United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

SEP 13 2011

In Reply Refer To:
ES-61411/WY11SL0372

Kevin Hsueh, Chief
U.S. Nuclear Regulatory Commission
Mail Stop T-8F05
Washington, DC 20555

Dear Mr. Hsueh:

Thank you for your letter (Docket No. 040-09091) of August 12, 2011, received in our office on August 19, regarding the Strata Energy, Inc., *in situ* Uranium Recovery (ISR) facility at the proposed Ross project site.

The proposed project area consists of approximately 1,720 acres of primarily privately-owned land and is located in Oshoto, Wyoming, in Crook County. The project area lies within portions of T53N, R67W, Sections 7 and 17-19, and T53N, R68W, Sections 12, 13, and 24.

We previously received a letter dated April 7, 2011, from Miles Bennett, Natural Resources Analyst, Wyoming Department of Environmental Quality, requesting technical review of the application for the Strata Energy Ross Project ISL Permit Application. We responded to this request on May 3, 2011, and have enclosed a copy of our response (WY11TA0210). Additionally, we have enclosed a copy of "*Responses to USF&WS and WG&F comments to Ross ISR Project Permit (TFN 5 5/217)*" dated June 30, 2011, from WWC Engineering.

You have requested information regarding species listed under the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq*. In response to your request, the U.S. Fish and Wildlife Service (Service) is providing you with recommendations for protective measures for threatened and endangered species in accordance with the Act. We are also providing recommendations concerning migratory birds in accordance with the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 *et seq*., and the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742a-742j.

In your letter, you requested that we also address the potential for Migratory Birds of High Federal Interest (MBHFI) to nest within or adjacent to the proposed permit area. The Service does not maintain site-specific information on the nesting locations of the birds on the MBHFI list (copy enclosed). Site-specific nest location information may be available from the Wyoming Game and Fish Department (WGFD), applicable land management agencies, or through species-specific surveys conducted on site. If site-specific information indicates that MBHFI do occur at or in the vicinity (e.g., 1 mile) of the proposed project area, we can provide additional site and species-specific recommendations.

In accordance with Section 7(c) of the Act, we have determined that the following species or their designated habitat may be present in the proposed project area. We would appreciate receiving information as to the current status of each of these species within the proposed project area.

Listed, Proposed, Candidate Species and their Designated and Proposed Critical Habitat that may be in the proposed Project Area

Species	Scientific Name	Status	Habitat
Ute Ladies'-tresses	*Spiranthes diluvialis*	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 ft. elevation
Greater Sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush communities

Ute Ladies'-tresses: Ute ladies'-tresses (*Spiranthes diluvialis*) is a perennial, terrestrial orchid, 8 to 20 inches tall, with white or ivory flowers clustered into a spike arrangement at the top of the stem. Ute ladies'-tresses typically blooms from late July through August; however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October. Ute ladies'-tresses is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams where it colonizes early successional point bars or sandy edges. The elevation range of known occurrences is 4,200 to 7,000 feet (although no known populations in Wyoming occur above 5,500 feet) in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Soils where Ute ladies'-tresses have been found typically range from fine silt/sand, to gravels and cobbles, as well as to highly organic and peaty soil types. Ute ladies'-tresses is not found in heavy or tight clay soils or in extremely saline or alkaline soils. Ute ladies'-tresses seems intolerant of shade and small scattered groups are found primarily in areas where vegetation is relatively open. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. Ute ladies'-tresses is difficult to survey for primarily due to its unpredictability of emergence of flowering parts and subsequent rapid desiccation of specimens. The Service does not maintain a list of "qualified" surveyors but can refer those wishing to become familiar with the orchid to experts who can provide training or services.

Greater Sage-grouse: The Service has determined that the greater sage-grouse (*Centrocercus urophasianus*) warrants listing under the Act, but the development of a proposed listing rule is

precluded by other higher priority listing actions. As a result, the greater sage-grouse has been placed on the list of candidate species. Candidates are reviewed annually to determine if they continue to warrant listing or to reassess their listing priority. Ideally, sufficient threats can be removed to eliminate the need for listing, in which case sage-grouse would no longer be a candidate. If threats are not addressed or the status of the species declines, a candidate species can move up in priority for a listing proposal.

Please see our recent *Federal Register* notice (75 FR 13910; available at http://www.fws.gov/wyominges/Pages/Species/Findings/GrtSageGrouse_CandidateBulletin.html) on greater sage-grouse for detailed information concerning the status of the species. Greater sage-grouse are dependent on sagebrush habitats year-round. Habitat loss and degradation, as well as loss of population connectivity have been identified as important factors contributing to the decline of greater sage-grouse populations rangewide. Therefore, any activities that result in loss or degradation of sagebrush habitats that are important to this species should be closely evaluated for their impacts to sage-grouse.

We recommend you contact the WGFD to identify important greater sage-grouse habitats, recommended seasonal restrictions within the project area, and appropriate measures to minimize potential impacts from the proposed project. The Service recommends surveys and mapping of important greater sage-grouse habitats where local information is not available. The results of these surveys should be used in project planning to minimize potential impacts to this species. No project activities that may exacerbate habitat loss or degradation should be permitted in important habitats.

Species of Concern

Black-tailed Prairie Dog: The range of the black-tailed prairie dog (*Cynomys ludovicianus*) once spanned the short and mixed grass prairies of North America east of the Rockies from southern Canada to northern Mexico. This species still occurs over much of its historic range, although in more widely scattered large colonies. Black-tailed prairie dogs occur within the eastern third of Wyoming. A population thought to have been intentionally introduced outside of this range also occurs in the Bighorn Basin. We encourage the conservation of prairie dog colonies for their value to the prairie ecosystem and the many species that rely on them. Threats that may be significant to conserving black-tailed prairie dog populations include disease (sylvatic plague) and some control programs (poisoning). Prairie dogs serve as the primary prey species for the black-footed ferret (*Mustela nigripes*) and several raptors, including the golden eagle (*Aguila chrysaetos*) and ferruginous hawk (*Buteo regalis*). Prairie dog colonies and burrows also provide shelter or nest sites for species like the mountain plover (*Charadrius montanus*) and burrowing owl (*Athene cunicularia*). Because black-tailed prairie dog colonies in Wyoming do not currently support any ferret populations, black-footed ferret surveys are not necessary within Wyoming. However, we do encourage evaluating black-tailed prairie dog colonies for the potential reintroduction of black-footed ferrets.

Migratory Birds: The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to

take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. Work that could lead to the take of a migratory bird or eagle, their young, eggs, or nests (for example, if you are going to erect new roads, or power lines in the vicinity of a nest), should be coordinated with our office before any actions are taken.

Removal or destruction of such nests, or causing abandonment of a nest could constitute violation of one or both of the above statutes. Removal of any active migratory bird nest or nest tree is prohibited. For golden eagles, inactive nest permits are limited to activities involving resource extraction or human health and safety. Mitigation, as determined by the local Service field office, may be required for loss of these nests. No permits will be issued for an active nest of any migratory bird species, unless removal of an active nest is necessary for reasons of human health and safety. Therefore, if nesting migratory birds are present on, or near the project area, timing is a significant consideration and needs to be addressed in project planning.

If nest manipulation is proposed for this project, the project proponent should contact the Service's Migratory Bird Office in Denver at 303-236-8171 to see if a permit can be issued for this project. No nest manipulation is allowed without a permit. If a permit cannot be issued, the project may need to be modified to ensure take of a migratory bird or eagle, their young, eggs or nest will not occur.

The Service's Wyoming Field Office has compiled a list of Migratory Bird Species of High Federal Interest (Enclosure) from the ongoing work among State and Federal agencies, non-governmental organizations, and the interested public that produced the Wyoming Bird Conservation Plan. This list will now serve as our list of Migratory Bird Species of Management Concern in Wyoming, in place of the previous list based on the Migratory Nongame Birds of Management Concern in the United States: the 1995 List.

Bald Eagle/Raptor: Enclosed please find our general recommendations for the protection of bald eagles and other raptor species. We strongly encourage project proponents to fully implement the protective measures described in the enclosures in order to help ensure compliance with the MBTA and the BGEPA. We are also available to assist you in developing a project specific plan to address the MBTA and BGEPA concerns.

Wetlands/Riparian Areas: Wetlands or riparian areas may be impacted by the proposed project. Wetlands perform significant ecological functions which include: (1) providing habitat for numerous aquatic and terrestrial wildlife species, (2) aiding in the dispersal of floods, (3) improving water quality through retention and assimilation of pollutants from storm water runoff, and (4) recharging the aquifer. Wetlands also possess aesthetic and recreational values. If wetlands may be destroyed or degraded by the proposed action, those wetlands in the project area should be inventoried and fully described in terms of their functions and values. Acreage of wetlands, by type, should be disclosed and specific actions should be outlined to avoid, minimize, and compensate for all unavoidable wetland impacts.

Riparian or streamside areas are a valuable natural resource and impacts to these areas should be avoided whenever possible. Riparian areas are the single most productive wildlife habitat type in North America. They support a greater variety of wildlife than any other habitat. Riparian vegetation plays an important role in protecting streams, reducing erosion and sedimentation as well as improving water quality, maintaining the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian areas should be avoided. Any potential, unavoidable encroachment into these areas should be further avoided and minimized. Unavoidable impacts to streams should be assessed in terms of their functions and values, linear feet and vegetation type lost, potential effects on wildlife, and potential effects on bank stability and water quality. Measures to compensate for unavoidable losses of riparian areas should be developed and implemented as part of the project.

Plans for mitigating unavoidable impacts to wetland and riparian areas should include mitigation goals and objectives, methodologies, time frames for implementation, success criteria, and monitoring to determine if the mitigation is successful. The mitigation plan should also include a contingency plan to be implemented should the mitigation not be successful. In addition, wetland restoration, creation, enhancement, and/or preservation does not compensate for loss of stream habitat; streams and wetlands have different functions and provide different habitat values for fish and wildlife resources.

Best Management Practices (BMPs) should be implemented within the project area wherever possible. BMPs include, but are not limited to, the following: installation of sediment and erosion control devices (*e.g.*, silt fences, hay bales, temporary sediment control basins, erosion control matting); adequate and continued maintenance of sediment and erosion control devices to insure their effectiveness; minimization of the construction disturbance area to further avoid streams, wetlands, and riparian areas; location of equipment staging, fueling, and maintenance areas outside of wetlands, streams, riparian areas, and floodplains; and re-seeding and re-planting of riparian vegetation native to Wyoming in order to stabilize shorelines and stream banks.

For our internal tracking purposes, the Service would appreciate notification of any decision made on this project (such as issuance of a permit or signing of a Record of Decision or Decision Memo). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of Wyoming's fish and wildlife resources. If you have questions regarding this letter or your responsibilities under the Act and/or other authorities or resources described above, please contact Genevieve Skora of my office at the letterhead address or phone (307) 772-2374, extension 225.

Sincerely,

For R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

Enclosures (4)

cc: WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/WY11TA0210

MAY 03 2011

Miles Bennett
Natural Resources Analyst
Wyoming Department of Environmental Quality
Land Quality Division
2100 West 5th Street
Sheridan, Wyoming 82801

Dear Mr. Bennett:

Thank you for your letter dated April 7, 2011 and received in our office on April 12 requesting a technical review of the Strata Energy, Inc. proposal to construct and operate an in situ leach uranium recovery (ISR) project to be located in Crook County approximately 22 miles north of Moorcroft, Wyoming near Oshoto. The ISR project area includes approximately 1,721 acres and includes the area around Oshoto Reservoir, Deadman Creek and the Little Missouri River.

You have requested a technical review of applicable portions of the permit application for the ISR project. In response to your request, the U.S. Fish and Wildlife Service (Service) is providing you with comments on permit application documents pertaining to surface water quality and wildlife mitigation measures. Our comments are in accordance with the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq.*, the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668. Wetlands are afforded protection under Executive Orders 11990 (wetland protection) and 11988 (floodplain management), as well as section 404 of the Clean Water Act. Other fish and wildlife resources are considered under the Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 *et seq.*, and the Fish and Wildlife Act of 1956, as amended, 16 U.S.C. 742a-742j.

General Comments

The permit application for the ISR project should specify that the wildlife monitoring and mitigation plan will be developed prior to impacts occurring and not after impacts have occurred. Land application of the permeate should be further assessed to determine the risks of selenium bioaccumulation in the terrestrial food chain and impacts on migratory birds.

Specific Comments:

Mine Plan, Vol 5, Page 9-14, Section 9.4.7.1 Federally Listed Species: According to the wildlife technical report (Report), there are no sage-grouse leks within the ISR project area. Additionally, the report states that the mountain plover (*Charadrius montanus*) was not observed during wildlife surveys conducted during November and December 2009 and January through September 2010. Surveys for Ute ladies' tresses (*Spiranthes diluvialis*) were conducted on August 11, 12, and 13, 2010 and no orchids were found.

Mine Plan, Vol 5, Page 9-15, Section 9.4.8 Wildlife Mitigation: Mitigation listed in this section includes:

- a Monitoring and Mitigation Plan,
- relocation of active and inactive raptor nests,
- establishing buffer zones to protect raptor nests,
- reestablishing ground cover to attract and sustain a suitable raptor prey base, and
- required use of raptor-safe construction for overhead power lines.

This section states that "if direct impacts to raptors or migratory bird species of management concern result from ISR development and operations" a monitoring and mitigation plan must be prepared. The monitoring and mitigation plan (Plan) should be in place before impacts occur. The Plan should include steps that will be taken if ISR development and operations are likely to impact raptors or migratory bird species of management concern. The Plan should also specify that active raptor nests should be avoided. A permit from the Service's Migratory Bird Permit Office in Denver will be required to relocate an active nest. The Service's Migratory Bird Office in Denver can be contacted at 303-236-8171. No nest manipulation is allowed without a permit. If a permit cannot be issued, the project may need to be modified to ensure take of a migratory bird or eagle, their young, eggs or nest will not occur. The Plan should address how raptor nest sites will be managed to ensure that violations of the MBTA and BGEPA do not occur. Additionally, threats to migratory birds from project operations should be listed along with proposed mitigation to address those threats. The Plan should also specify how ground cover will be reestablished (vegetative species, targeted cover endpoint, desired prey base) to support native avian communities.

The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird..." The BGEPA prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing.

Mine Plan, Vol 5, Page 2-8 through 2-11, Section 2.8 Lined Retention Ponds: Lined retention ponds will be constructed to store permeate and brine resulting from processing ISR fluids. This section states that potential impacts to avian wildlife will be reduced by the use of deterrents

such as netting and audio/visual deterrents, or "stretch wire." We are unclear as to what a "stretch wire" entails. Wires stretched across the retention ponds can present a hazard to birds attempting to land in the pond as the birds can become entangled in the line or they could suffer injury if they strike the wire (Terry 1987). This is possible if the visibility is poor and birds cannot see the "stretch wire."

Mine Plan, Vol 5, Page 7-13 through 7-15, Section 7.2.2.1.3 Land Application: Land application of excess permeate through center pivot irrigation or subsurface drip irrigation is proposed. According to Table MP.7-1, Anticipated Permeate Water Quality, maximum selenium concentrations in permeate are expected at 0.1 mg/L (parts per million) or 100 ug/L (parts per billion). We have concerns with the land application of permeate with elevated selenium concentrations. In 1998, the Service conducted a study of grassland irrigated with wastewater from an *in situ* uranium mine and found that selenium was mobilized into the food chain and bioaccumulated by grasshoppers and songbirds (Ramirez and Rogers 2002). Disposal of the *in situ* wastewater through irrigation is not recommended by the Service due to the potential for selenium bioaccumulation in the food chain and adverse effects to migratory birds. Additionally, land application may result in the contamination of groundwater and eventually seep out and reach surface waters. Additionally, the selenium-contaminated groundwater could seep into low areas or basins in upland sites and create wetlands which would attract migratory birds and other wildlife. The Sodium Absorption Ratio (SAR) of the permeate should be considered as well as potential impacts on the soils irrigated with the permeate. The impacts of permeate disposal using irrigation should be assessed to determine the risk of surface and ground water contamination.

Land application of the permeate through irrigation or other disposal methods should not be allowed if this disposal option presents a risk for selenium bioaccumulation in the food chain and adverse effects to migratory birds, and a risk for soil, surface water and ground water contamination.

Land application of the permeate could impact the black-tailed prairie dog (*Cynomys ludovicianus*). Land application of the permeate would saturate the soil and render the area uninhabitable to prairie dogs inhabiting the area. We encourage the conservation of prairie dog colonies for their value to the prairie ecosystem and the many species that rely on them. Prairie dogs serve as the primary prey species for the black-footed ferret and several raptors, including the golden eagle and ferruginous hawk. Prairie dog colonies and burrows also provide shelter or nest sites for species like the mountain plover and burrowing owl.

Mine Plan, Vol 5, Page 7-15, Section 7.2.2.1.3 Land Application: This page lists information that Strata will provide to the WDEQ and the Nuclear Regulatory Commission for approval of land application of the permeate and includes: an irrigation plan, site description, water balance, geologic description hydrogeologic description, water quality evaluation, baseline soil conditions, fate of crops produced, water treatment and soil amendment plans, a monitoring program, and a reclamation plan. If center pivot irrigation is implemented, the monitoring program should also include monitoring selenium concentrations in the terrestrial food chain (soil, vegetation, insects) and migratory birds using the center pivot irrigation area. The monitoring plan should be coordinated with our office

Mine Plan, Vol 5, Page 7-22, Section 7.2.3.1 Wellheads and Pipelines: The first paragraph states that automatic controls will stop operating equipment (primary pumps); however, it is not clear if this will stop flows at the wellhead in the event of a leak. We are concerned with spills of mining solutions reaching the Oshoto Reservoir, and the Little Missouri River.

We would appreciate an opportunity to review revisions to the permit application based on our comments and recommendations. For our internal tracking purposes, we would also appreciate notification of any decision made on this project (such as issuance of the permit). Notification can be sent in writing to the letterhead address or by electronic mail to FW6_Federal_Activities_Cheyenne@fws.gov.

We appreciate your efforts to ensure the conservation of Wyoming's fish and wildlife resources. If you have questions regarding this letter or your responsibilities under the Act and/or other authorities or resources described above, please contact Pedro 'Pete' Ramirez of my office at the letterhead address or phone (307) 772-2374, extension 236.

Sincerely,

R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

cc: FWS, Project Planning Coordinator, Region 6, Denver (D. Carlson)
WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

References Cited:

Ramirez, P. Jr. and B.P. Rogers. 2002. Selenium in a Wyoming grassland community receiving wastewater from an *in situ* uranium mine. Arch. Environ. Contam. Toxicol. 42:431-436.

Terry, L.E. 1987, A wire grid system to deter waterfowl from using ponds on airports. Bird Damage Research Report 394. Denver Wildlife Research Center, U.S. Dept. of Agriculture, Denver, CO. 19 pp.

Enclosure 2

Pete
(new event)

WWC ENGINEERING
1849 Terra Avenue
Sheridan, Wyoming 82801
(307) 672-0761 • fax (307) 674-4265
wwcengineering.com

LETTER OF TRANSMITTAL

RECEIVED
2011 JUL -5 PM 12: 17
WGFD & WILDLIFE SVC
CHEYENNE, WY

DATE July 1, 2011	JOB NO 2009142
ATTENTION **Mr. Pete Rameriz**	
RE **Responses to comments**	

TO **R. Mark Sattelberg, USF&WS**
Field Supervisor
Wyoming Field Office

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6/30/11		Responses to USF&WS and WG&F comments to Ross ISR Project
			Permit (TFN 5 5/217)
			* ES-61411 / WY11TA0210

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☒ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 20____ ☐ PRINTS RETURNED AFTER LOAN TO US

Remarks: **Please find the enclosed responses to the Ross ISR Project, Permit to Mine Application. If you have any questions please let me know.**

Ben Schiffer

Copy to: *Miles Bennett, WDEQ/LQD/D3* (VIA EMAIL)

Wyoming Game and Fish Department Comments

Amphibians and Reptiles

We recommend that surveys for the northern leopard frog be completed. The protocol outlines below is very broad and we encourage you to contact Zack Walker, Herpetologist, regarding specific protocols.

1. Perform aural surveys for amphibians during periods of spring breeding. Surveys should be conducted at least three times during the northern leopard frog breeding season. Survey locations should be spaced at least .5 miles apart, and incorporate some form of calling index. All amphibians heard during surveys should be documented.
2. Perform visual encounter egg mass surveys on a subsection of breeding habitat. This should focus on areas where egg deposition is likely to occur. While performing egg mass counts, all like stages of amphibians should be documented. Egg mass surveys should immediately follow aural surveys. If egg mass surveys cannot be conducted due to time constraints, later tadpole surveys could be substituted.

Response: Surveys for reptiles and amphibians (including northern leopard frogs) were completed, as discussed in Mine Plan Appendix D9. Methods for the leopard frog surveys, which were approved by Wyoming Game and Fish Department, are included in Mine Plan Addendum D9-1-B and results are provided in Mine Plan Addendum D9-1. No changes to the document were made.

USFWS Comments

General Comments

The permit application for the ISR project should specify that the wildlife monitoring and mitigation plan will be developed prior to impacts occurring and not after impacts have occurred. Land application of the permeate should be further assessed to determine the risks of selenium bioaccumulation in the terrestrial food chain and impacts on migratory birds.

Response: Responses to these comments are included in responses to specific comments, below.

Specific Comments:

Mine Plan, Vol 5, Page 9-14, Section 9.4.7.1 Federally Listed Species: According to the wildlife technical report (Report), there are no sage-grouse leks within the ISR project area. Additionally, the report states that the mountain plover (*Charadrius montanus*) was not observed during wildlife surveys conducted during November and December 2009 and January through September 2010. Surveys for Ute ladies' tresses (Spiranthes diluvialis) were conducted on August 11, 12, and 13, 2010 and no orchids were found.

Response: No response required.

Mine Plan, Vol 5, Page 9-15, Section 9.4.8 Wildlife Mitigation: Mitigation listed in this section includes:

- a Monitoring and Mitigation Plan,
- relocation of active and inactive raptor nests,
- establishing buffer zones to protect raptor nests,
- reestablishing ground cover to attract and sustain a suitable raptor prey base, and
- required use of raptor-safe construction for overhead power lines.

This section states that "if direct impacts to raptors or migratory bird species of management concern result from ISR development and operations" a monitoring and mitigation plan must be prepared. The monitoring and mitigation plan (Plan) should be in place before impacts occur. The Plan should include steps that will be taken if ISR development and operations are likely to impact raptors or migratory bird species of management concern. The Plan should also specify that active raptor nests should be avoided. A permit from the Service's Migratory Bird Permit Office in Denver will be required to relocate an active nest. The Service's Migratory Bird Office in Denver can be contacted at 303-236-8171. No nest manipulation is allowed without a permit. If a permit cannot be issued, the project may need to be modified to ensure take of a migratory bird or eagle, their young, eggs or nest will not occur. The Plan should address how raptor nest sites will be managed to ensure that violations of the MBTA and BGEPA do not occur. Additionally, threats to migratory birds from project operations should be listed along with proposed mitigation to address those threats. The Plan should also specify how ground cover will be reestablished (vegetative species, targeted cover endpoint, desired prey base) to support native avian communities.

The MBTA, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Section 703 of the MBTA states, "Unless and except as permitted by regulations … it shall be unlawful at any time, by any means or in any manner, to … take, capture, kill, attempt to take, capture, or kill, or possess … any migratory bird, any part, nest, or eggs of any such bird…" The BGEPA prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which included collection, molestation, disturbance, or killing.

Response: Mine Plan Section 9.4.8 (Wildlife Mitigation) will be revised to include a commitment to conduct topsoil stripping to reduce impacts to nesting migratory birds and a commitment to formulate a USFWS approved wildlife monitoring and mitigation plan prior to impacts. The list of information included in the plan will be revised to include steps taken if ISR development impacts raptors or migratory birds of management concern, as discussed above.

Mine Plan Section 9.4.8 (Wildlife Mitigation) will be revised to include a commitment to conduct activities in accordance with the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

Mine Plan, Vol 5, Page 2-8 through 2-11, Section 2.8 Lined Retention Ponds: Lined retention ponds will be constructed to store permeate and brine resulting from processing ISR fluids. This section states that potential impacts to avian wildlife will be reduced by the use of deterrents such as netting and audio/visual deterrents, or "stretch wire." We are unclear as to what a "stretch wire" entails. Wires stretched across the retention ponds can present a hazard to birds attempting to land in the pond as the birds can become entangled in the line or they could suffer injury if they strike the wire (Terry 1987). This is possible if the visibility is poor and birds cannot see the "stretch wire."

Response: The phrase "and stretch wire" will be removed from the text in Section 2.8. This aversion technique is not appropriate for this site and will not be use.

Mine Plan, Vol 5, Page 7-13 through 7-15, Section 7.2.2.1.3 Land Application: Land application of excess permeate through center pivot irrigation or subsurface drip irrigation is proposed. According to Table MP.7-1, Anticipated Permeate Water Quality, maximum selenium concentrations in permeate are expected at 0.1 mg/L (parts per million) or 100 ug/L (parts per billion). We have concerns with the land application of permeate with elevated selenium concentrations. In 1998, the Service conducted a study of grassland irrigated with wastewater from an in situ uranium mine and found that selenium was mobilized into the food chain and bioaccumulated by grasshoppers and songbirds (Ramirez and Rogers 2002). Disposal of the in situ wastewater through irrigation is not recommended by the Service due to the potential for selenium bioaccumulation in the food chain and adverse effects to migratory birds. Additionally, land application may result in the contamination of groundwater and eventually seep out and reach surface waters. Additionally, the selenium-contaminated groundwater could seep into low areas or basins in upland sites and create wetlands which would attract migratory birds and other wildlife. The Sodium Absorption Ratio (SAR) of the permeate should be considered as well as potential impacts on the soils irrigated with the permeate. The impacts of permeate disposal using irrigation should be assessed to determine the risk of surface and ground water contamination.

Land application of the permeate through irrigation or other disposal methods should not be allowed if this disposal option presents a risk for selenium bioaccumulation in the food chain and adverse effects to migratory birds, and a risk for soil, surface water and ground water contamination.

Land application of the permeate could impact the black-tailed prairie dog (*Cynomys ludovicianus*). Land application of the permeate would saturate the soil and render the area uninhabitable to prairie dogs inhabiting the area. We encourage the conservation of prairie dog colonies for their value to the prairie ecosystem and the many species that rely on them. Prairie

dogs serve as the primary prey species for the black-footed ferret and several raptors, including the golden eagle and ferruginous hawk. Prairie dog colonies and burrows also provide shelter or nest sites for species like the mountain plover and burrowing owl.

Response: Liquid wastes from the ISR process will be processed using two phases of reverse osmosis (RO), which produces a permeate with high water quality. According to Mine Plan Table MP.7-1 (Anticipated Permeate Water Quality), the typical selenium value for permeate water after reverse osmosis treatment is anticipated to be 0 µg/L. While not the norm, selenium values in the permeate of up to 100 µg/L could be experience. As discussed in Skorupa and Ohlendorf (1991), which was referenced in the Ramirez and Rogers study, to protect waterfowl, shorebirds, and other wildlife from adverse effects, waterborne selenium concentrations should be <2 µg/L. As such, Mine Plan Section 7.2.2.1.3 (Land Application) will be revised to include a discussion of selenium, including a commitment to evaluate the potential for selenium bioaccumulation as part a site-specific land application plan. This plan will be submitted to WDEQ/LQD, USFWS, and NRC for regulatory approval prior to applying any permeate to soils in the permit area in a land application system.

Regarding contamination of surface waters, as discussed in Mine Plan Section 7.2.2.1.3 (Land Application), excess permeate utilized in land application will be applied at optimum irrigation rates that would prevent runoff into stream channels. Mitigation measures such as agronomic water application rates, surface runoff controls, and contingencies for reducing or stopping the irrigation system in the event of surface runoff would be addressed in a site-specific land application plan submitted to WDEQ/LQD and NRC for regulatory approval prior to constructing a land application or subsurface drip system. No changes to the document were made as a result of this comment.

As stated in Mine Plan Section 9.2.3 (Soil Salinity Mitigation Measures for Land Application), soil salinity (including SAR) mitigation measures for land application of permeate will be addressed in a site-specific land application plan. This plan will be submitted to WDEQ/LQD and NRC for regulatory approval prior to applying any permeate to soils in the permit area in a land application system. The land application plan will include an analysis of baseline soil salinity and proposed soil and/or water amendments to maintain the soil infiltration rate and prevent salt buildup from insufficient leaching. A land application system would likely include the application of soil or water amendments to reduce infiltration risks to clay soils. No changes to the document were made as a result of this comment.

According to Mine Plan Table MP.7-1 (Anticipated Permeate Water Quality), the typical selenium value for permeate water after reverse osmosis treatment is anticipated to be 0 mg/L. Irrigated crops would be selected for compatibility with the irrigation water and would likely include alfalfa, wheat, or native grass hay and areas selected for irrigation would likely be areas currently farmed and not occupied by prairie dog colonies. As stated in Addendum D9-1, no active or historic prairie dog towns exist on or within one mile of the permit area. Therefore, the

impact of selenium on prairie dog colonies is not an issue at the proposed Ross ISR Project. No changes to the document were made as a result of this comment.

References included in this response:

Skorupa, J.P. and H.M. Ohlendorf. 1991. Contaminants in drainage water and avian risk thresholds. Pages 345-368. In A. Dinar and D. Zilberman, eds., The Economics and Management of Water and Drainage in Agriculture. Kluwer Academic Publishers. Norwell, Massachusetts.

Mine Plan, Vol 5, Page 7-15, Section 7.2.2.1.3 Land Application: The page lists information that Strata will provide to the WDEQ and the Nuclear Regulatory Commission for approval of land application of the permeate and includes: an irrigation plan, site description, water balance, geologic description, hydrogeologic description, water quality evaluation, baseline soil conditions, fate of crops produced, water treatment and soil amendment plans, a monitoring program, and a reclamation plan. If center pivot irrigation is implemented, the monitoring program should also include monitoring selenium concentrations in the terrestrial food chain (soil, vegetation, insects) and migratory birds using the center pivot irrigation area. The monitoring plan should be coordinated with our office.

Response: John

See above response.

Mine Plan, Vol 5, Page 7-22, Section 7.2.3.1 Wellheads and Pipelines: The first paragraph states that automatic controls will stop operating equipment (primary pumps); however, it is not clear if this will stop flows at the wellhead in the event of a leak. We are concerned with spills of mining solutions reaching the Oshoto Reservoir, and the Little Missouri River.

Response: John

Mine Plan Section 7.2.3.1 includes a thorough discussion of procedures that include periodic inspections to prevent spills and leaks and methods to detect, confine, and mitigate spills and leaks at a wellhead or pipeline, in the unlikely event they occur. As stated in Mine Plan Section 7.2.3, the potential for liquid waste pollution will be minimized by adhering to NRC, WDEQ/LQD, and WDEQ/WQD design criteria for ISR facilities, designing adequate spill containment and leak detection systems, training employees on how to monitor process parameters and recognize potential upset conditions before leaks or spills occur, frequently inspecting waste management systems and effluent control systems, and training employees in spill containment and clean up procedures. No changes to the document were made as a result of this comment.

Migratory Bird Species of Management Concern in Wyoming
(Migratory Birds of High Federal Interest)
Based on the *Wyoming Bird Conservation Plan* (Cerovski et al. 2000)

May 2, 2002

U.S. Fish and Wildlife Service, Wyoming Field Office,
5353 Yellowstone Road - Suite 308A, Cheyenne, Wyoming 82009

The Wyoming Field Office of the U.S. Fish and Wildlife Service (Service) has compiled the following list from the ongoing work among State and Federal agencies, non-governmental organizations, and the interested public that produced the Wyoming Bird Conservation Plan. This list will now serve as our list of Migratory Bird Species of Management Concern in Wyoming, in place of the previous list based on the Migratory Nongame Birds of Management Concern in the United States: the 1995 List. The Wyoming Bird Conservation Plan identified priority species based on a number of criteria (see below) using the best information available for these generally un-studied species. In many cases, this list reflects identified threats to habitat because no information is available on the species population trends. In some cases it reflects identified population declines though no causal factors have been identified.

The following tables and explanatory text are taken directly from the Wyoming Bird Conservation Plan (Cerovski et al. 2000). For more information on this listing process, this report is available from our Wyoming Field Office, 5353 Yellowstone Road, Suite 308A, Cheyenne, Wyoming 82009; or Wyoming Game and Fish Department (WGFD), Nongame Branch, 260 Buena Vista, Lander, Wyoming 82520.

Table 1. **Level I Species (Conservation Action)**. Species clearly needs conservation action. Includes species of which Wyoming has a high percentage of and responsibility for the breeding population, and the need for additional knowledge through monitoring and research into basic natural history, distribution, etc.

Species	PIF Score[a]	AI[b]	PT[c]	Primary Habitat Type(s)
Mountain Plover[d]	28	4	3	Shortgrass Prairie, Shrub-steppe
Trumpeter Swan	26	3	3	Wetlands
Sage Grouse	26	5	3	Shrub-steppe
McCown's Longspur	26	3	2	Shortgrass Prairie, Shrub-steppe
Baird's Sparrow	26	2	3	Shortgrass Prairie
Ferruginous Hawk	23	4	3	Shrub-steppe, Shortgrass Prairie
Brewer's Sparrow	23	5	5	Shrub-steppe, Mountain-foothills Shrub
Wilson's Phalarope	22	3	5	Wetlands
Franklin's Gull	22	3	3	Wetlands
Sage Sparrow	22	5	2	Shrub-steppe, Mountain-foothills Shrub

Table 1. **Level I Species (Conservation Action)**, continued.

Species	PIF Score[a]	AI[b]	PT[c]	Primary Habitat Type(s)
Swainson's Hawk	21	3	3	Plains/Basin Riparian
Long-billed Curlew	21	2	3	Shortgrass Prairie
Short-eared Owl	20	3	3	Shortgrass Prairie
Northern Goshawk	19	4	3	High Elevation Conifer, Mid Elevation Conifer, Aspen
Peregrine Falcon	19	3	3	Specialized (cliffs)
Burrowing Owl	19	3	4	Shortgrass Prairie
Forster's Tern	19	2	3	Wetlands
Bald Eagle	18	3	3	Montane Riparian, Plains/Basin Riparian
Upland Sandpiper	18	2	2	Shortgrass Prairie
Black Tern	18	3	3	Wetlands
Whooping Crane	n/a	n/a	n/a	Wetlands
Piping Plover	n/a	n/a	n/a	Wetlands, Aquatic

[a] From the PIF Priority Database (Carter et al. 1997).
[b] AI ' Area Importance (from the PIF Priority Database, Carter et al. 1997).
[c] PT ' Population Trend (from the PIF Priority Database, Carter et al. 1997).
[d] Species in all capital letters previously appeared on the Service's 1995 list.

Table 2. **Level II Species (Monitoring)**. The action and focus for the species is monitoring. Includes species of which Wyoming has a high percentage of and responsibility for the breeding population, species whose population trend is unknown, species that are peripheral for breeding in the habitat or state, or species for which additional knowledge is needed.

Species	PIF Score[a]	AI[b]	PT[c]	Primary Habitat Type(s)
Calliope Hummingbird	23	5	3	Mid Elevation Conifer, Montane Riparian
Lewis' Woodpecker	23	3	3	Low Elevation Conifer, Plains/Basin Riparian
Cassin's Kingbird	22	3	3	Juniper Woodland, Plains/Basin Riparian
Lark Bunting	22	4	4	Shortgrass Prairie, Shrub-steppe
American White Pelican	21	3	3	Aquatic
Williamson's Sapsucker	21	3	3	Mid Elevation Conifer
Black-backed Woodpecker	21	3	3	Mid Elevation Conifer, High Elevation Conifer
Gray Flycatcher	21	3	3	Juniper Woodland, Mountain-foothills Shrub
Juniper Titmouse [d]	21	3	3	Juniper Woodland
Dickcissel	21	3	3	Shortgrass Prairie
Chestnut-collared Longspur	21	2	3	Shortgrass Prairie
Harlequin Duck	20	3	3	Montane Riparian
Snowy Plover	20	3	3	Wetlands
Black-chinned Hummingbird	20	2	3	Plains/Basin Riparian, Shrub-steppe
Rufous Hummingbird	20	2	3	Mid Elevation Conifer
Red-naped Sapsucker	20	3	2	Aspen
Three-toed Woodpecker	20	4	3	Mid Elevation Conifer, High Elevation Conifer
Willow Flycatcher	20	3	4	Montane Riparian, Plains/Basin Riparian
Hammond's Flycatcher	20	2	3	High Elevation Conifer with Aspen, Montane Riparian
Cordilleran Flycatcher	20	3	3	Montane Riparian, Mid Elevation Conifer
Pygmy Nuthatch	20	3	3	Low Elevation Conifer
Marsh Wren	20	3	4	Wetlands
American Dipper	20	3	3	Montane Riparian
Plumbeous Vireo	20	3	3	Mid Elevation Conifer, Low Elevation Conifer
Townsend's Warbler	20	3	3	High Elevation Conifer, Mid Elevation Conifer
Dusky Flycatcher	19	3	2	Low Elevation Conifer, Aspen, Mountain-foothills Shrub

Table 2. **Level II Species (Monitoring)**, continued.

Species	PIF Score[a]	AI[b]	PT[c]	Primary Habitat Type(s)
Western Bluebird	19	3	3	Juniper Woodland, Low Elevation Conifer
Sage Thrasher	19	5	2	Shrub-steppe
Grasshopper Sparrow	19	3	5	Shortgrass Prairie, Shrub-steppe
Bobolink	19	2	3	Shortgrass Prairie, Shrub-steppe
Common Loon	18	3	3	Wetlands
Black-billed Cuckoo	18	2	3	Plains/Basin Riparian
Red-headed Woodpecker	18	2	3	Plains/Basin Riparian, Low Elevation Conifer
Yellow-billed Cuckoo	18	3	3	Plains/Basin Riparian
Eastern Screech-Owl	18	3	3	Plains/Basin Riparian
Western Screech-Owl	18	3	3	Plains/Basin Riparian
Great Gray Owl	18	3	3	Mid Elevation Conifer, High Elevation Conifer
Boreal Owl	18	3	3	High Elevation Conifer
Broad-tailed Hummingbird	18	2	2	Montane Riparian, Plains/Basin Riparian, Mid Elevation Conifer
Western Scrub-Jay [d]	18	3	3	Juniper Woodland
Loggerhead Shrike	18	3	3	Shrub-steppe
Vesper Sparrow	18	5	4	Shrub-steppe
Lark Sparrow	18	3	4	Shrub-steppe
Golden-crowned Kinglet	17	3	3	High Elevation Conifer
MacGillivray's Warbler	17	3	1	Montane Riparian, Plains/Basin Riparian
Ash-throated Flycatcher [d]	16	2	3	Juniper Woodland
Bushtit [d]	16	3	3	Juniper Woodland
Brown Creeper	16	3	3	Mid Elevation Conifer, High Elevation Conifer
Merlin	15	3	3	Low Elevation Conifer
Sprague's Pipit	n/a	n/a	n/a	Grassland, Plains/Basin Riparian, Shortgrass Prairie
Barn Owl	n/a	n/a	n/a	Shortgrass Prairie, Urban
White-faced Ibis	n/a	n/a	n/a	Wetlands, Aquatic
American Bittern	n/a	n/a	n/a	Wetlands, Aquatic
Common Tern	n/a	n/a	n/a	Wetlands, Aquatic
Purple Martin	n/a	n/a	n/a	Wetlands, Aquatic/Basin Riparian, Montane Riparian

[a] From the PIF Priority Database (Carter et al. 1997).
[b] AI ' Area Importance (from the PIF Priority Database).
[c] PT ' Population Trend (from the PIF Priority Database).
[d] Nicholoff, S. 2002. Wyoming Bird Conservation Plan, Version 1.1. Wyoming Partners In Flight and Wyoming Game and Fish Department, Lander. In press.

Wyoming Partners In Flight Process for Prioritizing Species

Wyoming Partners In Flight participants developed the current list of priority species based on a combination of the seven criteria in the national Partners In Flight Priority Database (Carter et al. 1997). This database serves as a defensible method of prioritizing both species and habitats in need of conservation. The criteria include Wyoming-dependent and Wyoming-independent factors. The Wyoming-independent criteria are constant over a species' range and do not vary for each species. The Wyoming-dependent criteria were the key components used to prioritize species and their conservation action needs. In the absence of any more rigorous statewide surveys, Breeding Bird Survey data dating back to 1968 were used to determine population trends in Wyoming.

Criteria

Within each criterion below, a species was given a rank score ranging from 1 to 5, with 1 being the least critical rank and 5 the most critical. Each ranked species could potentially receive a low score of 7 and a high score of 35. However, setting conservation goals based only on total score could be misleading; therefore, each total score was reviewed in conjunction with its component parts. In Wyoming, species were initially ranked using total score, area importance, and population trend.

1. Relative Abundance (RA) - The abundance of a bird, in appropriate habitat within its entire range, relative to other bird species. This criterion gives an indication of a species' vulnerability to withstand cataclysmic environmental changes. A low score would indicate a higher relative abundance, therefore reducing the risk of complete extirpation from losses in one or more regions. Higher scores indicate a lower relative abundance, thus more vulnerability to drastic losses or population changes.

2. Breeding Distribution (BD) - A relative measure of breeding range size as a proportion of North America (defined as the main body of the continent, excluding Greenland, through Panama and the islands of the Caribbean, comprising an area of 22,059,680 km^2 [National Geographic Society 1993]), and as such it provides an index of a species' vulnerability to random environmental events. High scores indicate localized breeding, thus a higher likelihood of serious decline from drastic environmental changes. Low scores indicate wide breeding distribution, therefore less likelihood of extirpation. Used for breeding birds only.

3. Non-breeding Distribution (ND) - A relative measure of non-breeding, or winter, range size as a proportion of North America, and as such it provides an index of a species' vulnerability to random environmental events. High scores indicate localized distribution on the non-breeding grounds. Low scores indicate wide distribution on the non-breeding grounds, therefore less likelihood of extirpation. Used for wintering birds only.

4. Threats on Breeding Grounds (TB) - The ability of a habitat in an area to support populations of a species in that area. Two factors are considered here: 1) each species' demographic and ecological vulnerability (the potential inability of a species to recover from population loss by normal reproductive effort due to low reproductive rate, high juvenile mortality, or both; and the level of ecological specialization of a species and, hence, its potential

inability to withstand environmental change), and 2) habitat loss or disruption (a combination of the amount of habitat or conditions necessary for survival and reproductive success that has been lost since 1945, and the amount that is anticipated to be lost in the future). High scores indicate either a large loss of habitat or a species that is an extreme ecological specialist. Low scores indicate a stable or increasing habitat or a species that is an ecological generalist. Used for both breeding and wintering birds.

5. Threats on Non-breeding Grounds (TN) - Range-wide threats on non-breeding, or winter, grounds. This is scored using the same criteria as threats on breeding grounds but reflects non-breeding issues, including migratory habitat. Used for wintering birds only.

6. Population Trend (PT) - The overall population trend of each species assigned independently for each state, province, or physiographic area. This criterion must meet two thresholds, reliability and magnitude, to warrant either a very high or very low score. When possible, a score was assigned using BBS data, which incorporated a population trend uncertainty score based on the statistical validity of the BBS data (i.e. a species must be detected on a minimum of 14 BBS routes per state for population trends to have statistical significance). This criterion was chosen to alert managers to species with modest, but certain, population declines.

7. Area Importance (AI) - The abundance of a species within a state, province, or physiographic area relative to its abundance throughout its range. This criterion helps direct conservation efforts toward areas that are most important to a species' survival. Area Importance is scored locally; therefore, high scores indicate that a large proportion of the species' breeding or winter range occurs in Wyoming, or a species is using a habitat that is only available in Wyoming. Low scores indicate that a small proportion of the species' range occurs in Wyoming, or the preferred habitat is widespread across its range. Used for both breeding and wintering birds.

Priority Species

Priority bird species in Wyoming were identified from the PIF Priority Database (Carter et al. 1997) and by qualitative, informed decisions. Those species with a total score of 18 or above, Area Importance (AI) of 3 or above, and/or Population Trend (PT) of 3 or above from the database, or with a total score less than 18 but of significant local interest were identified as the highest priority species. However, as more information becomes available, the highest priority species for Wyoming may change, as this is a dynamic database that allows for updated information to be periodically inserted and reviewed. The primary habitat type or types required for breeding were identified for each species to determine the highest priority habitat types for the state.

Literature Cited

Carter, M. F., W. C. Hunter, D. N. Pashley, J. S. Bradley, C. S. Aid, J. Price, and G. S. Butcher. 1997. Setting landbird conservation priorities for states, provinces, and physiographic areas of North America. Partners In Flight Priority Database Final Report, Colorado Bird Observatory, Brighton.

Cerovski, A., M. Gorges, T. Byer, K. Duffy, and D. Felley. 2000. Wyoming Bird Conservation Plan, Version 1.0. Wyoming Partners In Flight, Lander, WY.

Nicholoff, S. 2002. Wyoming Bird Conservation Plan, Version 1.1. Wyoming Partners In Flight and Wyoming Game and Fish Department, Lander. In press.

U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office

Protections for Raptors

Raptors, or birds of prey, and the majority of other birds in the United States are protected by the Migratory Bird Treaty Act, 16 U.S.C. 703 (MBTA). A complete list of migratory bird species can be found in the Code of Federal Regulations at 50 CFR 10.13. Eagles are also protected by the Bald and Golden Eagle Protection Act, 16 U.S.C. 668 (Eagle Act).

The MBTA protects migratory birds, eggs and nests from possession, sale, purchase, barter, transport, import, export, and take. The regulatory definition of take, defined in 50 CFR 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect a migratory bird. Activities that result in the unpermitted take (e.g., result in death, possession, collection, or wounding) of migratory birds or their eggs are illegal and fully prosecutable under the MBTA. Removal or destruction of active nests (i.e., nests that contain eggs or young), or causing abandonment of an active nest, could constitute a violation of the MBTA, the Eagle Act, or both statutes. Removal of any active migratory bird nest or any structure that contains an active nest (e.g., tree) where such removal results in take is prohibited. Therefore, if nesting migratory birds are present on or near a project area, project timing is an important consideration during project planning. As discussed below, the Eagle Act provides additional protections for bald and golden eagles and their nests. For additional information concerning nests and protections under the MBTA, please see the U.S. Fish and Wildlife Service's (Service) Migratory Bird Permit Memorandum, MBMP-2.

The Service's Wyoming Ecological Services Field Office works to raise public awareness about the possible occurrence of birds in proposed project areas and the risk of violating the MBTA, while also providing guidance to minimize the likelihood that take will occur. We encourage you to coordinate with our office before conducting actions that could lead to the take of a migratory bird, their young, eggs, or active nests (e.g., construction or other activity in the vicinity of a nest that could result in a take). If nest manipulation is proposed for a project in Wyoming, the project proponent should also contact the Service's Migratory Bird Office in Denver at 303-236-8171 to see if a permit can be issued. Permits generally are not issued for an active nest of any migratory bird species, unless removal of the nest is necessary for human health and safety. If a permit cannot be issued, the project may need to be modified to ensure take of migratory birds, their young or eggs will not occur.

For infrastructure (or facilities) that have potential to cause direct avian mortality (e.g., wind turbines, guyed towers, airports, wastewater disposal facilities, transmission lines), we recommend locating structures away from high avian-use areas such as those used for nesting, foraging, roosting or migrating, and the travel zones between high-use areas. If the wildlife survey data available for the proposed project area and vicinity do not provide the detail needed to identify normal bird habitat use and movements, we recommend collecting that information prior to determining locations for any infrastructure that may create an increased potential for avian mortalities. We also recommend contacting the Service's Wyoming Ecological Services office for project-specific recommendations.

Additional Protections for Eagles

The Eagle Act protections include provisions not included in the MBTA, such as the protection of unoccupied nests and a prohibition on disturbing eagles. Specifically, the Eagle Act prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagle or their body parts, nests, chicks or eggs, which includes collection, possession, molestation, disturbance, or killing. The term "disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3 and see also 72 FR 31132).

The Eagle Act includes limited exceptions to its prohibitions through a permitting process. The Service has issued regulations concerning the permit procedures for exceptions to the Eagle Act's prohibitions (74 FR 46836), including permits to take golden eagle nests which interfere with resource development or recovery operations (50 CFR 22.25). The regulations identify the conditions under which a permit may be issued (i.e., status of eagles, need for action), application requirements, and other issues (e.g., mitigation, monitoring) necessary in order for a permit to be issued.

For additional recommendations specific to Bald Eagles please see our Bald Eagle information web page (http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/BaldEagle.html).

Recommended Steps for Addressing Raptors in Project Planning

Using the following steps in early project planning, agencies and proponents can more easily minimize impacts to raptors, streamline planning and permitting processes, and incorporate measures into an adaptive management program:

1. Coordinate with appropriate Service offices, Wyoming Game and Fish Department, Tribal governments, and land-management agencies at the earliest stage of project planning.
2. Identify species and distribution of raptors occurring within the project area by searching existing data sources (e.g., Wyoming Game and Fish Department, Federal land-management agencies) and by conducting on-site surveys.
3. Plan and schedule short-term and long-term project disturbances and human-related activities to avoid raptor nesting and roosting areas, particularly during crucial breeding and wintering periods
4. Determine location and distribution of important raptor habitat, nests, roost sites, migration zones and, if feasible, available prey base in the project impact area.
5. Document the type, extent, timing, and duration of raptor activity in important use areas to establish a baseline of raptor activity.
6. Ascertain the type, extent, timing, and duration of development or human activities proposed to occur, and the extent to which this differs from baseline conditions.
7. Consider cumulative effects to raptors from proposed projects when added to past, present, and reasonably foreseeable actions. Ensure that project mitigation adequately addresses cumulative effects to raptors.
8. Minimize loss of raptor habitats and avoid long-term habitat degradation. Mitigate for unavoidable losses of high-valued raptor habitats, including (but not limited to) nesting, roosting, migration, and foraging areas.
9. Monitor and document the status of raptor populations and, if feasible, their prey base post project completion, and evaluate the success of mitigation efforts.
10. Document meaningful data and evaluations in a format that can be readily shared and incorporated into wildlife databases (contact the Service's Wyoming Ecological Services office for details).

Protection of nesting, wintering (including communal roost sites), and foraging activities is considered essential to conserving raptors. In order to promote the conservation of migratory bird populations and their habitats, Federal agencies should implement those strategies directed by Executive Order 13186, "Responsibilities of Federal Agencies To Protect Migratory Birds" (66 FR 3853).

Recommended Seasonal and Spatial Buffers to Protect Nesting Raptors

Because many raptors are particularly sensitive to disturbance (that may result in take) during the breeding season, we recommend implementing spatial and seasonal buffer zones to protect individual nest sites/territories (Table 1). The buffers serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or

replacement nest trees. The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there is little or no forested or topographical separation, distance alone must serve as the buffer. Adequate nesting buffers will help ensure activities do not take breeding birds, their young or eggs. For optimal conservation benefit, we recommend that no temporary or permanent surface occupancy occur within species-specific spatial buffer zones. For some activities with very substantial auditory impacts (e.g., seismic exploration and blasting) or visual impacts (e.g., tall drilling rig), a larger buffer than listed in Table 1 may be necessary, please contact the Service's Wyoming Ecological Services office for project specific recommendations on adequate buffers.

As discussed above, for infrastructure that may create an increased potential for raptor mortalities, the spatial buffers listed in Table 1 may not be sufficient to reduce the incidence of raptor mortalities (for example, if a wind turbine is placed outside a nest disturbance buffer, but inadvertently still within areas of normal daily or migratory bird movements); therefore, please contact the Service's Wyoming Ecological Services office for project specific recommendations on adequate buffers.

Buffer recommendations may be modified on a site-specific or project-specific basis based on field observations and local conditions. The sensitivity of raptors to disturbance may be dependent on local topography, density of vegetation, and intensity of activities. Additionally, individual birds may be habituated to varying levels of disturbance and human-induced impacts. Modification of protective buffer recommendations may be considered where biologically supported and developed in coordination with the Service's Wyoming Ecological Services Field Office.

Because raptor nests are often initially not identified to species (e.g., preliminary aerial surveys in winter), we first recommend a generic raptor nest seasonal buffer guideline of January 15th – August 15th. Similarly, for spatial nesting buffers, until the nesting species has been confirmed, we recommend applying a 1-mile spatial buffer around the nest. Once the raptor species is confirmed, we then make species-specific and site-specific recommendations on seasonal and spatial buffers (Table 1).

Activities should not occur within the spatial/seasonal buffer of any nest (occupied or unoccupied) when raptors are in the process of courtship and nest site selection. Long-term land-use activities and human-use activities should not occur within the species-specific spatial buffer of occupied nests. Short-term land use and human-use activities proposed to occur within the spatial buffer of an occupied nest should only proceed during the seasonal buffer after coordination with the Service, State, and Tribal wildlife resources management agencies, and/or land-management agency biologists. If, after coordination, it is determined that due to human or environmental safety or otherwise unavoidable factors, activities require temporary incursions within the spatial and seasonal buffers, those activities should be planned to minimize impacts and monitored to determine whether impacts to birds occurred. Mitigation for habitat loss or degradation should be identified and planned in coordination with applicable agencies.

Please contact the Service's Wyoming Ecological Services Field Office if you have any questions regarding the status of the bald eagle, permit requirements, or if you require technical assistance regarding the MBTA, Eagle Act, or the above recommendations. The recommended spatial and seasonal buffers are voluntary (unless made a condition of permit or license) and are not regulatory, and they do not supersede provisions of the MBTA, Eagle Act, Migratory Bird Permit Memorandum (MBMP-2), and Endangered Species Act. Assessing legal compliance with the MBTA or the Eagle Act and the implementing regulations is ultimately the authority and responsibility of the Service's law enforcement personnel. Our recommendations also do not supersede Federal, State, local, or Tribal regulations or permit conditions that may be more restrictive.

Table 1. Service's Wyoming Ecological Services Field Office's Recommended Spatial and Seasonal Buffers for Breeding Raptors

Raptors of Conservation Concern (see below for more information)

Common Name	Spatial buffer (miles)	Seasonal buffer
Golden Eagle	0.50	January 15 - July 31
Ferruginous Hawk	1.00	March 15 - July 31
Swainson's Hawk	0.25	April 1 - August 31
Bald Eagle	see Bald Eagle information web page[1]	
Prairie Falcon	0.50	March 1 - August 15
Peregrine Falcon	0.50	March 1 - August 15
Short-eared Owl	0.25	March15- August 1
Burrowing Owl	0.25	April 1 – September 15
Northern Goshawk	0.50	April 1 - August 15

Additional Wyoming Raptors

Common Name	Spatial buffer (miles)	Seasonal buffer
Osprey	0.25	April 1 - August 31
Cooper's Hawk	0.25	March 15 – August 31
Sharp-shinned Hawk	0.25	March 15 – August 31
Red-tailed Hawk	0.25	February 1 – August 15
Rough-legged Hawk (winter resident only)	----	----
Northern Harrier	0.25	April 1 - August 15
Merlin	0.50	April 1 - August 15
American Kestrel	0.125	April 1 – August 15
Common Barn Owl	0.125	February 1 – September 15
Northern Saw-whet Owl	0.25	March 1 - August 31
Boreal Owl	0.25	February 1 – July 31
Long-eared Owl	0.25	February 1 – August 15
Great Horned Owl	0.125	December 1 – September 30
Northern Pygmy-Owl	0.25	April 1 – August 1
Eastern Screech -owl	0.125	March 1 – August 15
Western Screech-owl	0.125	March 1 – August 15
Great Gray Owl	0.25	March 15 – August 31

[1] http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/BaldEagle.html

Raptors of Conservation Concern

The Service's Birds of Conservation Concern (2008) report identifies "species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing" under the Endangered Species Act (16 U.S.C 1531 et seq.). This report is intended to stimulate coordinated and proactive conservation actions among Federal, State, and private partners. The Wyoming Partners in Flight Wyoming Bird Conservation Plan identifies priority bird species and habitats, and establishes objectives for bird populations and habitats in Wyoming. This plan also recommends conservation actions to accomplish the population and habitat objectives.

We encourage project planners to develop and implement protective measures for the Birds of Conservation Concern as well as other high-priority species identified in the Wyoming Bird Conservation Plan. For

additional information on the Birds of Conservation Concern that occur in Wyoming, please see our Birds of Conservation Concern web page.

Additional Planning Resources

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

Edison Electric Institute and the Raptor Research Foundation. 1996. Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996. Washington, D.C.

Edison Electric Institute's Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. 2005. Avian Protection Plan Guidelines.

Edison Electric Institute and the Raptor Research Foundation. 1994. Mitigating Bird Collisions with Power Lines - The State of the Art in 1994. Washington, D.C.

U.S. Fish and Wildlife Service. 2000. Siting, Construction, Operation and Decommissioning of Communications Towers and Tower Site Evaluation Form (Directors Memorandum September 14, 2000), Arlington, Virginia.

U.S. Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. United States Department of Interior, Fish and Wildlife Service, Arlington, Virginia. 23 pp.

Wyoming Game and Fish Department Internet Link to Raptor Information

References

50 CFR 10.12 – Code of Federal Regulations. Title 50--Wildlife and Fisheries, Chapter I--United States Fish and Wildlife Service, Department of the Interior, Part 10--General Provisions.

50 CFR 10.13– Code of Federal Regulations. Title 50--Wildlife and Fisheries, Chapter I--United States Fish and Wildlife Service, Department of the Interior, Part 10--General Provisions.

50 CFR 22.3 – Code of Federal Regulations. Title 50--Wildlife and Fisheries, Chapter I--United States Fish and Wildlife Service, Department of the Interior, Part 22—Eagle Permits.

50 CFR 22.25– Code of Federal Regulations. Title 50--Wildlife and Fisheries, Chapter I--United States Fish and Wildlife Service, Department of the Interior, Part 22—Eagle Permits.

66 FR 3853 - Presidential Documents. Executive Order 13186 of January 10, 2001. Responsibilities of Federal Agencies To Protect Migratory Birds. Federal Register, January 17, 2001.

72 FR 31132 - Protection of Eagles; Definition of ''Disturb''. Final Rule. Federal Register, June 5, 2007.

74 FR 46836 - Eagle Permits; Take Necessary To Protect Interests in Particular Localities. Final Rule. Federal Register, September 11, 2009.

U.S. Fish and Wildlife Service. 2003. Migratory Bird Permit Memorandum, MBMP-2, Nest Destruction (Directors Memorandum April 15, 2003), Washington, D.C.

U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp.