Appendix H
(continued)

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ATTACHMENT 8

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Kara Morgan

Subject: FW: Power Company of Wyoming Eagle Conservation Strategy Conservation Measures Section
Attachments: Power Company of Wyoming ECS conservation measures section.pdf

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From: Jon Kehmeier
Sent: Wednesday, March 07, 2012 08:34 AM
To: Travis_Sanderson@fws.gov; Tyler_Abbott@fws.gov; Trish Sweanor (Patricia_Sweanor@fws.gov)
Cc: Garry Miller (garry.miller@tac-denver.com); Kelly.Cummins@tac-denver.com; Clint King (cking@swca.com)
Subject: Power Company of Wyoming Eagle Conservation Strategy Conservation Measures Section

Please find attached a copy of the conservation measures section of Power Company of Wyoming's Eagle Conservation Strategy. This information is provided to facilitate our discussion on Monday. The measures contained in this section are still very much in draft form and subject to change. Please note that this document is proprietary and confidential and has been marked as such in the document footer. Please let me know if you have any questions. See you all on Monday morning.

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6.0 RISK REDUCTION MEASURES

The following section identifies the risk reduction measures that will be implemented as part of the Project ECS. Additionally, this section describes the pre-construction planning processes that have been completed to reduce the overall impact of the Project. As described in Section 1.0, this programmatic ECS does not identify the site-specific measures that will be implemented. Rather, site-specific selection and implementation of these measures will occur once the final siting process is complete as part of the ECS for each stage of development. While the goal of the risk reduction measures described in this section is to avoid eagle mortality, it is anticipated that some level of impact will occur as a result of Project construction. As part of the final siting process, a site-specific risk assessment will be completed to identify the expected level of impacts to eagles and other species that would occur for each project stage. Upon completion of the risk assessment, adaptive management thresholds would be identified based on the expected number of eagle mortalities or injuries. If those thresholds are exceeded, the adaptive management process would be initiated and additional risk reduction measures would be identified to reduce impacts to eagle populations.

As part of the adaptive management process described in detail later in this document, a tiered approach will be used to reduce risk to eagles and other avian species. The first tier includes avoidance and conservation measures as well as mitigation measures that will be implemented across the entire Project Site. Second and third tier measures will be implemented in site-specific instances when first tier measures are not adequate to avoid expected impacts. Tier 2 and tier 3 measures would be implemented if impact thresholds are exceeded and after review by the adaptive management Technical Advisory Committee.

The measures identified in this section include ACPs that were identified in the Draft Eagle Conservation Guidance (Service 2011b) as well as site-specific measures that have been developed after completing the initial landscape and site characterizations for the Project. The ACPs outlined in this section meet the Stage 4 objectives in the Draft Eagle Conservation Guidance (Service 2011). PCW will work with the Service to determine whether a take permit for eagles is appropriate under the provisions of the Bald and Golden Eagle Protection Act. Should the opportunity to gain a permit become available, the measures identified below would become conditions of that permit.

6.1 PRE-CONSTRUCTION PROJECT MODIFICATIONS

PCW's original proposed project as identified in BLM's 2008 Notice of Intent for the Project EIS has been substantially altered to benefit a number of resources, including wildlife. As a result of public comments and discussions with the RFO, the WGFD and various non-governmental organizations, PCW became aware of resource issues that could be addressed by modifications to the Applicant's proposed action. Consequently, PCW submitted an Applicant Proposed Alternative (APA) in April 2010 which formed the basis for BLM's Alternative 1R in the DEIS.

In developing the APA, PCW considered not only utilization of the Ranch's best wind resources, but also conservation of the best greater sage-grouse habitat to enable the implementation of measures to avoid, minimize and mitigate impacts to greater sage-grouse and provide a net conservation benefit. PCW's APA represents a major revision to the Applicant's proposed action and is based upon the

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best available science including vegetation and habitat mapping as well as consideration of potential impacts to greater sage-grouse. In addition, PCW considered other resource issues such as recreational concerns (e.g., big game hunting within the Red Rim – Grizzly Wildlife Habitat Management Area and recreation on the Continental Divide Trail) and cultural resource concerns (e.g., potential impacts to the Overland Trail). All of these considerations resulted in significant modifications to the proposed wind development area that have reduced or removed impacts in important eagle foraging habitats.

The revisions to the proposed wind development areas within the Application Area include, but are not limited to, removal of turbines from over 97% of the Red Rim – Grizzly Wildlife Habitat Management Area, removal of turbines from the western portion of the Sierra Madre site and removal of all infrastructure from Wyoming's designated core sage-grouse areas. These areas are important for wildlife and provide high-quality foraging habitat for eagles and raptors. Additional pre-construction project modifications will occur to provide additional benefits to raptors and eagles. Many of these additional pre-construction measures are identified as first-tier measures in the following section.

6.2 FIRST-TIER MEASURES

First-tier risk reduction measures will be implemented for all aspects of the Project. The intent of these measures is to avoid impacts using responsible siting, design, operational, and land management practices while providing conservation benefits to eagle populations in areas that will not be impacted by wind development activities.

6.2.1 Siting and Avoidance Considerations

Avoidance of impacts is the primary measure for conserving eagles and other avian species within the Project Site. As a result of the Project's robust avian survey efforts, several areas of high eagle and raptor use have been identified. These areas are generally associated with nesting locations, foraging and scavenging areas, and topographic features that provide suitable perching, soaring, and kiting opportunities. The following siting considerations and avoidance measures will be used in the final Project design to avoid impacts to eagle populations to the extent practicable.

The final Project layout will be designed to reduce collision risk with wind turbines. Each of the following elements will be considered during final Project siting and engineering design:

1. High use areas will be identified though an appropriate discriminatory process as described in section 5. Siting considerations and avoidance measures will be used to avoid and minimize impacts in the high use areas that are identified.
2. In other areas, efforts will be made to site turbines back from ridge edges with highest soaring and kiting potential. These ridge edges include the Bolten Rim, Interior Chokecherry Rim, Miller Hill Rim, and Sage Creek Rim, most of which are generally west- and southwest-facing slopes that collect wind and provide soaring and kiting conditions. Site-specific setbacks will be determined based on observed eagle use and the type of use, terrain features, and flexibilities for siting individual turbines.

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3. Siting considerations will be made in areas between nesting locations and known foraging or concentration areas that have been identified as part of PCW's avian survey program. Efforts will be made to minimize placement of turbines in known travel corridors between nesting or roosting locations and foraging areas.
4. During construction, the spatial and timing restrictions identified in BLM's Rawlins Field Office (RFO) Resource Management Plan (RMP) will be implemented for all raptor nests that are active during the year of construction. These spatial and timing restrictions will be based on the ROD requirements and will be specified in each site-specific ECS.
5. Turbines will not be sited in the following areas that have been identified as important foraging locations and high-use habitats within the Project Site: Central Basin between the Bolten Rim and 3 miles south of the Bolten Rim; the northern flats between Chokecherry and I-80; all areas inside Wyoming sage-grouse core areas designated under EO-2011-5; and all areas within 1 mile of the North Platte River where the highest eagle nest density was located.
6. A corridor will be identified below the rim of Miller Hill in which no turbines will be constructed. This corridor has potential to serve as a north-south movement corridor during foraging activities and migration and as a nesting area for raptors and other avian species. The specific width and location of the corridor will be determined in subsequent site-specific ECS documents and will be determined based on observed use of the area, terrain features, and flexibilities for siting individual turbines.
7. All existing meteorological monitoring towers have been retrofitted with bird diverters on guy wires to minimize the risk of collision for all avian species.

6.2.2 Engineering Design and Construction Considerations

In areas where wind development activities will occur, design features will be used to minimize impacts to eagles and other avian species. Numerous engineering and construction-related measures will be implemented to avoid or minimize the impacts of wind development activities on eagle populations and other avian species. The site-specific implementation of some of these design features will be dependent on the final layout of the Project. Site-specific measures will be identified in the site specific ECS documents for each stage of the Project.

1. General design considerations – For all infrastructure, the following considerations will be used to develop the final Project design. These considerations are meant to minimize new disturbance and co-locate facilities to minimize impacts to eagles and other avian species.
    a. PCW will construct the Project in stages. This approach will provide greater flexibility for avoiding impacts to active eagle territories during breeding and nesting periods. Additionally, it will reduce the amount of area being constructed at any given time to minimize disruptions in important habitats and foraging areas. This conservation measure was analyzed as mitigation measure GEN-1 in BLM's draft Environmental Impact Statement for the Project
    b. The final Project design will optimize the footprint necessary for construction and operations activities. As part of this commitment, where possible, PCW will

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prioritize development on previously disturbed lands and within or adjacent to existing energy corridors and roads where impacts have already occurred.

c. For all new meteorological monitoring towers, bird diverters will be installed on guy wires to minimize the risk of collision for all avian species. All non-operational meteorological towers, turbines, or other above-ground infrastructure will be decommissioned and dismantled per PCW's Plan of Development (POD).

2. Turbine layout considerations – Turbines will be sited in rows and groups rather than haphazardly across the landscape where practicable according to Project topographic and wind resource limitations. Row-based turbine siting leaves travel corridors and natural landscapes between turbines and minimizes risk to eagles moving within the Project footprint.

3. Road Network Considerations – PCW's final Project design will strive to optimize the road network. The Project Site has an existing road network for ranching and agricultural activities. Many of these roads will be repurposed and used for access to turbine locations.

4. Power Line Considerations

   a. The majority of the power collection system will be buried underground to eliminate new perch locations, reduce collision, and minimize electrocution risk.

   b. Where power lines are not buried, the design of above-ground structures will follow the recommendations of the Avian Power Line Interaction Committee (APLIC) guidance on power line construction (APLIC 2006) and power line siting (APLIC 1994).

6.2.3 Operations and Maintenance Considerations:

1. Operational Design Considerations – The final plan for operation and maintenance of the Project will contain the following measures. These measures will reduce impacts to eagles and other avian species by removing threats from Project infrastructure and risks that could be associated with changes in the availability of the forage base within the Project Site.

   a. Lighting within the Project Site will be based upon recommendations from the Federal Aviation Administration. Lights will be installed in such a manner as to limit their visibility from the ground while maintaining the appropriate visibility to pilots. During instances where nighttime activities are required in substations, PCW will utilize a combined switched and motion-detection system for exterior lights. A master control switch for exterior lights will be placed at the gate so that lights can be activated prior to personnel entering the yard (this is required for safety). These lights will remain on when movement is detected within the substation, and for a "safety time period" (perhaps 30 to 60 minutes) after motion has been detected to facilitate worker safety. A few minutes prior to the end of the safety time period, the lights will flash to warn personnel that the lights are about to turn off. If motion is still not detected, the lights will then turn off at the end of the safety time period. The lights will turn back on whenever motion is detected until the master switch at the substation gate is turned off. A similar system will

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be used for activities outside the operations and maintenance buildings (with master switches likely within the buildings). This approach will minimize the time the lights are on to avoid attracting wildlife, but provide adequate safety for project personnel. It should also minimize the instances of false motion detection needlessly activating the lights. While lighting is not expected to have a direct impact on eagles, proper lighting design will reduce impacts to eagle prey species and will reduce collisions and resulting carcasses beneath turbines.

b. Construction storage and staging areas will be reclaimed following PCW's Master Reclamation Plan.

c. The Project POD provides several operations and maintenance features that will result in decreased risk to eagles and other avian species.

- Roads will be maintained in winter in accordance with PCW's Winter Access Plan. PCW's Winter Access Plan specifies that where roads are plowed, breaks be created in any snow banks alongside roads to allow free passage of ungulates across the landscape. This will minimize the likelihood of concentrated ungulate use along roads that would result in increased vehicle collisions that could attract eagles. Where collisions with ungulates or other possible eagle food sources occur, the carcasses of those animals would be removed immediately following the Project carcass removal plan that will be developed as part of site-specific ECS documents for each construction stage.
- An appropriate speed limit will be implemented depending on road design limitations. Signs will be posted to remind drivers to stay below posted limits. Limiting speeds will reduce the likelihood for vehicle collisions with avian species and their prey items. Additionally, it will reduce noise impacts and the perception of habitat fragmentation that is associated with high traffic volumes.
- Additional instruction will be given to all operations and maintenance staff to further reduce speeds during inclement weather or when visibility is low to decrease the risk of collisions with avian species and potential prey items.

2. Operations and Maintenance Plans – PCW has developed numerous operations and maintenance plans that will be implemented over the life of the Project. Implementation of various measures in these plans will reduce risk to eagles and other avian species.

a. Carcass Removal Plan – Carcasses that have the potential to attract raptors will be removed immediately from roadways and from areas where eagles could collide with wind turbines. All operations and maintenance staff will be trained to appropriately handle, remove, and dispose of all carcasses that are encountered within the Project Site. Disposal protocols will be developed in coordination with the Service and WGFD to ensure compliance with relevant state and federal wildlife statutes. Disposal areas will be located outside of the turbine footprint area.

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b. Environmental Training Program – As part of the Environmental Compliance and Monitoring Plan (ECMP), PCW will implement an Environmental Training Program (ETP) to support compliance with environmental permits, including permit requirements and conservation measures outlined in the ECS. The training program will be designed to consistently communicate the Project requirements to every individual working on the Project so that both managers and workers understand PCW's expectations, the permit requirements outlined in the ECMP, and how to incorporate them into their daily work activities. All personnel working on the Project will be required to attend environmental training prior to entering the Project Site. PCW will maintain environmental training attendance records through the end of construction. The ECS training will follow the APLIC guidelines training course format (APLIC 2005) and will incorporate site-specific training modules to minimize risks to eagles and other avian species.

c. Reclamation Plan – PCW has developed a Master Reclamation Plan for the Project. Site-specific reclamation plans will be developed for each stage of the Project. As part of these plans, appropriate reclamation techniques, seed mixtures, and avoidance measures will be identified to minimize attraction of small mammals and other potential prey items to recently revegetated sites. Additionally, the site-specific reclamation plans will provide detail on how turbine pads will be reclaimed to decrease the likelihood for fossorial mammal burrowing in recently disturbed soils.

d. Fire Prevention Plan – Impacts to natural habitats from fire can reduce the quality of habitat for eagles and other avian species. PCW's fire prevention plan will identify measures to reduce the likelihood of fires caused by the Project.

e. Post-Construction Monitoring Program – A post-construction monitoring program, as described in later sections of this document, will be implemented to evaluate potential impacts of wind development on eagles and other avian species. In addition to post-construction mortality monitoring, changes in use and behavior of eagles and other avian species will also be evaluated. This program will be carried out for three years following the completion of construction in each stage.

6.2.4 Continued Land Use Management Considerations:

PCW's affiliate, TOTCO, currently manages a cow-calf and yearling operation in much of the Project Site and in adjacent portions of the Ranch. TOTCO currently uses very active management to minimize impacts of grazing activities on wildlife and habitat. This includes responsible livestock husbandry (e.g., removing carcasses, active herd management, managed calving activities, etc.). This level of management will continue for the life of the Project to maintain suitable habitat and prey availability for eagles.

6.2.5 Conservation and Habitat Enhancement Considerations

PCW will coordinate with TOTCO and other committed private landowners and BLM to manage areas outside of the wind turbine footprint to conserve wildlife species. The managed areas would include much of Miller Hill and the south Sage Creek Basin adjacent to the Grizzly WHMA, the Central Basin, and areas of the Ranch east of the North Platte River. Management

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actions may include prevention of future development of wind resources, enhancement of habitat, and other measures to protect and conserve important eagle foraging, breeding, and nesting habitat for the life of the Project.

PCW has implemented a Sage-Grouse Conservation Plan that provides for monitoring of sage-grouse within the Ranch and adjacent areas. During PCW's sage-grouse monitoring efforts, golden eagles have been the second greatest predator of sage-grouse behind only mammalian carnivores (presumably coyotes). Conserving sage-grouse in areas adjacent to the wind development areas will enhance the eagle prey base and provide suitable foraging in areas with no risk of impact from wind turbines.

Many of the conservation measures contained in the Sage-Grouse Conservation Plan will benefit eagles and other avian species. PCW's Sage-Grouse Conservation Plan includes conservation measures that will improve habitat for greater sage-grouse and other wildlife species throughout the Ranch and identifies measures for minimizing and/or reducing potential threats to sage-grouse populations and other wildlife species.

Implementation of conservation measures and monitoring efforts in and adjacent to the Project Site will be staged and will include both pre- and post-wind development activities. The conservation measures that will be implemented include the minimization or removal of some existing threats to greater sage-grouse survival and productivity (e.g., removal and marking of fences, water development projects, and riparian/wetland habitat enhancement); and it includes, through the adaptive management process, the identification of additional conservation projects that will serve to achieve conservation goals if initial projects fail to meet the long-term goals and objectives.

Conservation measures that will be implemented as part of the Sage-Grouse Conservation Plan include:

1. Fence Marking and Removal – Fence collisions have been identified as a primary source of mortality for sage-grouse and other bird species (Christiansen 2009). PCW has removed 10 miles of woven wire and barbed wire fences in high-use areas around sage-grouse leks, nesting areas, and brood-rearing habitats. An additional 16 miles of barbed wire fence were marked with reflective bird diverters. While no eagles have been documented colliding with fences within the Project Site, removal of unnecessary fences and fence marking will remove this threat for all avian species.
2. Bird Diverters on Meteorological Towers – Similar to fences, guy wires on meteorological monitoring towers pose a collision risk for most avian species. To remove and reduce this risk, PCW has installed bird diverters on the guy wires of all meteorological towers located throughout the Project Site.
3. Water Tank Escape Ramps – PCW has worked in collaboration with the Saratoga High School Future Farmers of America chapter to construct metal mesh avian escape ladders that have been installed in the water tanks within the Project Sites and other parts of the Ranch. Escape ramps reduce the risk of drowning to all avian species.

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4. Habitat Improvements – PCW is implementing measures to improve sagebrush habitat. Through enhanced rangeland management and utilizing the flexibilities provided by the land and water resources throughout the Ranch, measures are being taken to create and improve nesting and brood-rearing habitats for sage-grouse. These measures include enhanced riparian and wetland resource management, maintenance and enhancement of native understory plants, revegetation of burned areas and fallow agricultural fields, sagebrush treatments, and numerous other vegetation enhancement opportunities.

    a. Wildfire Emergency Stabilization and Burned Area Rehabilitation – Wildfire, particularly in low-elevation Wyoming big sagebrush systems, has resulted in significant habitat loss primarily because of subsequent invasion by cheatgrass and other exotic plant species (BLM 2011b). PCW will work with BLM to prioritize stabilization and burned area revegetation projects to (1) maintain unburned intact sagebrush habitat when at risk from adjacent threats; (2) stabilize soils; (3) reestablish hydrologic function; (4) promote biological integrity; (5) promote plant resiliency; (6) limit expansion or dominance of invasive species; and (7) reestablish native species.

        For example, in 2010, a 170-acre wildfire occurred within sage-grouse habitat in the Chokecherry area of the Project Site. Following the fire, PCW seeded portions of the burned area to stabilize soils, reduce the risk of non-native plant invasion, and encourage use by sage-grouse and other wildlife species. Seed mixtures used were designed to maximize sage-grouse foraging opportunities during summer brood-rearing periods to enhance brood survival within the Project Site.

    b. Water Improvement Projects – The primary objective of all water development conservation projects will be to modify water sources to create and enhance natural free flowing water and wet meadow habitats that are used by sage-grouse for summer and late brood-rearing habitat. Water developments are known to improve sage-grouse brood rearing habitat (Autenrieth et al. 1982; Hanf et al. 1994). The specific locations of water improvement conservation projects will be determined following pre-construction sage-grouse monitoring to identify viable water sources that are in or adjacent to habitat that is likely to be used by sage-grouse for brood rearing and will continue for the life of the Project.

        Water source modifications may include installation of upland "bubblers" and water diversions to create and enhance natural free-flowing water, enhance wet meadow habitat and flood bottomland draws. "Bubblers" will be supplied with water from both artesian wells and other wells actively pumped by windmills. Other water sources to be developed will be supplied through water diversion pipelines from existing reservoirs and stock tank pipeline networks. Water improvement projects will be completed in a manner to minimize standing water and discourage use by mosquitos, which might carry West Nile virus.

    c. Agricultural Field Enhancements – There are approximately 2,023 acres of unused agricultural fields in the eastern portion of the Ranch that are currently dominated with either monocultures of crested wheatgrass (*Agropyron cristatum*) and other introduced grass species, or native bunchgrass communities and encroaching shrubs typical of sagebrush steppe habitats. Sage-grouse lek counts

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and additional observations have identified two active leks within or adjacent to these relict agricultural fields, and surrounding sagebrush habitat is being used for nesting and early brood-rearing habitat. Additional observations have been made during monitoring that sage-grouse are using hayfields (i.e., alfalfa and hay grass species) in the Ranch and the surrounding areas at increased rates during brood-rearing. The primary objectives of the agricultural field enhancement conservation projects are to develop water sources on the eastern portion of the Ranch and establish conditions suitable for year round use as breeding, nesting, brood-rearing, and wintering habitat. This will include, as appropriate, planting of additional sagebrush and/or establishment of high-value forage and cover sources in the relict agricultural fields.

d. Removal and Reclamation of Unnecessary Roadways – The primary objectives of the road closure and enhancement conservation projects are to minimize the extent of habitat fragmentation due to the road network across the Ranch. As such, selected roads would be closed and, where practicable, abandoned roadbeds would be reclaimed. Road closure and abandonment effectively increase habitat patch sizes by providing contiguous habitats and removing conduits used by predators and invasive species. Road closures would target two-track roads that experience periodic yet irregular patterns of vehicular activity across the Ranch. Monitoring efforts have resulted in several observations of grouse mortality on or near two-track roads which serve as conduits and hunting areas for predators. To reduce the effects of roads on the Ranch, selected existing roads will be closed to enhance greater sage-grouse nesting, brood-rearing, and winter habitat. The value of the habitat adjacent to the roadbed would improve in quality due to the removal of the associated traffic, effectively eliminating any buffer zones previously associated with that road.

e. Noxious and Invasive Plant Species Control – The primary objectives of the control of noxious and invasive plant species conservation projects are to limit the spread of weedy species into native habitats, promote the establishment of native plant species, and to provide suitable sage-grouse habitat. Sage-grouse prefer native and diverse vegetation cover and well established sagebrush communities. Noxious and invasive plant species often have a competitive advantage over native species and readily establish, thus decreasing plant diversity and reducing sage-grouse habitat quality. Herbicide application or other appropriate treatments will be used for noxious and invasive plant species control. Control measures will be followed by native vegetation seeding. This conservation measure will include the development of protocols for utilization of agricultural chemicals on the Ranch.

5. Suspension of Hunting – The suspension of sage-grouse hunting on the Ranch would reduce direct mortality of sage-grouse and enhance the forage base for eagles. Suspension of hunting would only be limited to sage-grouse and will continue throughout the life of the Project.

While these activities are designed to conserve sage-grouse populations and habitat, they will have direct benefits to eagles and other raptors by maintaining contiguous habitat patches,

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conserving and promoting prey base populations, and improving habitat quality throughout the Project area and the TOTCO Ranch property.

6.3 SECOND-TIER MEASURES

Second-tier measures will be implemented upon review of the success of the first tier risk reduction measures. If anticipated impact levels are exceeded and the Adaptive Management process is triggered, second tier risk reduction measures will be evaluated to identify those most likely to reduce impacts below acceptable thresholds.

6.3.1 Habitat Improvement/Modification Projects

Additional modifications or improvements to habitat for eagles or their prey base will be used as a second tier risk reduction measure. If it can be determined that artificial or natural habitats are attracting prey, removal of those habitat types will be considered. This consideration would be made on a site-specific basis. If an artificial habitat type is identified as attracting prey items for eagles or other large raptors, attempts would be made to relocate or recreate that artificial habitat in an area outside of the wind turbine footprint area in an effort to draw eagles and other raptors away from turbines.

If it is determined that breeding, nesting, and recruitment is impacted by wind development activities, measures would be taken to create or enhance habitats outside the wind development areas in an effort to draw eagles away from turbine locations. Artificial perch and nesting structures can easily be constructed in areas of the Ranch or elsewhere in south-central Wyoming that will not be impacted by wind development. These artificial structures can be placed in areas with adequate prey to minimize the likelihood that eagles using those structures would overlap with wind development areas.

6.3.2 Prey Base Modification

Habitat enhancement and wildlife management techniques will be used as second tier risk reduction measures to draw eagle activity away from wind development areas. The Ranch provides unique opportunities to implement these types of projects and contains the wildlife resources necessary to make this a successful risk reduction approach.

Habitat enhancements would be used to increase prey base populations in areas outside of wind development areas. Where prey base populations have been removed or reduced as part of past land management activities, prey base reintroductions would be considered to create new foraging areas and draw eagles away from turbines. White-tailed prairie dogs, Wyoming ground squirrels, and other prey base species would be considered for possible reintroduction.

In areas within the turbine development footprint, if eagle prey species (rabbits, ground squirrels, prairie dogs, etc.) are attracted to Project infrastructure, measures would be taken to reduce their activity levels and encourage activity elsewhere. If fossorial mammals are attracted to disturbed areas beneath turbines or adjacent to roads, burrows would be evaluated on a case-by-case basis and appropriate measures would be taken to prevent ongoing and future burrowing activities. This could include measures such as filling burrows and the surrounding area with gravel at least 2 inches deep and out to a perimeter of at least 5 feet. Where these types of deterrents are not

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successful or possible, active control would be evaluated to remove the enhanced prey base and reduce threats to foraging eagles. These control measures would be coordinated with the WGFD and other appropriate state and federal agencies.

Hazing big game out of the wind development areas would also be considered as a second tier reduction measure.

6.3.3 Operations and Maintenance Modifications

Modifications to Project infrastructure and operations and maintenance would be evaluated as a second tier reduction measure on a site-specific basis. If a single turbine or series of turbines consistently impact eagles, modifications including visual and auditory flight diverters would be evaluated and implemented if it is determined that those measures would minimize the risk. As other technologies or approaches are developed to reduce risk to eagles those technologies would be evaluated on a case-by-case basis.

6.3.4 Utility Power Pole Retrofits

Utility power pole retrofits would be used as compensatory mitigation in the event that anticipated impact levels are exceeded. Power pole retrofits may be used to remove risks for electrocution of eagles and other raptors, thereby offsetting eagle mortalities occurring within the Project Site.

6.3.5 Carcass Removal on Surrounding Highways

Carcass removal on surrounding highways would be used as compensatory mitigation in the event that anticipated impact levels are exceeded. The largest risk to eagles in the vicinity of the Project area is collision with highway traffic. Wintering and migratory eagles are attracted to roadkill on area highways (including Highway 130 north of Saratoga, Interstate 80 in the area surrounding Rawlins, and other surrounding roadways). During winter 2012, the Service has documented multiple eagle mortalities along these two highways in the vicinity of the Project area. During February 2012 avian survey efforts, 14 individual eagles and 1 ferruginous hawk concentrated around 2 pronghorn carcasses were observed during a 15 minute drive along a 10-mile stretch of Highway 130. At the same time, several others were observed along Interstate 80 north of the Project area. These eagles were under immediate threat of mortality from collision. In contrast, during February 2012 survey efforts, only 8 eagles were observed during 75 hours of survey in the Project area indicating, as would be expected, that winter eagle activity is low where prey and scavenging opportunities are infrequent. In the vicinity of the Project area winter eagle use is closely tied to the availability of winterkill carcasses along area highways. To remove the risk of mortality to wintering eagles and to ensure that there is no net change in regional eagle populations, carcasses will be removed from area highways on a regular basis. PCW will work with the Service and state and local highway department staff to identify appropriate removal protocols and the frequency of carcass removals. Carcasses removed from area highways will be disposed of away from the Project in areas that will attract eagles away from wind development infrastructure.

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6.4 THIRD–TIER MEASURES

Third tier measures will be implemented upon review of the success of the first and second tier risk reduction measures. If anticipated impact levels are exceeded after implementing second tier risk reduction measures, the Adaptive Management process will identify third tier risk reduction measures that are most likely to reduce impacts below acceptable thresholds. Third tier measures would only be implemented if it is determined that impacts to eagles cannot be addressed through implementation of all first and second tier risk reduction measures.

6.4.1 Real-Time Monitoring of Occupied Nest Sites

If it can be determined that construction or ongoing operations and maintenance activities result in decreased nest success or mortality, real-time monitoring of occupied nests would be considered to inform ongoing and future activities. Because most nest locations in the vicinity of the Project Site are located on cliff faces, real-time monitoring might be difficult or impractical. However, in some cases, video or photo monitoring of a nest site could be considered. Practicality of this measure would be evaluated on a case-by-case basis in close coordination with the Service.

6.4.2 Adjusting Turbine Cut-In Speeds

Adjusting turbine cut-in speeds could be evaluated on a case-by-case basis if it can be demonstrated that there is a correlation between eagle impacts and wind speed for individual turbines or groups of turbines. Because of the size of the Project, changing cut-in speeds for all turbines is impractical and unnecessary. However, if as a result of post-construction monitoring it can be demonstrated that impacts can be minimized or removed as a result of changing cut-in speeds, this measure will be evaluated.

6.4.3 Installing Sound Devices to Disorient Eagles

Installation of auditory deterrent technologies will be evaluated on a case-by-case basis. Air cannons and other sound emitting technologies can be used to deter eagle and other avian activity. It is likely that these types of technologies would be used in specific instances where predictable and repeat use of an area results in increased eagle impacts. In these instances, sound devices can be deployed on an intermittent basis when eagle use is most likely. If noise emissions become regular or predictable, eagles and other species might become acclimated, reducing the likelihood for success.

6.4.4 Wind-Wildlife Research Mitigation Fund

If impacts are greater than expected after implementing first and second tier measures, and selected third tier measures, PCW would work with the Service to develop and implement a wind-wildlife research and mitigation fund. Monies placed in this fund could be used to pay for enhancing eagle and prey base habitat, or other appropriate measures to conserve eagle populations. Monies could also be used to research and develop additional conservation and mitigation measures to benefit eagles, or to fund research related to wind energy impacts on golden eagles. Funding amounts for this research mitigation fund will be determined by PCW if it is determined that this is a necessary measure.

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Proprietary & Confidential – Wyo. Stat. § 16-4-203(d)(v)

6.4.5 Radar Monitoring and Mitigation System

In 2011, PCW purchased a DeTect Merlin Radar system to survey avian populations within the Project Site. The purchase of the Radar system was solely intended to survey and record avian activity over large areas of the Project Site without requiring regular ground-based surveys. Avian radar systems are often cited as having the capability to provide real-time information that will allow turbine operators to curtail production while a biological target or targets are at risk.

Curtailment of wind turbine operation by idling or braking turbines to prevent blades from spinning has been suggested as a possible mitigation measure to minimize or avoid impacts to avian species. Curtailment as a mitigation tool is typically applied to sites where large-scale broad-front songbird migration activities occur (Gulf Coast, Mississippi River corridor, Eastern Seaboard, etc.). Examples of sites in the United States where curtailment is being examined or implemented include Penascal Wind Farm, Texas, and Gulf Wind I, Texas. These locations have been identified as having high risk of avian mortality due to their proximity to major avian migration corridors or landscape features that act to concentrate birds during certain weather events or periods of broad-front migration.

Effective use of a curtailment program for eagles requires real-time identification of an individual bird, that bird's species, as well as its location, flight height, flight speed, and flight direction. It also requires a systematic approach to determine potential for collision with an operational wind turbine. Current radar technology will provide location, speed, and direction. However, radar technology cannot identify a single target to species or often even relative size class. For instance, in the PCW Radar dataset, based on preliminary analysis of ground-truth data, the signature of a golden eagle is most similar to that of a prairie falcon. Additionally, the Radar cannot predict or measure the other variables listed above that would allow curtailment to be an effective strategy to avoid risk. Further, because deviations from known high-use areas or flight paths are not predictable and cannot be determined in real-time, use of curtailment would not be effective to minimize impacts to eagles or other large species.

Even if radar technology were able to predict or measure the variables described in the above paragraph, the operational constraints of slowing or stopping turbines prevent the use of curtailment as a mitigation measure for eagles and other large species. It takes several minutes to shut down a spinning turbine. Eagle flight speeds have been calculated at 16 to 90 miles per hour (mph) during resident activities and migration (see references in Buehler 2000, PCW radar data). Using radar validation data, average eagle flight speed in the Project area is 29.75 miles per hour. Therefore, an eagle in direct flight would need to be identified as a potential risk more than 2.0 miles from a turbine (assuming a flight speed of 30 mph and a 4-minute time period to identify the bird to species, enter the curtailment command in the operations system, and brake the turbine). The difficulties of identifying a bird at more than 2.0 miles and determining that it is at risk for collision do not make curtailment a viable option for eagle mitigation. It is also probable that a bird identified at more than 2.0 miles could identify the turbine as a risk and alter its flight path prior to reaching the turbine location. This would result in unnecessary curtailment and loss of generating capacity.

Technological, logistical, and economic constraints prevent the practical application and efficacy of implementing a radar-based mitigation program for mitigating risk to eagles and other avian

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Proprietary & Confidential – Wyo. Stat. § 16-4-203(d)(v)

species. While this technology has proven effective for broad-front migration of passerines during high-use periods during spring and fall migration, it is not currently capable of providing adequate information to curtail turbines when eagles or other large avian targets are detected. Currently, this technology is not appropriate for avoiding or minimizing risks to eagles and other large avian targets. However, if the technology advances to a level making this risk reduction measure realistic, PCW will evaluate its use if all other first, second, and third tier measures cannot reduce impacts to acceptable levels.

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Proprietary & Confidential – Wyo. Stat. § 16-4-203(d)(v)

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ATTACHMENT 9

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Valerie Lightholder

Subject: Chokecherry and Sierra Madre Eagle Conservation Strategy Meeting

From: Patricia_Sweanor@fws.gov [mailto:Patricia_Sweanor@fws.gov]
Sent: Monday, March 12, 2012 5:06 PM
To: Clint King; garry.miller@tac-denver.com; Jon Kehmeier; Travis_Sanderson@fws.gov; Tyler_Abbott@fws.gov; kelly.commins@tac-denver.com
Subject: Re: Chokecherry and Sierra Madre Eagle Conservation Strategy Meeting

hi,

Thanks so much for coming up to Cheyenne to meet with us today. The meeting was very informative and helped Tyler and I understand your survey effort and the issues you face with project development. We are trying to get up to speed with Travis! I think we all realize how important this project is and that it requires a FWS team approach to ensure that your project needs are met while we work together to protect trust resources. We appreciate your efforts to achieve both results.

As a result of this meeting and to enable us to best help you, I am identifying the information we look forward to receiving from you prior to our being able to fully assess project avian issues and to review your ECP risk reduction measures in section 6.0 of your draft eagle conservation strategy.

To summarize, as we discussed, we look forward to receiving:

1. Eagle and other raptor data from on the ground counts: (1) Number and duration of counts per season; (2) Tabulated data (minutes of observation) by count location and season; (3) Flight paths (including distance of observer to flight path recorded and methods used to validate location of flight path, i.e, second observer, radar etc)

A question I still have is if there are radar locations that are verifiable as eagle/other raptor without corroboration of an observer on the ground?

2. Your revision to the CCSM eagle conservation strategy in response to FWS comments.

3. A framework for an Avian Protection Plan or Migratory Bird Conservation Strategy for the project area.

An additional point of clarification I was hoping you could provide me is how the radar results will be used to aid in depicting bird use geographically and seasonally across the project area. When I asked if radar results would be overlaid, I think I was told I would just get a blacked-out map. But doesn't that mean use was evenly distributed across the project area? Can't maps be developed, for example, for diurnal spring use, where heavier used areas with more radar locations are given a darker color and areas with fewer observations are given a lighter color? Is there not a correlation between number of dots on the map and number of bird "sightings' or locations?

As Travis mentioned, for third year surveys it will be important for understanding the geographic extent of high use areas in addition to assuring that project areas not yet thoroughly surveyed, but where turbines may be moved, are covered by effective survey efforts.

Thanks again and we look forward to hearing from you. Please continue directing your correspondence to Travis, and if you could, please cc me as back-up.

Trish

****

Trish Sweanor

Fish & Wildlife Biologist
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ATTACHMENT 10

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Valerie Lightholder

Subject: RE: Chokecherry and Sierra Madre Eagle Conservation Strategy Meeting

From: Jon Kehmeier [mailto:jkehmeier@swca.com]
Sent: Wednesday, March 14, 2012 8:47 AM
To: Patricia_Sweanor@fws.gov; Clint King; Garry Miller; Travis_Sanderson@fws.gov; Tyler_Abbott@fws.gov; kelly.commins@tac-denver.com
Subject: RE: Chokecherry and Sierra Madre Eagle Conservation Strategy Meeting

Trish,

Thank you for taking the time on Monday. We thought it was a very productive meeting and look forward to working closely with you, Travis, and Tyler as we move forward. To answer some of your questions/comment:

1. Eagle and other raptor data from on the ground counts: (1) Number and duration of counts per season; (2) Tabulated data (minutes of observation) by count location and season; (3) Flight paths (including distance of observer to flight path recorded and methods used to validate location of flight path, i.e, second observer, radar etc) **Clint and I are in the process of incorporating/clarifying these data in the current version of the eagle conservation strategy and will do the same for the avian conservation strategy.**

A question I still have is if there are radar locations that are verifiable as eagle/other raptor without corroboration of an observer on the ground? **No, radar targets cannot be 100% verified without an observer on the ground. We are developing models to help us define which targets are most likely eagles, other raptors, etc. These models will help us better understand flight patterns in the project area for siting purposes but cannot be verified without a ground observer and someone in the radar marking the bird as an eagle/raptor. The radar is helping us understand patterns of use by different categories (small, large, migratory, etc.).**

2. Your revision to the CCSM eagle conservation strategy in response to FWS comments.
We are nearing completion of our response to your initial comments and will incorporate/clarify some other items that we discussed with you and Tyler on Monday.

3. A framework for an Avian Protection Plan or Migratory Bird Conservation Strategy for the project area.
We are in the process of completing our annual avian survey report and will use that as the basis for the avian conservation strategy. We will begin to put together an outline/framework for this document and will share that when it is complete.

An additional point of clarification I was hoping you could provide me is how the radar results will be used to aid in depicting bird use geographically and seasonally across the project area. When I asked if radar results would be overlaid, I think I was told I would just get a blacked-out map. But doesn't that mean use was evenly distributed across the project area? Can't maps be developed, for example, for diurnal spring use, where heavier used areas with more radar locations are given a darker color and areas with fewer observations are given a lighter color? Is there not a correlation between number of dots on the map and number of bird "sightings' or locations? **We haven't explored this in enough detail to know if this will yield informative results. I agree with you that bird use is not evenly distributed across the landscape. We see this with our avian ground surveys. Clint began exploring this option yesterday and we will keep you posted on whether it is an appropriate use of the data.**

As Travis mentioned, for third year surveys it will be important for understanding the geographic extent of high use areas in addition to assuring that project areas not yet thoroughly surveyed, but where turbines may be moved, are covered by effective survey efforts.
We are in the process of developing our final recommended year 3 surveys. I hope to have those to you the first of next week.

Jon Kehmeier
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http://on.fb.me/SWCA_Environmental_Consultants
http://www.linkedin.com/company/swca-environmental-consultants

From: Patricia_Sweanor@fws.gov [mailto:Patricia_Sweanor@fws.gov]
Sent: Monday, March 12, 2012 5:06 PM
To: Clint King; garry.miller@tac-denver.com; Jon Kehmeier; Travis_Sanderson@fws.gov; Tyler_Abbott@fws.gov; kelly.commins@tac-denver.com
Subject: Re: Chokecherry and Sierra Madre Eagle Conservation Strategy Meeting

hi,

Thanks so much for coming up to Cheyenne to meet with us today. The meeting was very informative and helped Tyler and I understand your survey effort and the issues you face with project development. We are trying to get up to speed with Travis! I think we all realize how important this project is and that it requires a FWS team approach to ensure that your project needs are met while we work together to protect trust resources. We appreciate your efforts to achieve both results.

As a result of this meeting and to enable us to best help you, I am identifying the information we look forward to receiving from you prior to our being able to fully assess project avian issues and to review your ECP risk reduction measures in section 6.0 of your draft eagle conservation strategy.

To summarize, as we discussed, we look forward to receiving:

1. Eagle and other raptor data from on the ground counts: (1) Number and duration of counts per season; (2) Tabulated data (minutes of observation) by count location and season; (3) Flight paths (including distance of observer to flight path recorded and methods used to validate location of flight path, i.e, second observer, radar etc)

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across the project area? Can't maps be developed, for example, for diurnal spring use, where heavier used areas with more radar locations are given a darker color and areas with fewer observations are given a lighter color? Is there not a correlation between number of dots on the map and number of bird "sightings' or locations?

As Travis mentioned, for third year surveys it will be important for understanding the geographic extent of high use areas in addition to assuring that project areas not yet thoroughly surveyed, but where turbines may be moved, are covered by effective survey efforts.

Thanks again and we look forward to hearing from you. Please continue directing your correspondence to Travis, and if you could, please cc me as back-up.

Trish

****

Trish Sweanor

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ATTACHMENT 11

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Valerie Lightholder

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Wednesday, March 21, 2012 9:02 PM
To: Tyler_Abbott@fws.gov; Patricia_Sweanor@fws.gov; Travis_Sanderson@fws.gov
Cc: Garry Miller; cking@swca.com
Subject: PCW Eagle Data and Year 3 Survey Protocols
Attachments: PCW Year 3 protocols - DRAFT.docx; PCW_AllEagles_AllObservations_20120321_EagleDataForFWS.xlsx

Travis, Trish, and Tyler,

I have attached a copy of the eagle data collected as part of Power Company of Wyoming's year 2 surveys. These data do not include all of the winter data. Those data will be forwarded once we have gone through our QA process (likely within the next few weeks). The spreadsheet has three tabs. The first tab is the survey locations and time of survey at each location on the date the survey occurred. The second tab contains all of the eagle observations that were recorded, the duration of those observations, and the species of eagle observed. The third tab contains a glossary of the variables contained in each tab. These data should allow you to look at site-specific eagle use per minute of survey time (number of observations per minute). Please take a look at the data and let me know what additional information you need for your modeling purposes. Trish, Tyler mentioned to me on Monday that you have a new model for risk assessment. Would it be possible to get a copy of that model to review? I think it would help us understand all of the datasets that you need from us for modeling purposes. I think it will be helpful as we continue working through the risk assessment process and the finalization of the eagle conservation strategy and APP.

I have also attached a copy of the year 3 survey protocols. The protocols consist of running the radar through November of 2012, completing aerial surveys for raptors in the same areas we surveyed in 2011, and to conduct 3-4 hour long-watch raptor surveys at 14 sites. Two long-watch surveys would be completed per day and each site would be visited twice per month. The intent of the year 3 survey is to better understand the eagle use areas that we have identified, evaluate eagle and raptor use in areas where survey coverage is lacking, to compare nesting trends across years, and to use the radar to better understand home ranges around raptor/eagle nests and migratory bird migration and patterns of use. Following year 3 surveys we will have 100% survey coverage of all of the probable turbine footprint. We will begin our year 3 surveys at the beginning of April.

If you have any questions about either attached file please let me know.

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http://www.linkedin.com/company/swca-environmental-consultants

Date	SurveyPoint	StartTime	EndTime	SurveyMins
4/4/2011	RM 2-ALT	11:50	18:35	406
4/4/2011	RM 1	10:00	18:24	505
4/5/2011	RM 5	10:03	18:15	493
4/5/2011	RM 8	10:10	18:30	501
4/7/2011	RM 7	10:00	18:00	481
4/7/2011	RM 6	9:20	17:50	511
4/8/2011	RM 14	9:34	17:55	502
4/8/2011	RM 13-ALT	9:00	17:34	515
4/11/2011	RM 1	8:35	16:35	481
4/11/2011	RM 2	8:12	16:45	514
4/12/2011	RM 14	9:30	18:00	511
4/12/2011	RM 13-ALT	9:00	17:00	481
4/13/2011	RM 6	9:00	17:35	516
4/13/2011	RM 7	9:00	15:00	361
4/15/2011	RM 5	9:15	18:05	531
4/15/2011	RM 8	8:30	16:30	481
4/19/2011	RM 9	9:10	19:10	601
4/19/2011	RM 10-ALT	9:55	18:25	511
4/20/2011	RM 15	8:36	17:06	511
4/20/2011	RM 13	8:45	15:50	426
4/21/2011	RM 11	9:40	17:00	441
4/21/2011	RM 11-ALT	9:40	17:00	441
4/21/2011	RM 12	9:55	16:55	421
4/24/2011	RM 4	8:00	14:00	361
4/24/2011	RM 15	8:16	14:16	361
4/24/2011	RM 3	8:16	14:16	361
4/25/2011	RM 9	7:45	16:15	511
4/25/2011	RM 10	8:15	16:45	511
4/26/2011	RM 13	7:45	16:45	541
4/26/2011	RM 15	7:30	16:00	511
4/27/2011	RM 12	10:05	18:35	511
4/27/2011	RM 11	10:00	18:30	511
4/28/2011	RM 4	9:32	18:02	511
4/28/2011	RM 3	9:15	17:45	511
5/2/2011	RM 1	8:35	17:05	511
5/2/2011	RM 2	8:20	17:00	521
5/3/2011	RM 8	8:17	16:47	511
5/3/2011	RM 9	8:00	16:30	511
5/4/2011	RM 10	9:45	17:45	481
5/4/2011	RM 11	10:00	18:30	511
5/5/2011	RM 7	9:00	17:30	511
5/5/2011	RM 5	9:00	17:30	511
5/9/2011	RM 12	8:20	13:50	331
5/9/2011	RM 6	7:50	14:00	371
5/10/2011	RM 4	7:20	16:20	541
5/10/2011	RM 14	7:35	16:05	511

5/12/2011	RM 3	7:15	15:55	521
5/12/2011	RM 13	7:05	15:35	511
5/13/2011	RM 15	8:27	16:12	466
5/16/2011	RM 10	7:15	15:45	511
5/16/2011	RM 11	7:29	15:59	511
5/17/2011	RM 9	8:12	9:45	94
5/18/2011	RM 8	8:34	15:48	435
5/18/2011	RM 9	8:22	16:00	459
5/20/2011	RM 7	12:55	17:30	276
5/21/2011	RM 5	10:20	11:05	46
5/22/2011	RM 1	7:30	16:00	511
5/22/2011	RM 2	9:15	17:45	511
5/23/2011	RM 4	7:45	15:22	458
5/23/2011	RM 14	7:40	15:24	465
5/24/2011	RM 13	8:00	16:30	511
5/24/2011	RM 15	7:20	15:50	511
5/25/2011	RM 12	9:17	17:47	511
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5/28/2011	RM 5	8:00	14:15	376
5/28/2011	RM 3	8:20	10:59	160
5/31/2011	RM 11	9:00	17:30	511
5/31/2011	RM 3	9:29	17:29	481
6/1/2011	RM 2	8:25	16:55	511
6/1/2011	RM 1	8:15	16:45	511
6/2/2011	RM 7	8:01	16:31	511
6/2/2011	RM 5	7:50	17:15	566
6/3/2011	RM 9	8:40	17:10	511
6/3/2011	RM 10	8:50	17:20	511
6/3/2011	RM 8	8:55	17:25	511
6/6/2011	RM 14	9:14	17:44	511
6/6/2011	RM 4	9:20	17:50	511
6/7/2011	RM 13	9:00	17:30	511
6/7/2011	RM 3	10:15	17:30	436
6/8/2011	RM 12	8:00	16:30	511
6/8/2011	RM 6	7:54	16:24	511
6/9/2011	RM 15	7:15	15:45	511
6/13/2011	RM 2	9:30	18:00	511
6/13/2011	RM 1	9:30	18:00	511
6/14/2011	RM 5	9:10	17:40	511
6/14/2011	RM 7	10:05	18:00	476
6/15/2011	RM 10	8:30	16:30	481
6/15/2011	RM 11	8:00	16:30	511
6/16/2011	RM 9	8:25	11:18	174
6/16/2011	RM 8	8:20	11:14	175
6/21/2011	RM 3	8:04	16:34	511
6/21/2011	RM 8	9:15	15:30	376
6/21/2011	RM 9	8:15	16:45	511

6/23/2011	RM 14	8:05	16:15	491
6/23/2011	RM 4	8:05	16:15	491
6/24/2011	RM 15	9:50	17:50	481
6/24/2011	RM 13	7:30	16:00	511
6/25/2011	RM 6	8:15	16:45	511
6/25/2011	RM 12	7:50	16:20	511
6/27/2011	RM 5	11:30	18:05	396
6/27/2011	RM 7	9:35	18:05	511
6/28/2011	RM 1	8:15	16:45	511
6/28/2011	RM 2	8:40	17:15	516
6/29/2011	RM 8	8:05	15:05	421
6/29/2011	RM 9	9:20	15:00	341
6/30/2011	RM 11	8:55	10:26	92
6/30/2011	RM 10	8:05	10:26	142
7/1/2011	RM 11	8:45	16:45	481
7/1/2011	RM 10	8:45	16:38	474
7/10/2011	RM 14	13:35	17:40	246
7/10/2011	RM 4	8:45	12:45	241
7/10/2011	RM 3	8:55	12:55	241
7/10/2011	RM 13	13:55	17:55	241
7/11/2011	RM 11	8:40	12:40	241
7/11/2011	RM 12	8:30	12:40	251
7/11/2011	RM 7	13:00	16:15	196
7/11/2011	RM 6	13:25	15:56	152
7/13/2011	RM 2	13:00	17:00	241
7/13/2011	RM 1	7:40	11:40	241
7/13/2011	RM 10	12:30	16:30	241
7/14/2011	RM 15	8:15	12:15	241
7/14/2011	RM 5	8:00	12:00	241
7/14/2011	RM 9	7:43	11:43	241
7/14/2011	RM 8	13:05	17:05	241
7/24/2011	RM 4	13:05	17:05	241
7/24/2011	RM 15	8:40	12:40	241
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7/25/2011	RM 13	8:10	12:10	241
7/25/2011	RM 3	13:12	17:12	241
7/27/2011	RM 7	7:35	11:35	241
7/27/2011	RM 12	12:05	15:05	181
7/27/2011	RM 2	7:32	11:32	241
7/27/2011	RM 1	12:50	16:50	241
7/28/2011	RM 14	9:05	13:05	241
7/28/2011	RM 11	13:40	17:40	241
7/28/2011	RM 6	8:47	12:47	241
7/29/2011	RM 8	7:40	11:40	241
7/29/2011	RM 5	12:57	17:15	259
8/7/2011	RM 15	13:45	17:45	241

8/8/2011	RM 1	8:55	12:55	241
8/8/2011	RM 2	14:10	18:10	241
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8/8/2011	RM 8	12:50	17:00	251
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8/9/2011	RM 4	13:02	17:06	245
8/9/2011	RM 14	12:54	16:54	241
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8/10/2011	RM 7	13:12	17:12	241
8/10/2011	RM 12	8:40	12:40	241
8/12/2011	RM 10	10:55	14:55	241
8/12/2011	RM 6	10:55	14:55	241
8/15/2011	RM 13	9:03	16:50	468
8/15/2011	RM 3	9:05	16:25	441
8/16/2011	RM 15	11:40	17:45	366
8/17/2011	RM 6	9:07	17:37	511
8/17/2011	RM 12	8:50	17:20	511
8/18/2011	RM 14	7:55	16:25	511
8/18/2011	RM 4	7:53	16:23	511
8/19/2011	RM 1	7:30	14:45	436
8/19/2011	RM 2	7:54	15:10	437
8/21/2011	RM 8	7:33	16:03	511
8/21/2011	RM 9	7:35	16:05	511
8/22/2011	RM 5	8:54	17:24	511
8/22/2011	RM 11	8:50	17:20	511
8/23/2011	RM 10	8:30	16:30	481
8/23/2011	RM 6	8:30	17:00	511
8/30/2011	RM 12	8:48	15:30	403
8/30/2011	RM 7	8:50	15:20	391
8/31/2011	RM 3	7:32	16:06	515
8/31/2011	RM 13	7:30	16:00	511
9/1/2011	RM 4	7:36	16:06	511
9/2/2011	RM 15	8:10	16:40	511
9/2/2011	RM 14	8:10	16:20	491
9/7/2011	RM 9	10:30	18:00	451
9/7/2011	RM 8	10:25	18:00	456
9/8/2011	RM 2	9:15	17:45	511
9/8/2011	RM 1	9:05	17:35	511
9/9/2011	RM 5	7:45	16:15	511
9/9/2011	RM 11	7:57	16:27	511
9/11/2011	RM 10	7:55	15:55	481
9/11/2011	RM 6	8:00	16:30	511
9/12/2011	RM 12	7:35	14:50	436
9/12/2011	RM 7	7:40	15:00	441
9/14/2011	RM 13	8:50	17:20	511

9/14/2011 RM 15	9:02	17:32	511
9/15/2011 RM 4	9:15	17:45	511
9/15/2011 RM 14	9:12	17:42	511
9/16/2011 RM 3	8:57	17:27	511
9/19/2011 RM 1	8:10	16:40	511
9/19/2011 RM 2	7:44	16:14	511
9/20/2011 RM 5	9:37	18:07	511
9/20/2011 RM 11	9:20	17:40	501
9/21/2011 RM 8	7:55	16:25	511
9/21/2011 RM 9	7:50	16:20	511
9/22/2011 RM 10	9:00	17:30	511
9/22/2011 RM 6	9:00	17:30	511
9/26/2011 RM 12	9:00	17:30	511
9/26/2011 RM 7	9:00	17:30	511
9/27/2011 RM 4	8:22	16:52	511
9/27/2011 RM 14	8:25	16:55	511
9/28/2011 RM 3	8:15	16:45	511
9/28/2011 RM 13	8:22	16:52	511
9/30/2011 RM 15	8:20	16:50	511
10/3/2011 RM 9	8:32	15:30	419
10/3/2011 RM 8	8:30	15:30	421
10/4/2011 RM 10	8:25	14:20	356
10/4/2011 RM 6	8:25	14:20	356
10/5/2011 RM 5	9:20	17:50	511
10/5/2011 RM 1	11:00	18:00	421
10/10/2011 RM 2	8:35	17:05	511
10/10/2011 RM 11	8:55	17:25	511
10/11/2011 RM 12	8:30	17:00	511
10/11/2011 RM 7	8:30	17:00	511
10/12/2011 RM 13	9:05	17:38	514
10/12/2011 RM 3	9:09	17:39	511
10/13/2011 RM 15	8:50	17:20	511
10/14/2011 RM 4	8:30	17:00	511
10/14/2011 RM 14	8:30	17:00	511
10/18/2011 RM 8	8:58	17:28	511
10/18/2011 RM 9	9:00	17:30	511
10/19/2011 RM 6	8:44	17:14	511
10/19/2011 RM 10	8:30	17:00	511
10/19/2011 RM 6	8:44	17:14	511
10/20/2011 RM 1	8:00	16:30	511
10/20/2011 RM 2	8:04	16:34	511
10/21/2011 RM 5	8:55	17:25	511
10/21/2011 RM 11	9:00	17:30	511
10/24/2011 RM 13	8:35	17:05	511
10/24/2011 RM 7	8:45	12:30	226
10/24/2011 RM 3	8:30	17:00	511
10/25/2011 RM 12	8:45	12:45	241

10/27/2011	RM 15	8:30	17:00	511
10/27/2011	RM 4	8:30	17:00	511
10/28/2011	RM 7	9:45	17:30	466
10/28/2011	RM 12	9:50	17:30	461
10/29/2011	RM 14	10:00	17:00	421
10/31/2011	RM 6	8:35	17:05	511
10/31/2011	RM 10	8:30	17:00	511
11/3/2011	RM 9	9:11	17:00	470
11/3/2011	RM 9	9:11	17:00	470
11/3/2011	RM 1	8:10	17:30	561
11/3/2011	RM 8	9:18	16:55	458
11/5/2011	RM 2	8:51	14:45	355
11/7/2011	RM 3	8:35	16:40	486
11/7/2011	RM 13	8:25	16:55	511
11/8/2011	RM 7	10:05	15:00	296
11/8/2011	RM 15	10:00	15:30	331
11/9/2011	RM 14	9:46	16:30	405
11/9/2011	RM 4	10:10	16:30	381
11/9/2011	RM 5	9:30	16:00	391
11/10/2011	RM 11	9:07	16:20	434
11/10/2011	RM 12	10:10	16:00	351
11/14/2011	RM 1	8:40	16:50	491
11/14/2011	RM 2	10:07	16:30	384
11/15/2011	RM 8	9:36	16:30	415
11/15/2011	RM 9	10:01	16:30	390
11/15/2011	RM 10	9:49	16:17	389
11/16/2011	RM 11	10:00	16:19	380
11/16/2011	RM 5	11:30	16:45	316
11/16/2011	RM 6	10:10	16:30	381

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ATTACHMENT 12

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Valerie Lightholder

From: Tyler_Abbott@fws.gov
Sent: Thursday, April 12, 2012 2:29 PM
To: Jon Kehmeier
Cc: Clint King; Garry Miller; Patricia_Sweanor@fws.gov; Mark_Sattelberg@fws.gov
Subject: Information Request re. PCW Eagle Data and Year 3 Survey Protocols

Importance: High

Jon and Garry:

Trish is in the middle of reviewing the data provided.

In order for us to understand the survey data-- and for us to provide meaningful recommendations on the Migratory Bird Conservation Strategy and ECP for CCSM-- we have the following requests and/or questions:

1. Provide maps showing evolution of the CCSM project area and survey efforts within those boundaries.
2. Provide a map with count locations as identified in the excel spreadsheet entitled "PCW_AllEagles_AllObservations_20120321_EagleDataforFWS".
3. Provide a map of the flight paths of eagles observed in the 2011 surveys and overlaid on the count locations.
4. Provide maps with all radar point locations determined by "substantial analysis and post-processing" to be eagles. (Phrase in quotes is from the PCW Draft Programmatic ECP).
5. Provide step-by-step descriptions, with examples, of what "substantial analysis and post-processing" of the radar data is.
6. Include column in the excel spreadsheet PCW_AllEagles_AllObservations_20120321_EagleDataforFWS with distance from the observer for each eagle observation.
7. Provide eagle data from WEST's 2008 surveys in a spreadsheet with the following data entries: identification of point count location, date of survey, duration of survey, minutes eagles were observed (or at least no. of eagles observed) per survey. Also provide eagle flight path maps if available.
8. Identify any eagle survey efforts in 2009 and 2010.

Thanks

Tyler Abbott
Deputy Field Supervisor
U.S. Fish and Wildlife Service
Wyoming Ecological Services Office
Office: (307) 772-2374 x 231

Cell: (307) 286-7242
tyler_abbott@fws.gov

"Jon Kehmeier" <jkehmeier@swca.com>

"Jon Kehmeier"
<jkehmeier@swca.com>

03/21/2012 09:02 PM

To<Tyler_Abbott@fws.gov>, <Patricia_Sweanor@fws.gov>, <Travis_Sanderson@fws.gov>

cc<garry.miller@tac-denver.com>, <cking@swca.com>

SubjectPCW Eagle Data and Year 3 Survey Protocols

Travis, Trish, and Tyler,

I have attached a copy of the eagle data collected as part of Power Company of Wyoming's year 2 surveys. These data do not include all of the winter data. Those data will be forwarded once we have gone through our QA process (likely within the next few weeks). The spreadsheet has three tabs. The first tab is the survey locations and time of survey at each location on the date the survey occurred. The second tab contains all of the eagle observations that were recorded, the duration of those observations, and the species of eagle observed. The third tab contains a glossary of the variables contained in each tab. These data should allow you to look at site-specific eagle use per minute of survey time (number of observations per minute). Please take a look at the data and let me know what additional information you need for your modeling purposes. Trish, Tyler mentioned to me on Monday that you have a new model for risk assessment. Would it be possible to get a copy of that model to review? I think it would help us understand all of the datasets that you need from us for modeling purposes. I think it will be helpful as we continue working through the risk assessment process and the finalization of the eagle conservation strategy and APP.

I have also attached a copy of the year 3 survey protocols. The protocols consist of running the radar through November of 2012, completing aerial surveys for raptors in the same areas we surveyed in 2011, and to conduct 3-4 hour long-watch raptor surveys at 14 sites. Two long-watch surveys would be completed per day and each site would be visited twice per month. The intent of the year 3 survey is to better understand the eagle use areas that we have identified, evaluate eagle and raptor use in areas where survey coverage is lacking, to compare nesting trends across years, and to use the radar to better understand home ranges around raptor/eagle nests and migratory bird migration and patterns of use. Following year 3 surveys we will have 100% survey coverage of all of the probable turbine footprint. We will begin our year 3 surveys at the beginning of April.

If you have any questions about either attached file please let me know.

Jon Kehmeier
Principal Ecologist
SWCA Environmental Consultants
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Broomfield, CO 80021
P 303.487.1183 | M 720.951.0600 | F 303.487.1245

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http://on.fb.me/SWCA_Environmental_Consultants
http://www.linkedin.com/company/swca-environmental-consultants

[attachment "PCW Year 3 protocols - DRAFT.docx" deleted by Tyler Abbott/R6/FWS/DOI] [attachment "PCW_AllEagles_AllObservations_20120321_EagleDataForFWS.xlsx" deleted by Tyler Abbott/R6/FWS/DOI]

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ATTACHMENT 13

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Valerie Lightholder

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Tuesday, April 17, 2012 5:34 PM
To: Tyler_Abbott@fws.gov; Patricia_Sweanor@fws.gov
Cc: Clint King; Garry Miller; Mark_Sattelberg@fws.gov
Subject: RE: Information Request re. PCW Eagle Data and Year 3 Survey Protocols
Attachments: 2011_2012_EagleFlightPaths.docx; 2011_2012 _LongWatchAndRadarSurveyLocations.docx; 2012-04-09_OriginalDev-CurrentDev_ 11x17_lr.pdf; EagleAnalysis_AllSeasons_April17_2012_forUSFWS.xlsx; WESTAvianObservationPoints.jpg

Tyler and Trish,

Please find attached copies of the information you requested. Details of the contents of this email are as follows:

1. Provide maps showing evolution of the CCSM project area and survey efforts within those boundaries.

   See attached PDF titled 2012-04-09 OriginalDev-CurrentDev file. This map shows the current project boundaries in a purple color and the original in an orange color. Sage-grouse core areas have been included as reference as they help to define the outer boundaries of the current development area. Note the shift in the Sierra Madre project area. The current Chokecherry project area is largely similar to the original boundary.

2. Provide a map with count locations as identified in the excel spreadsheet entitled "PCW_AllEagles_AllObservations_20120321_EagleDataforFWS".

   See attached Word file titled 2011_2012LongWatchAndRadarSurveyLocations. These maps are also included in the latest version of PCW's ECS which is nearing completion.

3. Provide a map of the flight paths of eagles observed in the 2011 surveys and overlaid on the count locations.

   See attached Word file titled 2011_2012EagleFlightPaths. These maps are also included in the latest version of PCW's ECS which is nearing completion.

4. Provide maps with all radar point locations determined by "substantial analysis and post-processing" to be eagles. (Phrase in quotes is from the PCW Draft Programmatic ECP).

   The newest version of the ECS will not include radar data analyzed to be eagles. The uncertainty regarding each radar target is too great for us to include those data at this time. Radar data are being used to identify avian use patterns as part of PCW's BBCS but will not be relied on for species identification, including for eagles and other raptor species.

5. Provide step-by-step descriptions, with examples, of what "substantial analysis and post-processing" of the radar data is.

   See response for question 4. Radar data will not be included in the newest version of the ECS.

6. Include column in the excel spreadsheet PCW_AllEagles_AllObservations_20120321_EagleDataforFWS with distance from the observer for each eagle observation.

   See attached Excel spreadsheet titled EagleAnalysis_AllSeasons... This file contains all observations of eagles in flight for all seasons, a summary of survey duration for all survey events, and calculations of eagle use by survey site and season. These data should be used to replace those that were sent to the Service earlier as the earlier version did not include winter data and contained several records that have been corrected as part of our ongoing QA/QC program for this dataset. The Excel spreadsheet contains a glossary tab that should provide the information you need to decipher the various datasets.

7. Provide eagle data from WEST's 2008 surveys in a spreadsheet with the following data entries: identification of point count location, date of survey, duration of survey, minutes eagles were observed (or at least no. of eagles observed) per survey. Also provide eagle flight path maps if available.

   WEST's 2008 data are still in process. I anticipate delivering that dataset in the next day or two. I have attached a copy of WEST's observation locations. WEST's data only include number of observations per 20 minute point count and thus will not be able to provide the number of minutes in which eagles were observed or the flight paths of those eagles but will be able to provide number of eagles per 20 minute survey.

8. Identify any eagle survey efforts in 2009 and 2010.

There were no specific eagle survey efforts in 2009 or 2010 other than those that were completed in winter 2009 by WEST. SWCA has maintained an incidental observation dataset that contains observations that have been made during 2009 and 2010.

I will forward the WEST dataset as soon as it has been compiled. If you have any questions regarding the information attached please let me know.

Jon Kehmeier
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http://www.linkedin.com/company/swca-environmental-consultants

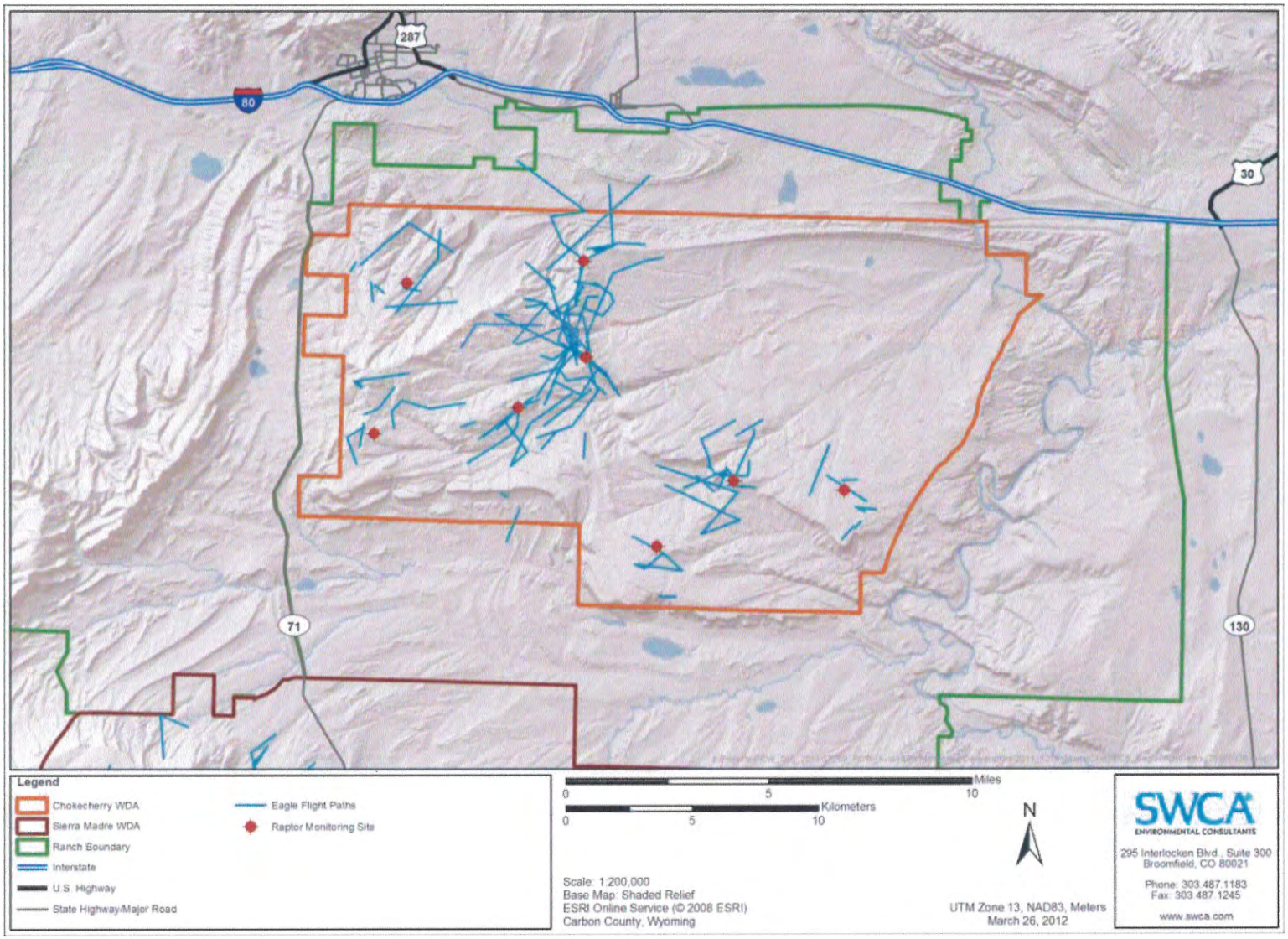


Figure 17. All eagle flight paths documented in the Chokecherry WDA during Year Two long-watch surveys.

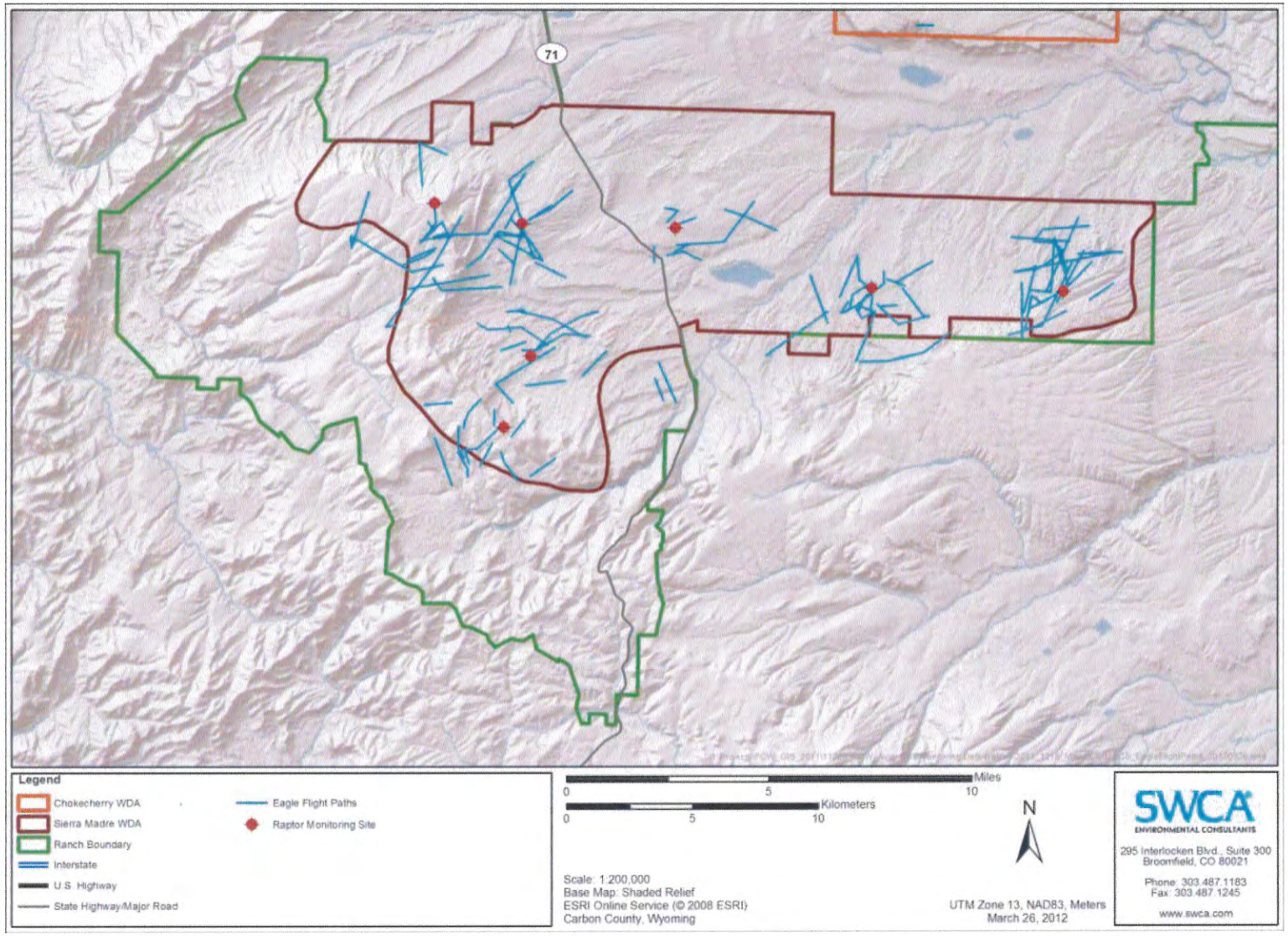


Figure 18. All eagle flight paths documented in the Sierra Madre WDA during Year Two long-watch surveys.

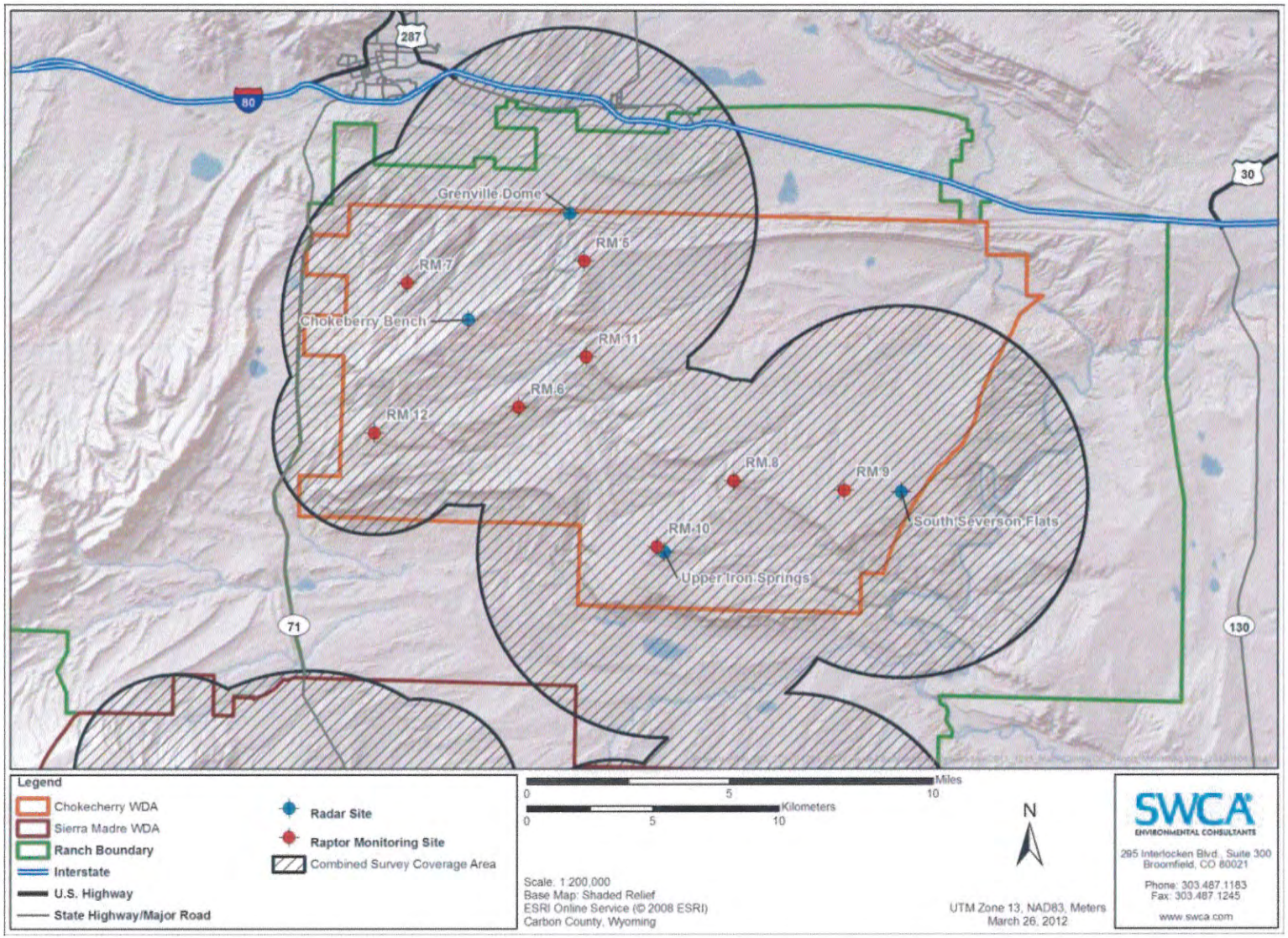


Figure 10. Radar and long-watch raptor survey sites and survey coverage areas in Chokecherry.

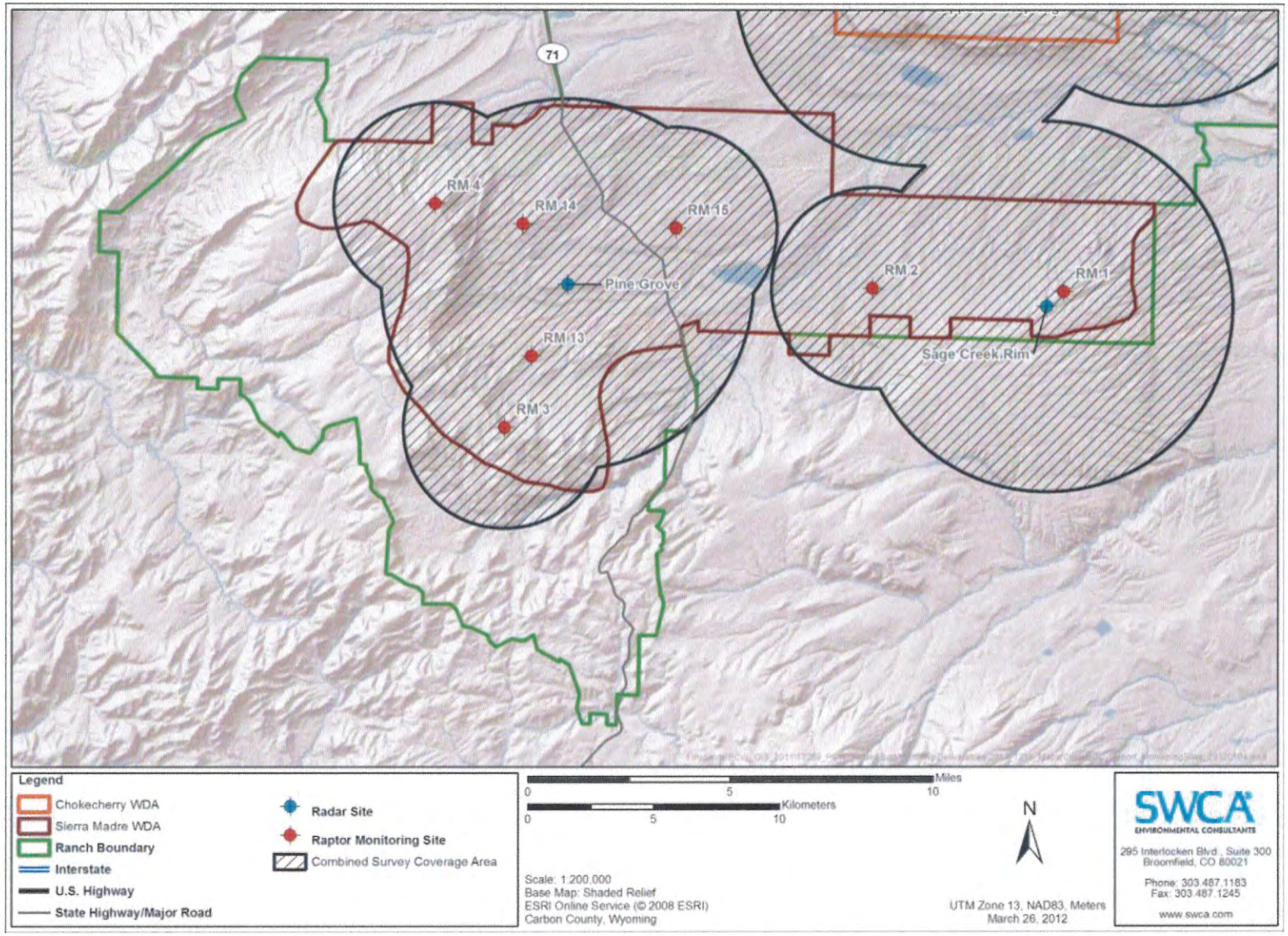
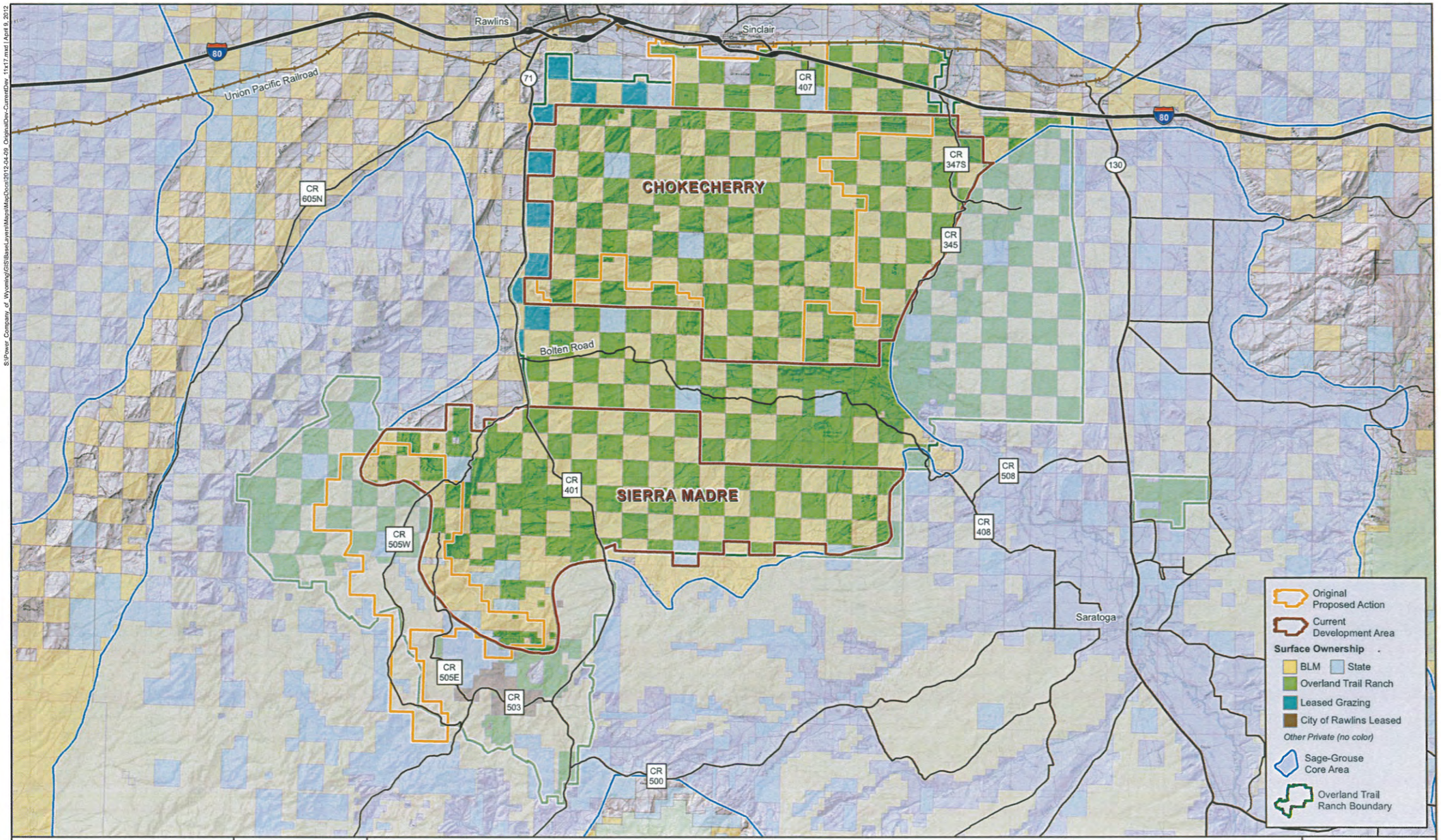


Figure 11. Radar and long-watch raptor survey sites and survey coverage areas in Sierra Madre.



S:\Power_Company_of_Wyoming\GIS\BaseLayers\Maps\MapDocs\2012-04-09_OriginalDev-CurrentDev_11x17.mxd | April 9, 2012

Proprietary & Confidential

Original Proposed Action and Current Development Areas

Chokecherry and Sierra Madre Wind Energy Project | Apr. 9, 2012

Power Company of Wyoming LLC

SiteSummary Data

SurveyEvent	Unique identifier for each survey event, used for relational purposes in master database
SurveyPoint	Survey point at which observations were made
Date	Date on which survey occurred
StartTime	Start time of survey
EndTime	End time of survey
SurveyMins	Minutes of survey completed (end time - start time)
ProjectArea	Project area in which survey point is located (SM = Sierra Madre, CC = Chokecherry)
Season	Migratory bird season in which survey occurred (spring = April 1 - June 30, summer = July 1 - August 14, fall = August 15 - November 15, winter = November 15 - March 31)

EagleUse

SurveyEvent	Unique identifier for each survey event, used for relational purposes in master database
SurveyPoint	Survey point at which observations were made
Date	Date on which survey occurred
Season	Migratory bird season in which survey occurred (spring = April 1 - June 30, summer = July 1 - August 14, fall = August 15 - November 15, winter = November 15 - March 31)
NumberOfEagles	Number of eagles observed per observation
FlightMinutesPerTarget	Number of minutes eagles were observed
TotalEagleFlightMinutes	Product of number of eagles per observation multiplied by number of minutes that the eagles were in flight (NumberOfEagles * FlightMinutesPerTarget)
DistanceToTarget	Distance from observer for each eagle target
ProjArea	Project area in which survey point is located (SM = Sierra Madre, CC = Chokecherry)

Valerie Lightholder

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Wednesday, April 18, 2012 3:29 PM
To: Tyler_Abbott@fws.gov; Patricia_Sweanor@fws.gov
Cc: Clint King; Garry Miller; Mark_Sattelberg@fws.gov
Subject: RE: Information Request re. PCW Eagle Data and Year 3 Survey Protocols
Attachments: PCW WEST 2008-2009 eagle data.xlsx

Tyler and Trish,

I have attached the 2008 and 2009 eagle observations recorded by WEST. In 2008-2009 there were 433, 800-meter, 20-minute point counts completed within the original wind development area. A total of 8660 minutes of observation occurred during these surveys. A total of 72 individual eagles were observed during 58 of the 433 surveys. The other 375 surveys did not record any eagle activity. If you have any questions regarding the attached spreadsheet, please let me know.

Jon Kehmeier
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http://www.linkedin.com/company/swca-environmental-consultants

---

From: Jon Kehmeier
Sent: Tuesday, April 17, 2012 5:34 PM
To: 'Tyler_Abbott@fws.gov'; Patricia_Sweanor@fws.gov
Cc: Clint King; garry.miller@tac-denver.com; Mark_Sattelberg@fws.gov
Subject: RE: Information Request re. PCW Eagle Data and Year 3 Survey Protocols

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http://www.linkedin.com/company/swca-environmental-consultants

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date	Station Number	species	indivs	duration (minutes)
10/30/2008	2	GOEA	1	20
4/22/2009	2	GOEA	1	20
10/23/2008	3	GOEA	1	20
11/6/2008	3	GOEA	2	20
11/12/2008	3	GOEA	1	20
4/29/2009	3	GOEA	2	20
10/3/2008	4	GOEA	1	20
10/23/2008	4	GOEA	1	20
10/30/2008	4	GOEA	1	20
11/12/2008	4	GOEA	1	20
4/28/2009	4	GOEA	1	20
11/6/2008	5	GOEA	1	20
5/28/2009	5	BAEA	1	20
5/28/2009	5	GOEA	1	20
5/13/2009	6	GOEA	2	20
5/28/2009	6	BAEA	1	20
6/26/2008	7	GOEA	2	20
8/1/2008	7	GOEA	1	20
8/29/2008	7	GOEA	1	20
9/14/2008	7	GOEA	1	20
10/3/2008	7	GOEA	1	20
10/13/2008	7	GOEA	1	20
5/14/2009	7	GOEA	1	20
6/3/2009	7	GOEA	1	20
7/23/2008	9	GOEA	1	20
11/6/2008	9	GOEA	2	20
9/14/2008	10	GOEA	2	20
10/30/2008	10	GOEA	1	20
12/17/2008	10	GOEA	1	20
12/23/2008	10	GOEA	1	20
6/16/2009	10	GOEA	1	20
7/8/2008	11	GOEA	1	20
8/16/2008	11	GOEA	2	20
10/14/2008	11	GOEA	1	20
5/29/2009	11	GOEA	1	20
6/8/2009	11	GOEA	1	20
10/14/2008	12	UNEA	1	20
10/24/2008	12	GOEA	1	20
6/27/2008	13	GOEA	1	20
8/31/2008	13	GOEA	1	20
10/2/2008	13	GOEA	1	20
10/14/2008	13	GOEA	1	20
10/24/2008	13	GOEA	2	20

5/29/2009	13	GOEA	1	20
7/31/2008	14	GOEA	2	20
8/2/2008	14	GOEA	2	20
9/15/2008	14	GOEA	1	20
10/14/2008	14	GOEA	1	20
11/13/2008	14	GOEA	2	20
5/18/2009	14	GOEA	1	20
7/23/2008	15	GOEA	1	20
8/18/2008	15	GOEA	1	20
10/21/2008	15	GOEA	2	20
11/7/2008	15	GOEA	2	20
11/13/2008	15	GOEA	1	20
10/14/2008	16	GOEA	1	20
10/24/2008	16	GOEA	2	20
4/27/2009	19	GOEA	1	20

ATTACHMENT 14

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Valerie Lightholder

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Tuesday, May 01, 2012 3:49 PM
To: Patricia_Sweanor@fws.gov
Subject: FW: Information Request re. PCW Eagle Data and Year 3 Survey Protocols
Attachments: 2011_2012_EagleFlightPaths.docx

Hi Trish,

I just got your voicemail from yesterday. I have attached the flight path file that you mentioned on your message. Sorry that it did not come through the first time. If you could, please let me know that you received it this time around. Thanks. Hope you had a great field visit to the project area.

Jon

From: Jon Kehmeier
Sent: Tuesday, April 17, 2012 5:34 PM
To: 'Tyler_Abbott@fws.gov'; Patricia_Sweanor@fws.gov
Cc: Clint King; garry.miller@tac-denver.com; Mark_Sattelberg@fws.gov
Subject: RE: Information Request re. PCW Eagle Data and Year 3 Survey Protocols

Tyler and Trish,

Please find attached copies of the information you requested. Details of the contents of this email are as follows:

1. Provide maps showing evolution of the CCSM project area and survey efforts within those boundaries.

   See attached PDF titled 2012-04-09 OriginalDev-CurrentDev file. This map shows the current project boundaries in a purple color and the original in an orange color. Sage-grouse core areas have been included as reference as they help to define the outer boundaries of the current development area. Note the shift in the Sierra Madre project area. The current Chokecherry project area is largely similar to the original boundary.

2. Provide a map with count locations as identified in the excel spreadsheet entitled "PCW_AllEagles_AllObservations_20120321_EagleDataforFWS".

   See attached Word file titled 2011_2012LongWatchAndRadarSurveyLocations. These maps are also included in the latest version of PCW's ECS which is nearing completion.

3. Provide a map of the flight paths of eagles observed in the 2011 surveys and overlaid on the count locations.

   See attached Word file titled 2011_2012EagleFlightPaths. These maps are also included in the latest version of PCW's ECS which is nearing completion.

4. Provide maps with all radar point locations determined by "substantial analysis and post-processing" to be eagles. (Phrase in quotes is from the PCW Draft Programmatic ECP).

The newest version of the ECS will not include radar data analyzed to be eagles. The uncertainty regarding each radar target is too great for us to include those data at this time. Radar data are being used to identify avian use patterns as part of PCW's BBCS but will not be relied on for species identification, including for eagles and other raptor species.

5. Provide step-by-step descriptions, with examples, of what "substantial analysis and post-processing" of the radar data is.

   See response for question 4. Radar data will not be included in the newest version of the ECS.

6. Include column in the excel spreadsheet PCW_AllEagles_AllObservations_20120321_EagleDataforFWS with distance from the observer for each eagle observation.

   See attached Excel spreadsheet titled EagleAnalysis_AllSeasons... This file contains all observations of eagles in flight for all seasons, a summary of survey duration for all survey events, and calculations of eagle use by survey site and season. These data should be used to replace those that were sent to the Service earlier as the earlier version did not include winter data and contained several records that have been corrected as part of our ongoing QA/QC program for this dataset. The Excel spreadsheet contains a glossary tab that should provide the information you need to decipher the various datasets.

7. Provide eagle data from WEST's 2008 surveys in a spreadsheet with the following data entries: identification of point count location, date of survey, duration of survey, minutes eagles were observed (or at least no. of eagles observed) per survey. Also provide eagle flight path maps if available.

   WEST's 2008 data are still in process. I anticipate delivering that dataset in the next day or two. I have attached a copy of WEST's observation locations. WEST's data only include number of observations per 20 minute point count and thus will not be able to provide the number of minutes in which eagles were observed or the flight paths of those eagles but will be able to provide number of eagles per 20 minute survey.

8. Identify any eagle survey efforts in 2009 and 2010.

There were no specific eagle survey efforts in 2009 or 2010 other than those that were completed in winter 2009 by WEST. SWCA has maintained an incidental observation dataset that contains observations that have been made during 2009 and 2010.

I will forward the WEST dataset as soon as it has been compiled. If you have any questions regarding the information attached please let me know.

Jon Kehmeier
Principal Ecologist
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295 Interlocken Blvd., Suite 300
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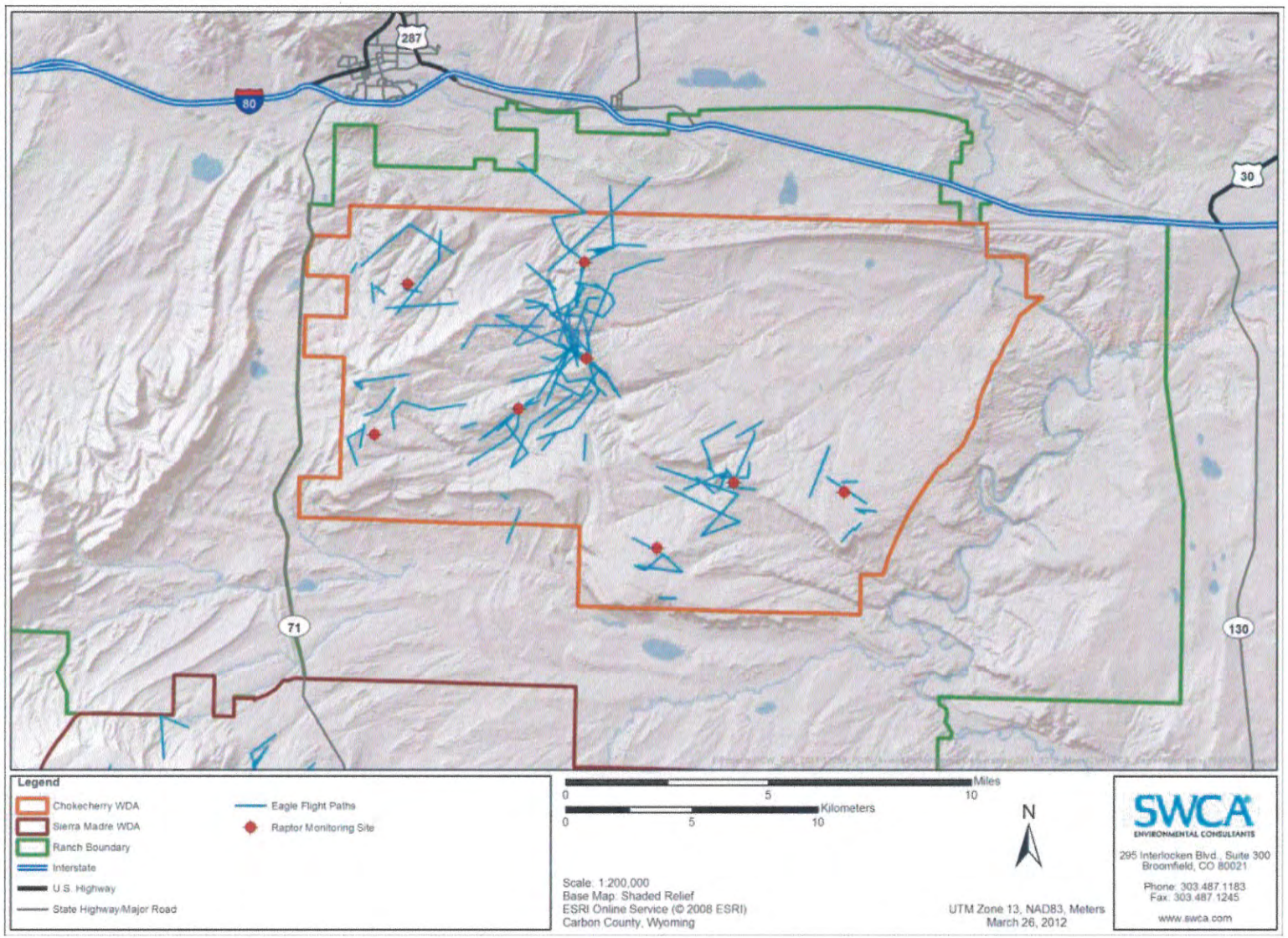

Figure 17. All eagle flight paths documented in the Chokecherry WDA during Year Two long-watch surveys.

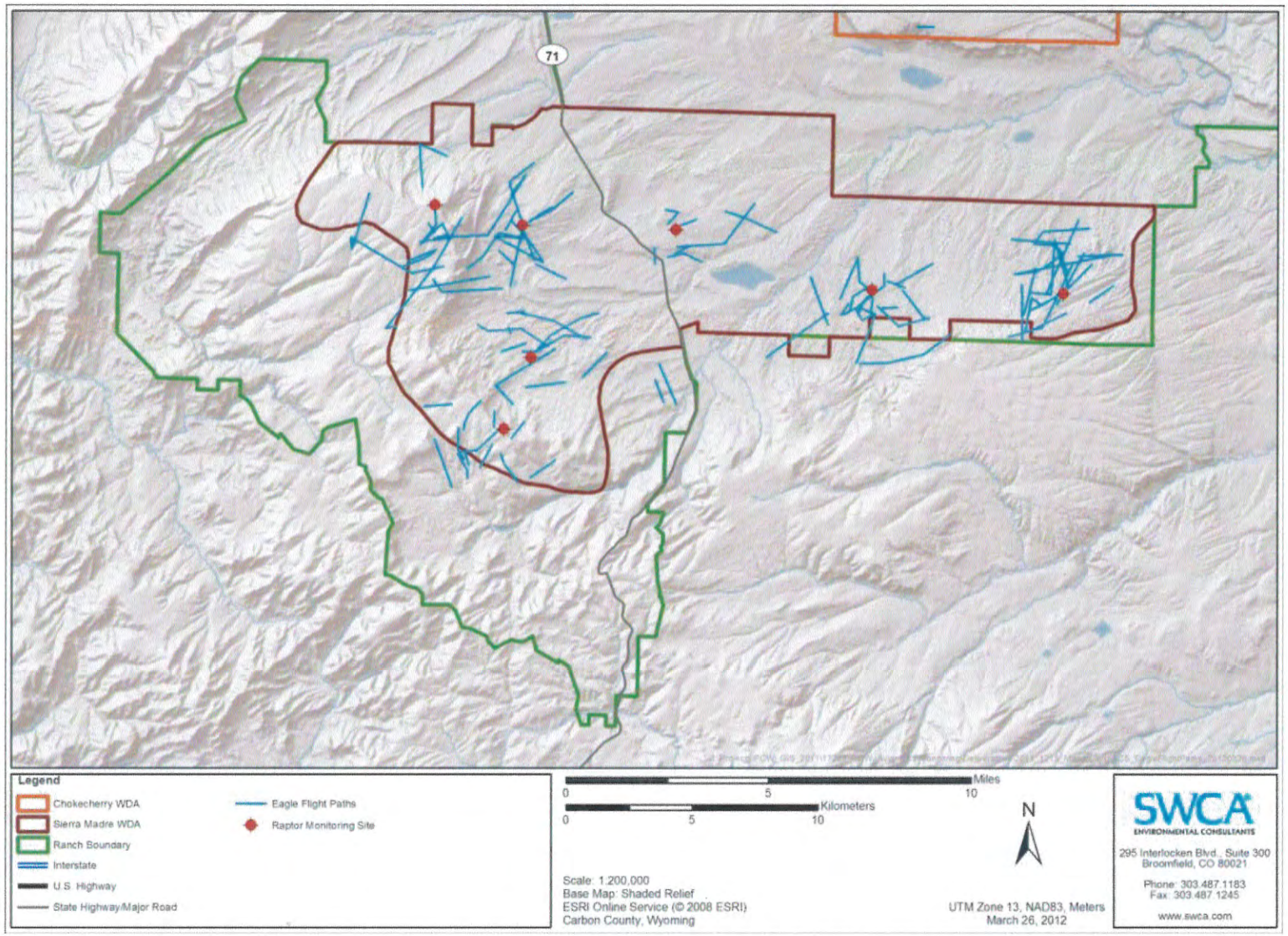

Figure 18. All eagle flight paths documented in the Sierra Madre WDA during Year Two long-watch surveys.

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ATTACHMENT 15

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Valerie Lightholder

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Monday, May 07, 2012 3:47 PM
To: Patricia_Sweanor@fws.gov
Subject: PCW eagle use data
Attachments: EagleAnalysis_AllSeasons_April17_2012_forUSFWS.xlsx; PCW WEST 2008-2009 eagle data.xlsx

Hi Trish,

I have attached the most current eagle use data for PCW. The files are for the SWCA data collected in 2011-2012 and the WEST data collected in 2008-2009. If you have any questions please let me know.

Jon Kehmeier
Principal Ecologist

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date	Station Number	species	indivs	duration (minutes)
10/30/2008	2	GOEA	1	20
4/22/2009	2	GOEA	1	20
10/23/2008	3	GOEA	1	20
11/6/2008	3	GOEA	2	20
11/12/2008	3	GOEA	1	20
4/29/2009	3	GOEA	2	20
10/3/2008	4	GOEA	1	20
10/23/2008	4	GOEA	1	20
10/30/2008	4	GOEA	1	20
11/12/2008	4	GOEA	1	20
4/28/2009	4	GOEA	1	20
11/6/2008	5	GOEA	1	20
5/28/2009	5	BAEA	1	20
5/28/2009	5	GOEA	1	20
5/13/2009	6	GOEA	2	20
5/28/2009	6	BAEA	1	20
6/26/2008	7	GOEA	2	20
8/1/2008	7	GOEA	1	20
8/29/2008	7	GOEA	1	20
9/14/2008	7	GOEA	1	20
10/3/2008	7	GOEA	1	20
10/13/2008	7	GOEA	1	20
5/14/2009	7	GOEA	1	20
6/3/2009	7	GOEA	1	20
7/23/2008	9	GOEA	1	20
11/6/2008	9	GOEA	2	20
9/14/2008	10	GOEA	2	20
10/30/2008	10	GOEA	1	20
12/17/2008	10	GOEA	1	20
12/23/2008	10	GOEA	1	20
6/16/2009	10	GOEA	1	20
7/8/2008	11	GOEA	1	20
8/16/2008	11	GOEA	2	20
10/14/2008	11	GOEA	1	20
5/29/2009	11	GOEA	1	20
6/8/2009	11	GOEA	1	20
10/14/2008	12	UNEA	1	20
10/24/2008	12	GOEA	1	20
6/27/2008	13	GOEA	1	20
8/31/2008	13	GOEA	1	20
10/2/2008	13	GOEA	1	20
10/14/2008	13	GOEA	1	20
10/24/2008	13	GOEA	2	20

5/29/2009	13	GOEA	1	20
7/31/2008	14	GOEA	2	20
8/2/2008	14	GOEA	2	20
9/15/2008	14	GOEA	1	20
10/14/2008	14	GOEA	1	20
11/13/2008	14	GOEA	2	20
5/18/2009	14	GOEA	1	20
7/23/2008	15	GOEA	1	20
8/18/2008	15	GOEA	1	20
10/21/2008	15	GOEA	2	20
11/7/2008	15	GOEA	2	20
11/13/2008	15	GOEA	1	20
10/14/2008	16	GOEA	1	20
10/24/2008	16	GOEA	2	20
4/27/2009	19	GOEA	1	20

SiteSummary Data

SurveyEvent	Unique identifier for each survey event, used for relational purposes in master database
SurveyPoint	Survey point at which observations were made
Date	Date on which survey occurred
StartTime	Start time of survey
EndTime	End time of survey
SurveyMins	Minutes of survey completed (end time - start time)
ProjectArea	Project area in which survey point is located (SM = Sierra Madre, CC = Chokecherry)
Season	Migratory bird season in which survey occurred (spring = April 1 - June 30, summer = July 1 - August 14, fall = August 15 - November 15, winter = November 15 - March 31)

EagleUse

SurveyEvent	Unique identifier for each survey event, used for relational purposes in master database
SurveyPoint	Survey point at which observations were made
Date	Date on which survey occurred
Season	Migratory bird season in which survey occurred (spring = April 1 - June 30, summer = July 1 - August 14, fall = August 15 - November 15, winter = November 15 - March 31)
NumberOfEagles	Number of eagles observed per observation
FlightMinutesPerTarget	Number of minutes eagles were observed
TotalEagleFlightMinutes	Product of number of eagles per observation multiplied by number of minutes that the eagles were in flight (NumberOfEagles * FlightMinutesPerTarget)
DistanceToTarget	Distance from observer for each eagle target
ProjArea	Project area in which survey point is located (SM = Sierra Madre, CC = Chokecherry)

ATTACHMENT 16

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Garry Miller

From: Jon Kehmeier <jkehmeier@swca.com>
Sent: Monday, June 25, 2012 11:55 AM
To: Patricia_Sweanor@fws.gov
Cc: Garry Miller; Kevin_Kritz@fws.gov; Tyler_Abbott@fws.gov; Nathan_Darnall@fws.gov; James_Linstrom@fws.gov
Subject: RE: SWCA eagle take model an request for data

Hi Trish,

The conference was great. Lots of good information on sage-grouse.

Regarding the GIS files, I will begin pulling all of those together with a goal of having them to you mid-week. If I think of any other layers that might be useful for you I will throw those in as well. If you have any questions in the meantime, please let me know.

Jon

Jon Kehmeier
Principal Ecologist

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From: Patricia_Sweanor@fws.gov [mailto:Patricia_Sweanor@fws.gov]
Sent: Monday, June 25, 2012 11:43 AM
To: Jon Kehmeier
Cc: garry.miller@tac-denver.com; Kevin_Kritz@fws.gov; Tyler_Abbott@fws.gov; Nathan_Darnall@fws.gov; James_Linstrom@fws.gov
Subject: RE: SWCA eagle take model an request for data

hi Jon,

I heard from Pat and Lynn that the conference in Steamboat was very good - with a lot of information to absorb. What were your thoughts on it? And thanks for the opportunity to meet with you to discuss how you constructed your eagle model for CCSM.

First, however, I was looking forward to receiving the CCSM project GIS layers. To clarify my previous email, the important bird habitat or information data layers I would like to receive include such data sets as active nest sites 2008, 2011 and 2012, flight path data for all raptor species, avian survey point locations, vegetation cover, BLM historical nest sites (we have that) , prairie dog towns (we have that), ungulate crucial winter ranges, sage-grouse leks,ungulate parturition areas, grouse brood rearing habitat, rodent concentrations, e.g., ground squirrel. I realize you may not have all of these layers or may have different ones so please just let me know what you will be able to provide to us. Thanks. Additionally, if you have a GIS layer for the project area boundary map that was modified when the Grizzly Wildlife Habitat Mgmt area was omitted, could you provide that to us as well?

Thanks so much!

Trish

****

Trish Sweanor

Fish and Wildlife Biologist
Wyoming Energy Program Coordinator
U.S. Fish & Wildlife Service
5353 Yellowstone Rd, Suite 308A
Cheyenne, Wyoming 82009

ph (307)772-2374 ext 239
fax (307) 772-2358

"Jon Kehmeier" <jkehmeier@swca.com>

06/20/2012 03:52 PM

To <Patricia_Sweanor@fws.gov>
cc <Tyler_Abbott@fws.gov>, <garry.miller@tac-denver.com>, <Kevin_Kritz@fws.gov>
Subject RE: SWCA eagle take model an request for data

Hi Trish,

Unfortunately I won't be able to get you the information you requested by tomorrow. I am in Steamboat Springs at the western agencies sage-grouse conference and won't be back until Friday afternoon. When I get back in town I would be more than happy to schedule a time to meet with you, Kevin, and other members of the strike team if possible to describe how we constructed our model, the assumptions we made, and the data that underlie the model. I know that Kevin and I had talked about scheduling something like that once he heard back from the modeler that built the Service risk assessment model. Let me know what dates might work for a meeting or even a web conference.

Regarding the spatial data, if you can provide a list of what you are looking for we can determine how to best meet your needs.

Thanks. I hope your meetings go well with the strike team.

Jon

Jon Kehmeier
Principal Ecologist

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From: Patricia_Sweanor@fws.gov [mailto:Patricia_Sweanor@fws.gov]
Sent: Wednesday, June 20, 2012 9:54 AM
To: Jon Kehmeier
Cc: Tyler_Abbott@fws.gov; garry.miller@tac-denver.com>
Subject: SWCA eagle take model an request for data

hi Garry and Jon,

We are meeting with the FWS Eagle Team tomorrow regarding CCSM. First, would you be able to supply our office with the eagle model that you are using to estimate eagle take from your survey data?

Secondly, I am also requesting your GIS important bird habitat layers. I can either provide you a list of the habitat features we would like or perhaps you can provide us with a list of the layers you have. Thank you!

Trish

****

Trish Sweanor

Fish and Wildlife Biologist
Wyoming Energy Program Coordinator
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