

#### **ACTION:**

Provide information on road characteristics, traffic volumes, and accident statistics for the existing and new roadways to be utilized by the Project activities.

#### **PRI RESPONSE:**

Road characteristics and traffic volumes have been provided in the response to Air Quality, Meteorology, Noise Comment No. 1. Based on the latest US DOT statistics (1996), the fatal injury crash rate for all public roads in Wyoming is 1.64 per 100 million vehicle-miles of travel. The nonfatal injury crash rate is 57.46 per 100 million vehicle-miles of travel. The very small addition of vehicles on the public roads due to the Gas Hills Project will not significantly increase the accident rate for the state.

### **4. ISSUE: Locations of Lucky Mc Mine and Natrona County Airport Weather Stations**

#### **DISCUSSION:**

Section 2.5.3, Page 2-9, Para. 1 and 2, cite wind-related data for the Lucky Mc Mine and Natrona County Airport (NWS) weather stations. Accurate information on the locations (distances and directions) of these weather stations with respect to the Project site is needed to determine how relevant the data from these weather stations are to the Project site.

**ACTION:**

Provide information on the locations (distances and directions) of the Lucky Mc Mine and Natrona County Airport (NWS) weather stations with respect to the Project site.

**PRI RESPONSE:**

The Lucky Mc Mine weather station is approximately four miles northwest of the Amendment Area. The Natrona County Airport weather station is approximately 58 miles east-northeast of the Amendment Area.

**5. ISSUE: Fugitive Dust Control Measures****DISCUSSION:**

Section 3.2.1.10, Page 3-14, describes fugitive dust control measures planned for the operational period of the Gas Hills Project, i.e., revegetation of disturbed areas and speed limits on wellfield roads (10 mph). Emissions of fugitive dusts from activities associated with construction, decommissioning, and reclamation of wellfields, utilities, surface facilities (including evaporation ponds), and access roads could be significant, especially during dry seasons. However, Section 3.2.1.10, Page 3-14, does not provide information on fugitive dust control measures to be taken during these construction, decommissioning, and reclamation activities.

**ACTION:**

Provide information on fugitive dust control measures to be taken during construction, decommissioning, and reclamation of wellfields, utilities, surface facilities (including evaporation ponds) and access roads.

**PRI RESPONSE:**

It is not anticipated that fugitive dust emissions created by construction, decommissioning and reclamation activities will be a concern. However, should it become apparent that fugitive dust emissions are becoming excessive, efforts will be made to control and reduce them. The primary control measure will be water application. It should be noted that the air quality permit for the Highland Uranium Project does not specifically require PRI to use dust suppressant, unless conditions warrant (see Condition 7 of attached Air Quality Permit).

**6. ISSUE: Nonradioactive Airborne Effluents****DISCUSSION:**

Section 4.1.1, Page 4-1, states that nonradioactive airborne effluents will be limited to fugitive dusts from wellfield activities. However, there would be additional nonradioactive airborne effluents associated with the Gas Hills Project. They may include: (1) nonradioactive airborne emissions from (a) fuel combustion (e.g., boilers or furnaces for heating, if any), and (b) operation of machines and vehicles during the periods of construction, operation, decommissioning and reclamation, and (2) fugitive dust emissions during the periods of construction, decommissioning and reclamation.



Although these emissions may not be very significant, they should not be ignored. In addition, acknowledging existence of such emissions may not be sufficient. Detailed quantitative estimation of these emissions are not needed, but, listing the types, capacities, frequencies and duration of operation of these combustion sources, machines, and vehicles is needed to make proper assessment of the significance of these emissions.

**ACTION:**

Provide additional information on nonradioactive airborne effluents associated with the Gas Hills Project, as described in the above discussion.

**PRI RESPONSE:**

Emissions from machines and vehicles and fugitive dust emissions are discussed in PRI's responses to Air Quality, Meteorology, Noise Comments No. 2 and No. 5 above. The Satellite facilities will be heated with natural gas or propane. There will be six heaters with an approximate output of 400,000 BTU and 500,000 BTU input. Assuming the natural gas will be the source of the heat, it will contain approximately 20 grains/100 ft<sup>3</sup> of sulfur and approximately 1000 BTU/ft<sup>3</sup>.

**7. ISSUE: Assessment of Noise Impacts**

**DISCUSSION:**

Section 7.2.6, Page 7-4, Para. 1, states that impacts due to noise from the project and movement of people and equipment will be minimal. To make such an assessment, one must show that increases in noise levels due to the project and movement of people and equipment above the existing noise levels will be minimal. Because the Project site is located in a remote area and the number of vehicles and/or equipment involved in the project and movement of people and equipment would be relatively small, efforts to estimate potential increases in noise levels may not be justified. Before reaching the minimal impact conclusion, however, one must present, at minimum, the types of vehicles/equipment involved and, show that the number and frequency of their use would be small and that duration of heavy equipment operation would be short or temporary.

**ACTION:**

Present the types of vehicles/equipment involved and, to show that the number and frequency of their use would be small and that duration of heavy equipment operation would be short or temporary.

**PRI RESPONSE:**

Approximately four to eight truck mounted diesel powered rotary drilling rigs will be utilized to install monitor and production wells and perform ore body delineation drilling. This activity will occur throughout each year at approximately eight hours per day, five days per week. Other equipment that will be used will include two pump pulling units (1-ton gas or diesel vehicles), one motor grader, two backhoes and approximately eight to ten light duty trucks. All equipment will be properly muffled, and noise levels should not exceed legal limits. No heavy equipment, such as scrapers, dozers, etc. will be used except for short duration periods of time during initial

construction and wellfield road construction (approximately one month each year). Based upon this description, PRI believes that the number and frequency of equipment used will be small and of temporary or short duration and will not create a noise impact significantly above current ambient levels.

## **8. ISSUE: Assessment of Impacts on Transportation**

### **DISCUSSION:**

Section 7.2.6, Page 7-4, Para. 2, states that traffic disturbance on the county road should be minimal because it is anticipated that a large portion of the work force will live in Riverton and commute using Wyoming State Highway No. 136. To properly assess potential impacts on the traffic on the State Highway, county roads, and other roadways, one must (1) provide estimated traffic volume on each of these roadways that is anticipated due to the Gas Hills Project, (2) compare the anticipated increase in traffic volume with the existing traffic volume on each of these roadways, and (3) present assessment result for each of the roadways that would be affected by the Gas Hills Project.

### **ACTION:**

(1) Identify all roadways to be affected by the Gas Hills Project, (2) Provide and compare data on existing traffic volume and anticipated increase in traffic volume on each of these roadways, and (3) Present assessment result for each of these roadways.

### **PRI RESPONSE:**

Available traffic volume data for roadways to be used by the Gas Hills Project has been provided in the response to Air Quality, Meteorology, Noise Comment No. 1 above. Employment at the Project will add approximately 25 to 30 additional vehicles traveling the roadways, split approximately 60% from Riverton and 40% from Casper.

## **9. ISSUE: Aesthetic Impacts**

### **DISCUSSION:**

New surface facilities to be constructed at the Gas Hills Project site and its vicinity include wellfields, wellfield header house, satellite buildings, pump stations, and power lines and poles. (Certain new facilities such as wastewater disposal facilities will be housed in the existing Carol Shop building.) These new surface facilities would result in certain visual impacts. Section 7, Pages 7-1 through 7-10, presents the results of assessments of various environmental impacts. However, aesthetic impacts are not discussed.

### **ACTION:**

Present the assessment results of aesthetic impacts of new surface facilities to be constructed at the Gas Hills Project site and its vicinity.

### **PRI RESPONSE:**

PRI maintains that aesthetic impacts from the Project will be negligible. Buildings will be painted a color that will blend with the natural landscape. Pipeline and wellfield electrical will be buried or contained within header houses. Overhead lines will be kept to the minimum necessary to provide power to the facilities, and will be placed in the same corridors as the roadways and pipelines. Revegetation of wellfields will enhance the overall aesthetics of the area.



THE STATE OF WYOMING

MIKE SULLIVAN  
GOVERNOR

AUG 19 1991

HIGHLAND URANIUM PROJECT  
RECEIVED

## Department of Environmental Quality

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

Administration  
(307) 777-7937

Air Quality Division  
(307) 777-7391

Land Quality Division  
(307) 777-7756  
FAX (307) 634-0799

Solid Waste Management Program  
(307) 777-7752

Water Quality Division  
(307) 777-7781  
FAX (307) 777-5973

August 12, 1991

Mr. Bill Kearney  
Sr. Environmental Coordinator  
Power Resources  
Highland Uranium Project  
P.O. Box 1210  
Glenrock, WY 82637

Permit No. MD-153

Dear Mr. Kearney:

The Division of Air Quality of the Wyoming Department of Environmental Quality has completed final review of Power Resources' application to modify operations at the Highland Uranium Project by the addition of 11,451.84 acres into the permit area for in situ uranium mining at the facility located at 294 Highland Loop Road in Converse County, Wyoming.

Following this agency's proposed approval of the request as published July 10, 1991 and in accordance with Section 21(m) of the Wyoming Air Quality Standards and Regulations, the public was afforded a 30-day period in which to submit comments concerning the proposed new source, and an opportunity for a public hearing. No comments have been received. Therefore, on the basis of the information provided to us, approval to modify operations at the Highland Uranium Project by the addition of 11,451.84 acres into the permit area as described in the application is hereby granted pursuant to Section 21 of the regulations with the following conditions:

1. That authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or is being constructed or installed for the purpose of investigating actual or potential sources of air pollution, and for determining compliance or non-compliance with any rules, regulations, standards, permits or orders.

Mr. Bill Kearney  
August 12, 1991  
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2. That all commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as conditions of this permit.

3. That the hot water boiler be operated and maintained in a proper manner.

4. That the venturi scrubbers on the dryer and package room be operated during all drying and packaging activities.

5. That the allowable emissions shall be as follows:

Point Sources Emissions

<u>Source</u>	<u>Allowable Particulates (TPY)</u>	<u>Allowable NOx (TPY)</u>
Dryer	9.1	---
Package Room	8.8	---
Hot Water Boiler	1.0	1.9
TOTAL	18.9	1.9

Note: The above allowable emissions were based upon 8760 hours per year of operations. The Division estimated the SO<sub>2</sub> emissions from the hot water boiler at 0.6 TPY over 8760 hours while combusting 2200 CFH of natural gas containing 20 grains of sulfur per 100 CF. On an hourly basis, the allowable particulate emissions from the dryer and package room are 2.08 pounds and 2.02 pounds, respectively, as per OP-202.

6. That Power Resources shall submit to the Division of Air Quality a copy of the Method 5 particulate tests for the dryer and package room on an annual basis to determine compliance with the allowable particulate emission rates set for in Section 14 (listed above).

7. That upon future inspections, the Division will determine the necessity for chemical treatment of access and wellfield roads and, if needed, will require the application of dust suppressants to control fugitive emissions from these sources.

It must be noted that this approval does not relieve you of your obligation to comply with all applicable county, state, and federal standards, regulations or ordinances. Special attention must be given to Section 21 of the Wyoming Air Quality Standards and Regulations. Section 21(a) requires that a permit to operate is required in order to operate a facility after a 120-day start-up

Mr. Bill Kearney  
August 12, 1991  
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period, Section 21(i) requires notification of start-up, Section 21(j) requires that performance tests be conducted within 90 days of initial start-up, and Section 21(h) requires that construction or modification must commence within 24 months of date of permit issuance or the permit will become invalid, unless the Administrator extends such time period based on a satisfactory justification of the requested extension.

If we may be of further assistance to you, please feel free to contact this office.

Sincerely,

*Charles A. Collins*

Charles A. Collins  
Administrator  
Air Quality Division

*Dennis Hemmer*

Dennis Hemmer  
Director  
Dept. of Environmental Quality

CAC:DH/md