Powder River Basin – Montana Wildlife Monitoring and Protection Plan 2009 Progress Report and Database Development

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INTRODUCTION

The Bureau of Land Management (BLM) Miles City Field Office (MCFO) manages for the multiple use of more than 2.7 million surface acres of public land and 12.4 million acres of subsurface mineral estate in 16 counties in eastern Montana. The BLM-MCFO achieves its multiple-use mission while considering and providing for responsible development of important oil and gas resources through the Final Supplement to the Montana Statewide Oil and Gas Environmental Impact Statement (FSEIS) and Proposed Amendment of the Powder River and Billings Resource Management Plans (RMPs) (BLM 2008a), including the Wildlife Monitoring and Protection Plan (WMPP) (BLM 2008b). The FSEIS and RMPs address future exploration for and development of BLM-managed coal bed natural gas (CBNG) and conventional oil and gas resources. Although the FSEIS covers lands administered by the BLM's Billings Field Office, all current development has occurred within the boundaries of the BLM-MCFO.

The WMPP document is the framework for wildlife monitoring and protection across the Powder River and Billings RMP areas and provides a template for regional and/or project-specific WMPP development. The BLM, Montana Fish Wildlife and Parks (MFWP), and the U.S. Fish and Wildlife Service (USFWS) work cooperatively to implement portions of the WMPP over the planning area, which excludes those lands administered by the U.S. Forest Service, the Crow, the Northern Cheyenne, and other Native American lands. The WMPP is implemented on federal lands, including split estate (lands in which the mineral rights are federally owned and the land ownership is non-federal), in cooperation with state agencies, federal agencies, tribal representatives, operators, and landowners.

The goal of the WMPP (BLM 2008b) is to avoid or minimize impacts to wildlife and serve as a communication tool to foster cooperative relationships among CBNG and conventional oil and gas industry operators (operators), resource management agencies, landowners, adjacent tribal governments, and the public. The overall purpose of the WMPP is to acquire baseline wildlife information, monitor wildlife populations, and assess the effectiveness of development stipulations. The WMPP was designed to facilitate the BLM's ability to pinpoint problems (including the evaluation of other contributing factors), provide guidance for the design of project plans that include conservation for declining species, monitor the effectiveness of decisions, and make recommendations to adjust management to address specific situations. The WMPP is intended to be a fluid guidance document, with a goal of periodic review and revision if needed. If necessary, protective measures will be added, modified, or removed.

Implementation of the WMPP began with the issuance of the Record of Decision for the Final Statewide Oil and Gas Environmental Impact Statement (FEIS) and Proposed Amendment of the Powder River and Billings RMP (BLM 2003). Prior to issuance of the Record of Decision, little biological data existed for areas of potential CBNG development within the Powder River and Billings RMP areas. In 2003, survey requirements in areas of development were established with the issuance of the FEIS and WMPP. In 2008, survey requirements were updated to reflect new information and changes in policies, regulations, or activities since the FEIS was approved (BLM 2008a). Collection of consistent wildlife information identified in the WMPP involves landowners, operators, and state and federal agencies. An

interagency working group composed of a core team of agency biologists oversees the implementation of the programmatic elements of the WMPP.

Wildlife data collection in support of CBNG development has been ongoing for approximately 10 years. This information, collected by many entities, has not been organized, consolidated, or summarized. Collection of much of the wildlife inventory and monitoring data is a requirement placed on industry. This requirement has largely been accomplished. A common criticism directed at the BLM is that all information is not readily available or used by the BLM.

The WMPP 2009 Progress Report and Database Development Project (WMPP Project) is the first of a two-phase project. Phase 1 will assimilate the data and provide the BLM-MCFO with a summary of inventory, monitoring, and research conducted in the Powder River Basin (PRB) area in which CBNG development has occurred from 2000 to 2009; measure change in wildlife populations in relation to CBNG development; and allow the BLM-MCFO to review the available data to determine if the guidelines for inventory and monitoring set forth in the WMPP are being met. Phase 2 of the WMPP Project will use information collected and included in the Phase 1 report and database to analyze the impacts of CBNG development to wildlife species and their habitats. The objectives of Phase 2 are to 1) determine if there is a statistically significant correlation between changes in wildlife parameters, such as greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) lek attendance or raptor nest occupancy, to CBNG development (e.g. rate and/or density of development) and 2) assess the effectiveness of current stipulations and Conditions of Approval (COAs). The WMPP Project will facilitate the BLM-MCFO's ability to pinpoint problems, design project plans that include conservation for declining species, and make recommendations to adjust management to address specific situations.

PROJECT AREA

The WMPP Project will focus on 933,513 acres of the PRB (WMPP Focus Area), which is bound to the north by the Northern Cheyenne Nation and Ashland District-Custer National Forest, to the east by the Powder River, to the south by the Montana/Wyoming state line, and to the west by the Crow Nation (Figure 1). The WMPP Focus Area is the primary area within the Powder River RMP area where CBNG development has occurred.

The WMPP Focus Area's climate is typical of the PRB with hot summers, cold winters, and the bulk of the precipitation occurring in late spring and early summer. The frost-free period on average lasts approximately 114 days. The PRB is considered semiarid and typically averages 12 to 14 inches of precipitation annually. Evaporation usually exceeds precipitation, and the total supply of moisture is low. Within the northern part of the PRB, annual precipitation appears to increase rapidly with elevation and, as a result, ranges from 12 inches at lower elevations to 18 inches of precipitation at higher elevations (around 4,000 feet) (Carlson and Cooper 2003). The mean maximum temperature in July is 72.2 degrees Fahrenheit (°F), while the mean minimum temperature is 21.5°F in January (based on the 1961–1990 period of record) (Carlson and Cooper 2003).

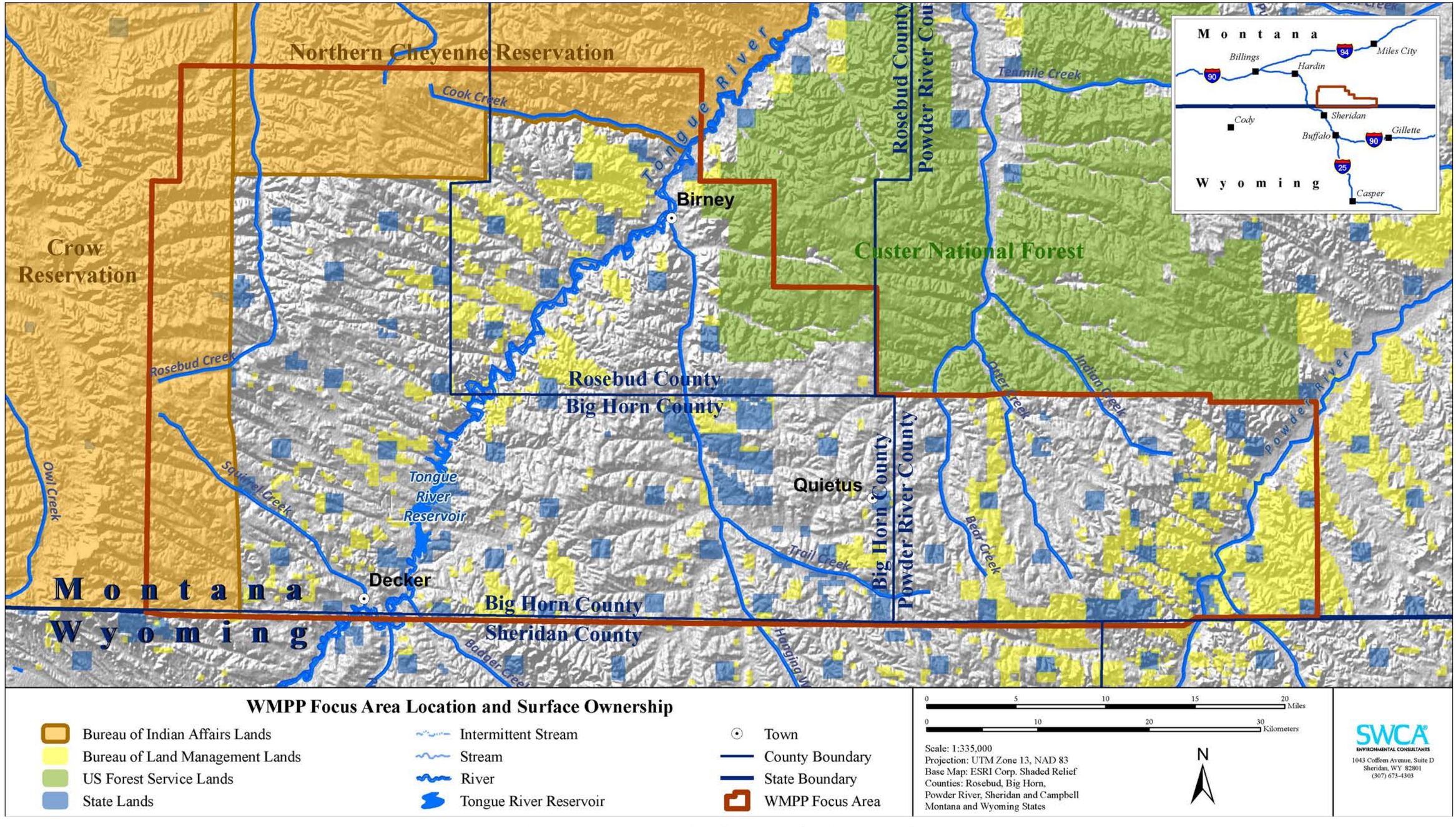

Figure 1. WMPP Focus Area location and surface ownership.

The LANDFIRE National Existing Vegetation Type layer (LANDFIRE) indicates that approximately 25% of the WMPP Focus Area is dominated by Northwestern Great Plains Mixed-grass Prairie, 24% is dominated by Inter-Mountain Basins Big Sagebrush Steppe, 24% is composed of Western Great Plains Sand Prairie, and 18% is Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna (LANDFIRE 2006). These four primary vegetation communities comprise approximately 91% of the WMPP Focus Area.

COAL BED NATURAL GAS DEVELOPMENT IN WMPP FOCUS AREA

As described under Alternative H of the FSEIS (BLM 2008a), the BLM manages the development of CBNG resources on BLM-administered lands in a phased manner through restrictions imposed by the BLM. This approach is designed to reduce the overall cumulative impacts to resources by managing the pace, placement, density, and intensity of federal CBNG development. The phased approach involves reviewing the Plans of Development (PODs), making a permit decision, monitoring and assessing impacts and adjusting operations, implementing mitigation measures, and reviewing thresholds. In addition to the standard POD review process, four evaluation screens for water, wildlife, Native American concerns, and air quality are applied.

Under the wildlife screen, the BLM's goal is conserving wildlife habitat and the sagebrush steppe/mixed grass prairie complex through the use of protective measures such as lease stipulations, best management practices (BMPs), and alternative development schemes as permit COAs.

PROTECTION MEASURES

Wildlife protective and conservation measures have been established through planning documents. These measures include lease stipulations, COAs, BMPs, and Terms and Conditions imposed through Endangered Species Act Section 7 consultation with the USFWS.

Lease stipulations are mandatory actions that were approved in the 1994 BLM Oil and Gas Environmental Impact Statement (BLM 1994). Lease stipulations reduce the possibility of impacts to wildlife populations, productivity, or habitat use through the protection of important breeding, nesting, and seasonal habitats. Lease stipulations combined with mitigation measures are also designed to reduce the likelihood of "take" of a federally listed species. Lease stipulations are applied to all projects on BLM-administered lands unless a waiver, exception, or modification has been issued. A lease stipulation may be waived if a determination is made that the proposed action will not adversely affect the species in question. An exception to a protection measure may be granted if the operator demonstrates the proposed action will not be significant or can be adequately mitigated. A modification may be made if it is determined that portions of the project area do not include habitat protected by the lease stipulation.

During the project design and approval process, additional conservation measures for wildlife are also incorporated through the project plan design as COAs or BMPs. In general, COAs are protective measures that "provide a full range of practicable means to avoid or minimize harm

to wildlife species or their habitats" (BLM 2008a). COAs are applied on a project-by-project basis and can be found under the Programmatic Guidance for the Development of Project Plans within the WMPP (BLM 2008b) and the FSEIS (BLM 2008a). BMPs may be listed separately or incorporated as COAs. Wildlife monitoring data (described below under Research, Inventory, Monitoring, and Disturbance Thresholds) will be used to assess the appropriateness and effectiveness of these protective measures. If necessary, protective measures will be added, modified, or removed.

Raptors

Maintaining healthy raptor populations requires protection of crucial habitats and reducing mortality due to project-related infrastructure. Lease stipulations and/or Terms and Conditions are designed to limit disturbance to nesting raptors and winter roost sites and include the following.

- No surface use from March 1 through August 1 within 0.5 mile of raptor nest sites that have been active within the past two years (except ferruginous hawk [*Buteo regalis*], bald eagle [*Haliaeetus leucocephalus*], and peregrine falcon [*Falco peregrinus*] nest sites). This stipulation does not apply to the operation and maintenance of production facilities (stipulation MT-13-4).
- No surface occupancy or use within 0.5 mile of known ferruginous hawk nest sites that have been active within the past two years (stipulation MT-11-8 and MT-11-17).
- No surface occupancy or use is authorized within 1 mile of identified peregrine falcon nests (stipulation MT-11-7). No surface occupancy within 0.5 mile of any identified bald eagle roost site.
- No surface occupancy within 0.5 mile of know bald eagle nest sites that have been active within the past seven years and within bald eagle nesting habitat in riparian areas (stipulation MT-11-6).

Additional COAs applied to PODs include conservation measures that minimize the effects of project-related infrastructure, such as roads, pipelines, and utility line corridors, on raptors (for a complete list of COAs, see A-11 to A-14 of the WMPP [BLM 2008b]).

Prairie Dogs/Black-footed Ferrets

Prairie dog (*Cynomys* spp.*)* colonies are often habitat for sensitive wildlife species, such as black-footed ferrets (*Mustela nigripes*). Black-footed ferrets inhabit extensive prairie dog complexes, typically composed of several smaller colonies in proximity to one another that provide a sustainable prey base. The BLM's goal is to maintain prairie dog colonies and protect associated species through the use of lease stipulations, COAs, Terms and Conditions, and BMPs.

- Prior to surface disturbance, a surface use plan of operations for oil and gas activities must be approved for black-footed ferret reintroduction areas (stipulation MT-12-2).
- In areas containing potential habitat for black-footed ferrets (prairie dog colonies and complexes 80 acres or more in size with a burrow density of five burrows per acre),

surveys will be conducted to determine the presence or absence of black-footed ferrets. If black-footed ferrets are discovered, consultation with the USFWS will be initiated and surface use restrictions may be applied (stipulation MT-12-3).

Mountain Plover

Mountain plover (*Charadrius montanus*) habitat generally consists of large prairie dog towns and sparsely vegetated areas on mesa tops. Breeding and nesting habitat for mountain plover is a limiting factor for this species. As such, the BLM's goal is to protect areas of known mountain plover habitat and limit disturbance to areas of potential habitat. Lease stipulations and Terms and Conditions include the following timing and surface occupancy stipulations (BLM 2008b).

- Surface use is prohibited within 0.25 mile of active mountain plover nest sites.
- No surface occupancy on any active prairie dog colonies on federal surface within suitable mountain plover habitat.
- Controlled surface use stipulation applied between April 1 and July 31 on any active prairie dog town occupied by mountain plovers.
- No surface use on any active prairie dog town within 0.25 mile of an active mountain plover nest once nesting has been confirmed.
- A disturbance-free buffer zone of 0.25 mile will be established around all mountain plover nesting locations between April 1 and July 31.
- No surface occupancy of ancillary facilities (e.g., compressor stations, processing plants) within 0.5 mile of known nesting areas.

Additional COAs applied to PODs include conservation measures that limit disturbance to habitat and individuals, provide for reclamation of disturbances, and reduce mortality due to project-related infrastructure (for a complete list of COAs, see A-11 to A-12 of the WMPP [BLM 2008b]).

Waivers

Exceptions and/or waivers to lease stipulations may be granted by the BLM through consultation with the USFWS.

Gray Wolf/Canada Lynx/Grizzly Bear

Canada lynx (*Lynx canadensis*) and grizzly bears (*Ursus arctos horribilis*) are federally protected under the Endangered Species Act (USFWS 2000, 2010a). If these species or their habitat were found to be potentially impacted by CBNG development, formal consultation with the USFWS will be required (stipulation MT-16-2). Potential protective measures could include avoidance or buffers around potential habitat areas and/or measures to prevent attracting these species to project sites (BLM 2008a).

Gray wolves (*Canis lupus*) were reintroduced into the Greater Yellowstone area in 1995 and 1996 as part of a non-essential, experimental population (the Northern Rocky Mountain Distinct Population Segment) under the Endangered Species Act. On April 2, 2009, the

USFWS published a final rule on the Northern Rocky Mountain Distinct Population Segment delisting gray wolf populations, in Idaho and Montana, while retaining wolves in Wyoming as a non-essential, experimental population under the Endangered Species Act (USFWS 2009). If gray wolves were found to be potentially impacted by CBNG development, notification and consultation with the BLM will be required (stipulation MT-16-2).

Greater Sage-grouse

The sage-grouse is a candidate species for listing under the under the Endangered Species Act (USFWS 2010b). The BLM manages sage-grouse populations to maintain habitat connectivity and healthy populations to serve as source populations. In addition, within the crucial habitat areas the BLM will maintain sage-grouse habitat so that population trends follow the general magnitude of decline or increase when compared to control leks. Crucial habitat areas have been identified in the planning area. When development is proposed within crucial sage-grouse habitat, the BLM will rely on science, professional judgment, and monitoring data to determine the acceptable level of disturbance. For crucial habitat areas the objective is to maintain sage-grouse populations on the northern end of the PRB, permit genetic exchange with other populations, and ensure source populations remain available for areas where sage-grouse may have been reduced or displaced due to CBNG development or other factors. Outside crucial habitat areas, connectivity will be maintained by reducing habitat fragmentation.

Management actions focus on minimizing disturbance on seasonal habitats. To meet management objectives, standard lease stipulations apply to all PODs; in addition, PODs must demonstrate specific sage-grouse conservation actions. Actual placement of wells will depend on the operator's ability to outline a strategy where effects to sage-grouse will be minimized and where the species will not be displaced from any crucial habitat as a result of these actions. The following examples illustrate the types of measures that should be developed and included in the PODs:

- Within 1 mile of a lek, surface disturbance proposals will be sited to meet objectives for sage-grouse habitat management, including avoiding loss of sagebrush (*Artemisia tridentata*), especially in linear routes; avoiding installation of perching structures; and keeping noise disturbance levels to less than 10 decibels above background noise on active leks.
- Proposals for storage ponds or produced water discharge into vegetated drainages in summer sage-grouse habitat will be designed to minimize the potential for outbreaks of West Nile virus.
- The operator will be required to map and avoid seasonal habitats when proposing placement of infrastructure.

Lease stipulations include standard timing and surface occupancy stipulations and development of guidelines for produced water to reduce the spread of West Nile virus. Specifically, lease stipulations and Terms and Conditions designed to protect sage-grouse include the following (BLM 2008b):

- No surface occupancy within 0.25 mile of a lek (stipulation MT-11-4).

- Surface use is prohibited from March 1 through June 15 in grouse nesting habitat within 2 miles of a known lek. This stipulation does not apply to the operation and maintenance of production facilities (stipulation MT-13-3).
- Surface use is prohibited from December 1 through March 31 within designated crucial winter range.

COAs and BMPs designed to reduce the spread of West Nile virus include the following (BLM 2008b):

- Overbuild the size of ponds to accommodate a greater volume of water than is discharged.
- Build steep shorelines to reduce shallow water and aquatic vegetation around the perimeter of impoundments. Use of this construction technique could be harmful to certain wildlife species such as birds and will require consideration on a case-by-case basis.
- Maintain the water level below rooted vegetation for a muddy shoreline that is unfavorable habitat for mosquito larvae.
- Construct dams or impoundments that restrict downslope seepage or overflow.
- Line the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water.
- Line the overflow spillway with crushed rock, and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation.
- Fence pond sites to restrict access by livestock and other wild ungulates.
- Use adulticides and larvicides to target mosquito populations.
- Introduce native fish species into ponds.
- Use electric-, solar-, or wind-powered fountains or aerators in ponds.
- Use a vertical discharge pipe in the center of the impoundment to create a ripple effect and aerate the water to support a fish population.

Specific conservation actions, applied as COAs, address the design and placement of project infrastructure to minimize effects to sage-grouse. COAs include measures designed to avoid loss of sage-grouse habitat, avoid displacement of sage-grouse from crucial habitats, reduce the spread of West Nile virus infection, and reduce increased mortality due to project-related activities (for a complete list of COAs, see A-12 to A-14 of the WMPP [BLM 2008b]).

If management actions, COAs, and/or BMPS are insufficient or overly restrictive, the BLM will make the needed changes in order to maintain sage-grouse populations. Science and monitoring data will provide the basis for formulating alternative development scenarios, and decisions will be coordinated with MFWP. See the Research, Inventory, Monitoring, and Disturbance Thresholds section below for further details.

Waivers
The stipulation for no surface occupancy within 0.25 mile of a lek may be waived if the BLM authorized officer, in coordination with MFWP, determines the entire leasehold can be occupied without adversely affecting sage-grouse lek sites or if the lek sites within 0.25 mile of the leasehold have not been attended for five consecutive years.

Sharp-tailed Grouse

Lease stipulations and Terms and Conditions designed to protect sharp-tailed grouse (*Tympanuchus phasianellus*) include the following (BLM 2008b):

- No surface occupancy within 0.25 mile of a lek.
- Surface use is prohibited from March 1 through June 15 in sharp-tailed grouse nesting habitat within 2 miles of a known lek.
- Surface use is prohibited from December 1 through March 31 within designated crucial winter range.

Waivers
The stipulation for no surface occupancy within 0.25 of a lek may be waived if the BLM authorized officer, in coordination with MFWP, determines the entire leasehold can be occupied without adversely affecting sharp-tailed grouse lek sites or if the lek sites within 0.25 mile of the leasehold have not been attended for five consecutive years.

Big Game

Disturbance of big game species during the parturition period and on winter range can increase stress and may influence species distribution (Morgantini and Hudson 1980; Hayden-Wing Associates [Hayden-Wing] 1990), resulting in short- and long-term adverse effects. To reduce these impacts, the following lease stipulations are applied:

- Surface use is prohibited from December 1 to March 31 within crucial winter range for wildlife (does not apply to the operation and maintenance of production facilities) (stipulation MT-13-1).

To help protect big game species, which rely seasonally or year-long on crucial habitat, COAs and BMPs may also be applied to PODs to reduce the loss, fragmentation, degradation, and isolation of connected crucial habitats. Other management actions may be applied that reduce mortality caused by project-related infrastructure.

General Wildlife

Protective measures for general wildlife species are designed to affect the pace, placement, density, and intensity of CBNG activities. Protective measures may be modified if results of monitoring and research efforts indicate a change in wildlife species populations within crucial habitats or adjacent to POD areas (BLM 2008b).

RESEARCH, INVENTORY, MONITORING, AND DISTURBANCE THRESHOLDS

The WMPP (BLM 2003; BLM 2008b) and Alternative H of the FSEIS (BLM 2008a) set forth guidelines for research, inventory, monitoring, and disturbance thresholds for each species or species group within the Powder River and Billings RMP areas. These guidelines were designed to allow for adequate data collection and establish significance criteria for assessing species trends, which will shed light on the effectiveness of stipulations and protection plans outlined in the FSEIS (BLM 2008a) and the WMPP (BLM 2008b). These monitoring guidelines, as outlined below, generally apply to federally managed surface and subsurface acres. In some cases, operators have applied these monitoring requirements to private and state lands.

RAPTORS

Changes in raptor populations (including number of nest sites and nest productivity) will be assessed through the use of annual and five-year inventory surveys, research, and other population-level indicators conducted by the BLM, MFWP, and operators (Table 1). Baseline inventories have also been conducted prior to development and can be used to assess effects from development. If downward trends are observed and are related to CBNG development, the BLM may use adaptive management techniques to adjust stipulations and COAs (see Table 1).

Table 1. Summary of Inventory and Monitoring Requirements, Impact Thresholds, and Management Options for Raptors.

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Raptors	Active nest locations (excluding burrowing owls [*Athene cunicularia*])	Project area plus 1-mile buffer	Air/ground field inspection	Number of nests	Every three years	Downward trend in occupancy
	Raptor productivity (including burrowing owl)	Active nests within 1 mile of project disturbance	Air/ground field inspection	Nest success/failure species productivity	Annually	Downward trend in nest success, overall productivity
	Raptor productivity–selected undeveloped comparison area	CBNG project area	Air/ground field inspection	Nest success/failure species productivity	Every five years	Information used as support to determine downward trend

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Burrowing Owl	Active nest locations	Specific project area plus 0.5-mile buffer (within active prairie dog town)	Ground inspection	Occupancy	Twice yearly (June–August)	Human-caused disturbance to owls related to oil and gas activities such as vandalism and harassment

Source: BLM (2008a, 2008b).

PRAIRIE DOGS/BLACK-FOOTED FERRETS

As described in the WMPP (BLM 2008b), prairie dog colonies on federally managed surface and subsurface within 0.5 mile of a CBNG project area have been identified, mapped, and surveyed by operators (Table 2). If downward trends in acreage of occupied prairie dog towns are observed on federally managed surface acres related to CBNG development, the BLM may use adaptive management techniques to adjust stipulations and COAs or reinitiate consultation with the USFWS as appropriate (see Table 2).

Additionally, the BLM has been determining acreage of occupied prairie dog habitat within suitable mountain plover habitat on federally managed surface acres within areas of development. These data will be used to estimate impacts, including habitat loss, that CBNG development has on occupied prairie dog town acreage within specific project areas.

Active prairie dog colonies have also been mapped by operators to determine if habitat is available for black-footed ferrets within 0.5 mile of a specific project. Within the PRB, prairie dog colonies that meet USFWS size criteria as potential black-footed ferret habitat are required to be surveyed to determine active burrow density and the presence/absence of black-footed ferrets.

Table 2. Summary of Inventory and Monitoring Requirements, Impact Thresholds, and Management Options for Prairie Dog and Black-footed Ferret.

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Prairie Dog	Active prairie dog colony	Specific project area plus 0.5-mile buffer	Air/ground inspection	Occupancy	Annually	Documented prairie dog fatalities caused by oil and gas activities
Black-footed Ferret	Occupancy	Prairie dog towns larger than 80 acres located within 0.5 mile of proposed activity	Ground inspection	Occupancy	Determined on a site-specific basis in coordination with the USFWS	Habitat decline or prairie dog fatalities caused by oil and gas activities - occupancy of black-footed ferret sites would be managed in a Black-footed Ferret Management Plan

Source: BLM (2008a, 2008b).

MOUNTAIN PLOVERS

As described in the WMPP (BLM 2008b), the BLM, the USFWS, and MFWP will estimate and identify potential mountain plover habitat using predictive models. Potential habitat areas will then be refined by field validation to determine the presence/absence of potentially suitable mountain plover habitat. In areas of suitable habitat, surveys will be conducted prior to ground-disturbing activities at the CBNG project area plus a 0.5-mile buffer (Table 3). Efforts will also be made to identify mountain plover nesting areas not subject to CBNG development to be used as reference sites.

These data will be used to document suitable mountain plover habitat within the WMPP Focus Area and document any loss of habitat (as described under the prairie dog section above). The amount of disturbance (number of CBNG wells) within 0.25 mile of suitable habitat will be used to assess the potential impact. If the data are available, comparisons will be made of the trends in mountain plover nesting occupancy between reference areas and areas experiencing CBNG development. The BLM will use these data to determine if mountain plover habitat is being impacted by CBNG development and determine compliance with the take of habitat and individuals outlined in the biological opinion (BLM 2008a).

Table 3. Summary of Inventory and Monitoring Requirements, Impact Thresholds, and Management Options for Mountain Plover.

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Mountain Plover	Active nest locations	Specific project development area plus 0.5-mile buffer (within areas less than 4-inch average vegetation height and prairie dog towns)	Ground inspection	Occupancy	Twice yearly (April 15–June 30)	Human-caused disturbance to mountain plovers related to oil and gas activities such as vandalism and harassment

Source: BLM (2008a, 2008b).

GRAY WOLF/CANADA LYNX/GRIZZLY BEAR

As outlined in the WMPP (BLM 2008b), areas bordering Yellowstone National Park and suitable habitat for the gray wolf, Canada lynx, and grizzly bear will be surveyed for these species. The WMPP Focus Area does not meet these criteria, and these species do not regularly occur within the PRB. If these species were found to occur in the PRB, reconnaissance-level surveys for sign (scat, tracks, etc.) of these species will be required (BLM 2008a).

SAGE-GROUSE

As described in the WMPP (BLM 2008b), sage-grouse lek inventories will be conducted in areas of high potential for development and at least once every five years (Table 4). In areas with development, lek location inventories will be conducted annually on affected sections, 2-mile buffers, and selected undeveloped reference areas. Lek location and attendance will be monitored within 2 miles of development areas such that all leks on these areas are surveyed three times annually.

Reference leks, similar in habitat and within proximity to areas currently being developed, have been established to allow comparisons of lek attendance between developed and undeveloped areas. The reference leks will also be surveyed for lek attendance three times annually.

Sage-grouse winter use surveys of suitable habitat within 2 miles of proposed development areas will be conducted to identify sage-grouse wintering concentration areas. These surveys will be conducted between November and February when suitable conditions exist. If the data are available, trends in winter use will be presented and compared to historical information.

Lek attendance data will be used to demonstrate overall trends in activity for those leks (expressed as the number of males per lek), and comparisons will be made between leks in developed areas and reference leks. Annual and cumulative (if appropriate) changes in development within 2 miles of leks and lek attendance will be assessed. Survey data will also be overlaid on the development areas to assess if the survey frequency and area requirements set forth in the WMPP are being met.

Changes in management of future development will occur if male attendance on leks within 2 miles of CBNG development declines by 25% over five-year increments (BLM 2008a). Changes may also be made if lesser declines occur in a period of less than five years, when compared with predetermined reference leks (BLM 2008a). If downward trends in habitat occupancy or lek attendance are observed, the BLM may use adaptive management strategies. These strategies could include not authorizing or limiting the number of federal well sites, roads, and infrastructure; not authorizing or restricting the timing of operations conducted on federal leases; extending timing and/or increasing distance from leks; or implementing stipulations, COAs, or off-site habitat management/mitigation. Similarly, if populations remain comparable with the reference leks or increase over a five-year monitoring period, management of development may be modified to be less restrictive or the pace of development may be increased (BLM 2008a).

Table 4. Summary of Inventory and Monitoring Requirements, Impact Thresholds, and Management Options for Sage-grouse.

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Sage-grouse	Sage-grouse lek location	Overall project area	Aerial field inspection	Number, location of leks	Every five years	Downward trend in habitat occupancy
	Sage-grouse lek attendance	Specific project development areas plus 2-mile buffer	Air/ground field inspection	Number of males/lek	Three times annually	Downward trend in lek attendance
	Sage-grouse winter habitat	Specific project development areas plus 2-mile buffer	Air/ground field inspection	Occupancy	When suitable conditions exist	Downward trend in habitat occupancy or quality caused by oil and gas activities

Source: BLM (2008a, 2008b).

SHARP-TAILED GROUSE

Sharp-tailed grouse lek sites and attendance is monitored throughout the WMPP Focus Area by the BLM, MFWP, and operators. Prior to development activities, operator-financed inventories are conducted within the area of development plus a 2-mile buffer. Following development, leks within developed areas plus a 2-mile buffer are routinely surveyed and lek attendance recorded. Changes in lek status will be identified and presented.

BIG GAME

Changes in big game (including pronghorn [*Antilocapra americana*], elk [*Cervus canadensis*], white-tailed deer [*Odocoileus virginianus*], and mule deer [*Odocoileus hemionus*], if applicable) populations will be assessed through the use of annual big game inventories and seasonal habitat use surveys (BLM 2008b) (Table 5). Comparisons in trends between big game seasonal habitat reference areas and seasonal habitats associated with CBNG development may provide insight into the response of big game to CBNG development.

Adaptive management strategies will be used if a 30% or more decline (based on MFWP adaptive harvest thresholds) is observed in mule deer or pronghorn populations over a three-year period relative to baseline and/or adjacent populations (BLM 2008a). Adaptive management strategies may include extension of timing stipulations or COAs, off-site habitat management, or enhancement (BLM 2008a).

Table 5. Summary of Inventory and Monitoring Requirements, Impact Thresholds, and Management Options for Big Game Species (BLM 2008a).

Species	Item	Location	Technique	Unit of Measure	Frequency and Duration	Remedial Action Trigger
Big Game	Seasonal habitat use	Specific project development areas plus 1-mile buffer	Air/ground field inspection	Occupancy	Annually	Downward trend in habitat occupancy

Source: BLM (2008a, 2008b).

GENERAL WILDLIFE

The identification of project-related wildlife deaths is important to designing and assessing the effectiveness of mitigation opportunities to reduce direct and indirect impacts from project-related activities. As described in the WMPP (BLM 2008b), wildlife mortality from project pits and vehicle collisions has been monitored by operators. These data will be used to report avian mortality from collisions with vehicles, electrocutions, well pits, and other sources. If the data are available, areas of high concentrations of wildlife mortality will be mapped and identified.

Operators, federal and state agencies, universities, and private individuals have been conducting surveys and research on various wildlife and vegetation species within the WMPP Focus Area. All available data, including songbird inventories, will be gathered and presented with the survey method description, surveyor, date, and a map delineating areas surveyed. BLM special-status species known or suspected to occur in the WMPP Focus Area will be identified and presented.

AQUATIC SPECIES

As described in the WMPP, the health of these ecosystems has been monitored through inventories and studies of benthic macroinvertebrates, periphyton, fisheries, amphibians, and aquatic reptiles (BLM 2008b). As described in the WMPP, species distribution, abundance, and population diversity at baseline, control, and treatment sites will be compared to determine if aquatic communities are changing as a result of the discharge of CBNG produced water and development within the PRB. Data and analysis from these inventories and research studies are maintained and conducted by the PRB Aquatic Task Force. Results of these studies are included within this report.

CURRENT ENERGY DEVELOPMENT IN THE PROJECT AREA

Energy development within the WMPP Focus Area consists of coal and CBNG development. There are currently two coal mines operating within the Focus Area, Decker Mine and Spring Creek Mine (Figure 2).

Decker Mine, near Decker, Montana, was discovered by Kiewit Mining Group Inc. in 1961. Decker Coal Company developed the mine in the early 1970s and began shipments in 1972. Decker Mine consists of two distinct mining areas, East Decker and West Decker. The mine is currently under the management of Kiewit Mining Group Inc.

Spring Creek Mine is northwest of Decker Mine near Decker in the northwest section of the PRB. The mine was acquired by Rio Tinto Energy America in 1993 and previously owned by NERCO Mining Company, a mining and natural resource company of PacifiCorp. In November 2009, Spring Creek Mine was transferred to Rio Tinto Energy America to Cloud Peak Energy during a corporate split.

CBNG development within the WMPP Focus Area is currently being conducted by two operators, Pinnacle Gas Resources (Pinnacle) and Fidelity Exploration and Production Company (Fidelity). Pinnacle currently operates the Coal Creek POD northeast of Spring Creek Mine (see Figure 2). Fidelity currently operates the Badger Hills, Coal Creek, Dry Creek, Deer Creek North, and Decker Mine East PODs, all located south and/or east of the Decker and Spring Creek mines (see Figure 2).

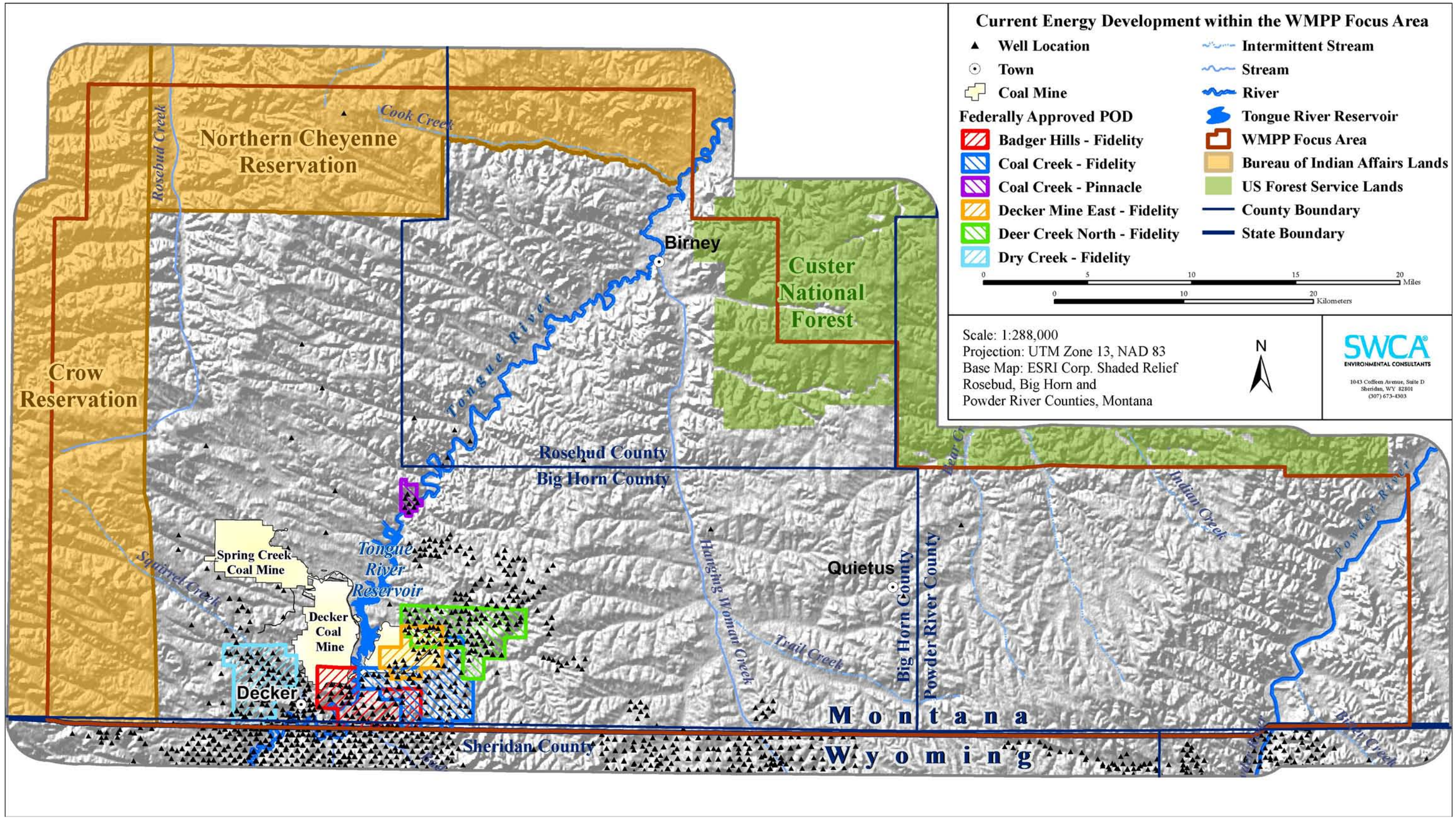

Figure 2. Current energy development within the WMPP Focus Area.

There are currently 1,152 CBNG wells drilled, including producing, abandoned, and shut-in wells, within the WMPP Focus Area (Montana Board of Oil and Gas 2009). These CBNG wells are distributed by land and mineral ownership as follows:

- 17 on federal surface/federal minerals;
- 163 on private surface/federal minerals;
- 859 on private surface/private minerals; and
- 113 on state surface/state minerals.

The number of CBNG wells drilled annually and cumulatively by land and surface ownership within federal POD boundaries is displayed in Table 6. The number of CBNG wells drilled annually and cumulatively that fall outside federal POD boundaries is displayed in Table 7. The number of CBNG wells drilled annually and cumulatively within the WMPP Focus Area is displayed in Table 8.

Table 6. Numerical Compilation of CBNG Wells Drilled in the PRB by Federal POD, Annually and Cumulatively, Including Producing, Abandoned, and Shut-in Wells.

POD Name - Operator	Year	Federal Surface/ Federal Mineral	Private Surface/ Federal Mineral	Private Surface/ Private Mineral	State Surface/ State Minerals	Wells by Year	Total Wells
Coal Creek – Pinnacle	2002	0	0	1	0	1	17
	2003	0	0	1	0	1	
	2004	0	5	0	0	5	
	2005	0	2	8	0	10	
Badger Hills – Fidelity	1997	0	1	0	0	1	204
	2001	0	0	3	0	3	
	2002	0	0	2	0	2	
	2003	0	85	63	20	168	
	2006	0	0	18	10	28	
	2007	0	1	0	0	1	
	2008	0	1	0	0	1	
Coal Creek – Fidelity	1998	0	1	0	1	2	145
	1999	0	0	2	0	2	
	2003	1	0	0	0	1	
	2005	0	15	68	16	99	
	2006	0	0	19	0	19	
	2007	7	6	1	0	14	
	2008	5	2	0	0	7	
	2009	1	0	0	0	1	
Decker Mine East – Fidelity	2007	0	0	7	0	7	14
	2008	0	7	0	0	7	

POD Name - Operator	Year	Federal Surface/ Federal Mineral	Private Surface/ Federal Mineral	Private Surface/ Private Mineral	State Surface/ State Minerals	Wells by Year	Total Wells
Deer Creek North – Fidelity	2001	0	0	1	0	1	201
	2004	0	0	2	0	2	
	2005	0	0	84	0	84	
	2006	0	0	89	3	92	
	2007	0	0	8	0	8	
	2008	0	6	0	0	6	
	2009	0	8	0	0	8	
Dry Creek – Fidelity	1997	0	3	3	0	6	132
	1998	0	0	2	0	2	
	1999	0	0	35	0	35	
	2000	0	0	51	0	51	
	2001	0	0	5	0	5	
	2002	0	0	2	0	2	
	2004	2	0	3	11	16	
	2005	0	15	0	0	15	
Total		**16**	**158**	**478**	**61**	**713**	**713**

Source: Montana Board of Oil and Gas (2009).

Table 7. Numerical Compilation of CBNG Wells Drilled Outside Federal POD Boundaries, Annually and Cumulatively, Including Producing, Abandoned, and Shut-in Wells.

Year	Federal Surface/ Federal Mineral	Private Surface/ Federal Mineral	Private Surface/ Private Mineral	State Surface/ State Minerals	Wells by Year	Total Wells
1990	1	0	1	0	2	439
1997	0	2	1	0	3	
1998	0	0	17	0	17	
1999	0	0	72	0	72	
2000	0	0	40	0	40	
2001	0	2	12	0	14	
2002	0	0	6	0	6	
2003	0	1	32	2	35	
2004	0	0	11	2	13	
2005	0	0	39	0	39	
2006	0	0	114	19	133	
2007	0	0	13	1	14	
2008	0	0	6	4	10	
2009	0	0	1	0	1	
Unknown	0	0	16	24	40	
Total	**1**	**5**	**381**	**52**	**439**	**439**

Source: Montana Board of Oil and Gas (2009).

Table 8. Numerical Compilation of CBNG Wells Drilled Annually and Cumulatively in the WMPP Focus Area, Including Producing, Abandoned, and Shut-in Wells.

Year	Federal Surface/ Federal Mineral	Private Surface/ Federal Mineral	Private Surface/ Private Mineral	State Surface/ State Minerals	Wells by Year	Total Wells
1990	1	0	1	0	2	1,154
1997	0	6	4	0	10	
1998	0	1	21	1	23	
1999	0	0	109	0	109	
2000	0	0	91	0	91	
2001	0	2	21	0	23	
2002	0	0	11	0	11	
2003	1	86	96	22	205	
2004	2	5	16	13	36	
2005	0	32	199	16	247	
2006	0	0	240	32	272	
2007	7	7	29	1	44	
2008	5	16	6	4	31	
2009	1	8	1	0	10	
Unknown	0	0	16	24	40	
Total	**17**	**163**	**861**	**113**	**1,154**	**1,154**

Source: Montana Board of Oil and Gas (2009).

RESULTS OF RESEARCH, INVENTORY, AND MONITORING ACTIVITIES

RESEARCH, INVENTORY, AND MONITORING CONDUCTED FROM 2000 TO 2009

Research, inventory, and monitoring efforts have been conducted by agencies and operators within the WMPP Focus Area since 2000. These survey efforts are outlined in Appendix A. Monitoring and research conducted within the WMPP Focus Area by federal and state agencies are summarized in Table 1A. Monitoring conducted by operators both on federally managed surface acres and federal mineral estate lands and private and state lands are summarized in Table 2A. Aquatic research and monitoring conducted in the WMPP Focus Area are summarized in Table 3A.This information is delineated by the year(s) conducted, project proponent and conductor, description of the project, and general results to date.

TRENDS BY SPECIES

All data collected within the WMPP Focus Area provided to the BLM through 2009 were included in the data analysis. In some cases, monitoring data collected by operators and the Coal Mines were not available and could not be included in this analysis.

Raptors

Aerial and ground raptor nest surveys have been conducted within the WMPP Focus Area by the BLM and operators since the 1970s (Table 9). These surveys have included location, species information, and productivity information for some nests. The total area within the WMPP Focus Area surveyed for nests is unknown. Operators have surveyed within 1 mile of their development areas (see Figure 3). In addition, Greystone Environmental Consultants, Inc. (Greystone 2004a) has completed a raptor survey and inventory covering 376,000 acres of suitable nesting habitat within Big Horn County, Montana. The survey area associated with incidental observations and data collected by other agencies is unknown.

Table 9. Raptor Nest Surveys Conducted in the WMPP Focus Area from 2000 to 2009.

Surveyor	Year	Survey Mode	Dates	Development Area	Number of Nests Surveyed (nest status)
Decker Mine	2004–2008	Ground	Unknown	Decker Mine	118 nests (26 active)[1]
Spring Creek Mine/Jones and Stokes	1976–2003	Ground	Unknown	Spring Creek Mine	49 known sites[2]
Spring Creek Mine/Jones and Stokes	2004	Ground	Unknown	Spring Creek Mine	49 known sites, 32 intact nests[2] (9 active)
Spring Creek Mine/Jones and Stokes	20005	Ground	Unknown	Spring Creek Mine	49 known sites, 32 intact nests[2] (7 active)
Spring Creek Mine/Jones and Stokes	2006	Ground	Unknown	Spring Creek Mine	49 known sites, 32 intact nests[2] (11 active)
Spring Creek Mine/Jones and Stokes	2007	Ground	Unknown	Spring Creek Mine	49 known sites, 32 intact nests[2] (12 active)
Spring Creek Mine/Jones and Stokes	2008	Ground	Unknown	Spring Creek Mine	49 known sites, 32 intact nests[2] (12 active)
Fidelity/ Hayden-Wing	2002	Aerial/ Ground	5/28	Coal Creek, Badger Hills, Dry Creek	44 nests (16 active, 28 inactive)
Fidelity/ Hayden-Wing	2003	Aerial/ Ground	5/13, 5/28	Coal Creek, Badger Hills, Dry Creek	46 nests (22 active, 24 inactive)
Fidelity/ Hayden-Wing	2004	Aerial/ Ground	4/23, 5/11, 6/3	Coal Creek, Badger Hills, Dry Creek, Deer Creek, Pond Creek	72 nests (30 active, 42 inactive)
BLM/ Greystone	2004	Aerial/ Ground	5/18–5/21	Big Horn County	35 nests (23 active, 12 inactive)
Fidelity/ Hayden-Wing	2005	Aerial/ Ground	4/5, 4/6, 4/22, 4/26, 4/28, 6/21	Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Pond Creek, Spring Creek, Deer Creek South	81 nests (36 active, 40 inactive, 5 unknown)

Surveyor	Year	Survey Mode	Dates	Development Area	Number of Nests Surveyed (nest status)
Fidelity/ Hayden-Wing	2006	Aerial/ Ground	4/29, 6/6–6/8	Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Pond Creek, Spring Creek, Deer Creek South, Corral Creek	96 nests (44 active, 52 inactive)
Fidelity/ Hayden-Wing	2007	Aerial/ Ground	5/4, 5/7, 5/8, 5/22–5/25	Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Deer Creek South, Pond Creek, Spring Creek, Corral Creek, Decker Mine East	141 nests (37 active, 70 inactive)3
Fidelity/ Hayden-Wing	2008	Aerial/ Ground	5/5, 5/9, 5/10	Coal Creek, Badger Hills, Deer Creek North, Deer Creek South, Corral Creek, Decker Mine East, Penson	96 nests (32 active, 41 inactive)3
Pearl Field Services/ Arcadis	2008	Unknown	4/15–7/25	Forks Ranch	27 nests (5 active, 22 inactive)
Fidelity/ Hayden-Wing	2009	Unknown	Unknown	Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Deer Creek South, Decker Mine East[4]	197 nests[5]

[1]Survey information was not available for all years, information may be incomplete.
[2]Number of intact nests based on 2008 survey results.
[3]Active status is only available for nests within 1 mile of PODs.
[4]Additional PODs may have been surveyed.
[5]Active status is unknown for 2009.

In total, 359 unique raptor nest locations have been recorded and reported to the BLM throughout the WMPP Focus Area (Figure 3); however, the highest concentrations of nests fall within the required survey area for development areas (see Figure 3). The most common raptor species nesting in the WMPP Focus Area are red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), and great horned owl (*Bubo virginianus*) (Table 10).

Raptor nest occupancy and productivity monitoring has been conducted at all 359 nests (Appendix B, Table 1B). Survey requirements for raptor nests within development areas have been met. Select undeveloped areas have not been established for nest productivity monitoring. Trends in productivity and status of nests within developed and undeveloped areas have not been assessed due to insufficient data.

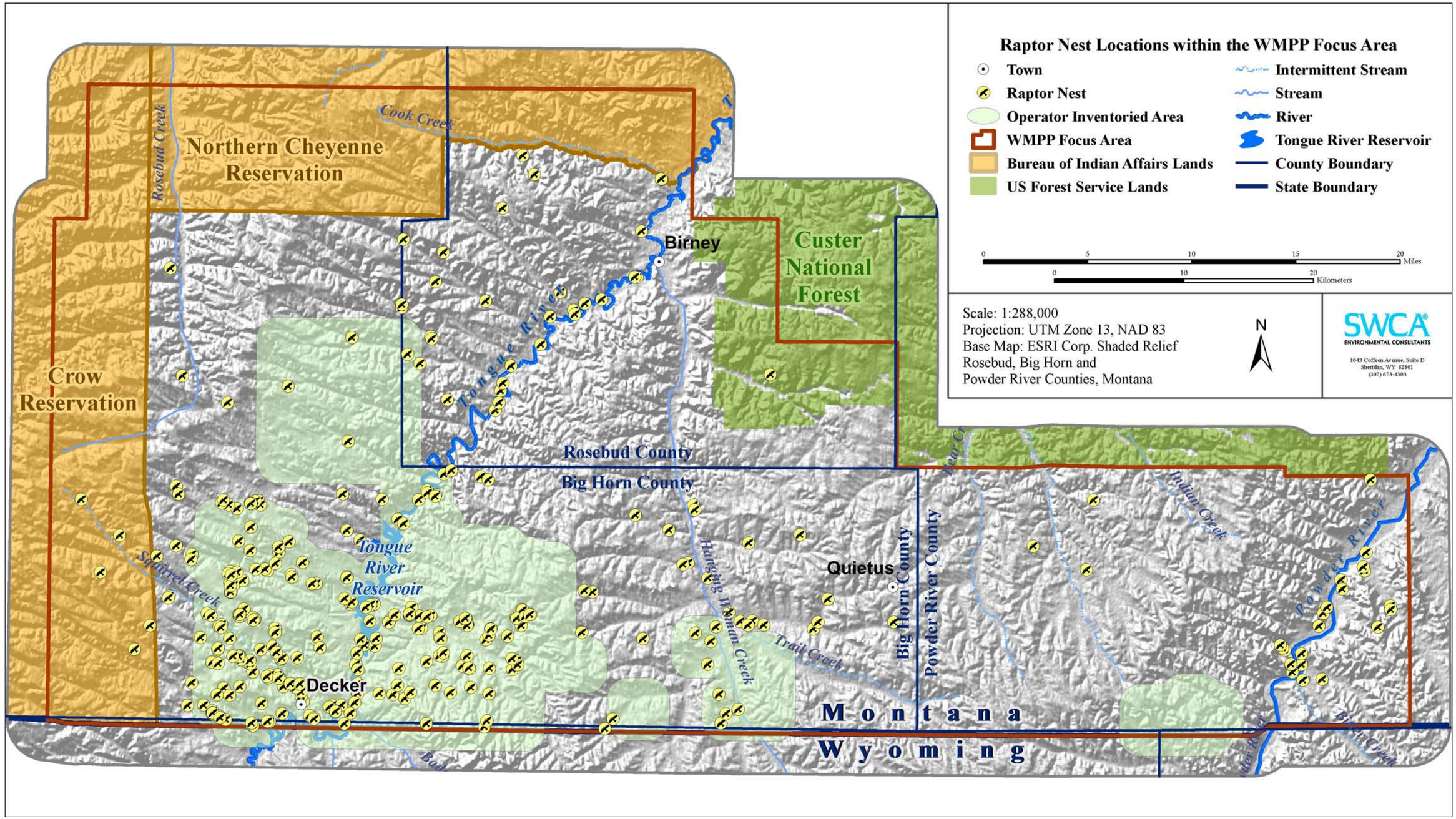

Figure 3. Raptor nest locations within the WMPP Focus Area.

Table 10. Number of Nests by Species within the WMPP Focus Area.

Common Name	Total Nests[1]
American kestrel	3
Bald eagle	14
Burrowing owl	24
Common barn owl	1
Cooper's hawk	1
Golden eagle	44
Great horned owl	34
Osprey	18
Peregrine falcon	1
Prairie falcon	39
Red-tailed hawk	152
Swainson's hawk	1
Unknown *Buteo* spp.	4
Unknown raptor	43
Grand Total	**379**

[1]Number of nests may overlap between species. More than one species may have used a unique nest location between 2000 and 2009.

Bald Eagle Winter Roost

Aerial bald eagle winter roost surveys have been conducted within the WMPP Focus Area by the BLM and operators (Table 11). The overall extent of the WMPP Focus Area surveyed is unknown; however, surveys have reportedly been conducted within upland and riparian habitats. Surveys conducted in the uplands have documented little use by roosting bald eagles. In contrast, the entire surveyed length of the Tongue River has been consistently shown to harbor roosting bald eagles (Figure 4).

Winter Roost Surveys

During the winters of 2003/2004 and 2004/2005, the BLM-MCFO conducted bald eagle winter roost surveys from Birney, Montana, to approximately 5 miles south of the Montana/Wyoming border along the Tongue River (see Table 11) (BLM 2004, 2005). Results of these two surveys showed that bald eagles were predominantly sighted along the Tongue River where mature cottonwoods and open water are present and prey species are available.

From 2003 to 2008, bald eagle roost surveys were completed by Hayden-Wing in support of Fidelity's Dry Creek, Deer Creek, Pond Creek, Coal Creek, Badger Hills, Deer Creek North and South, and Spring Creek PODs (Hayden-Wing 2002, 2003a, 2003b, 2005, 2006a, 2006b, 2008a, 2008b; Fidelity 2009). Suitable habitat was found along the entire surveyed route of the Tongue River corridor. The Decker Mine East POD was added to the areas surveyed in the 2006/2007 survey season with three upland and three riparian surveys completed on Fidelity's approved PODs. In the 2007/2008 survey season, the proposed Penson POD was added to the areas surveyed.

During the 2005/2006 survey season, Pinnacle hired Western Land Services to conduct aerial surveys along the Tongue River corridor north of the Montana/Wyoming state line.

Table 11. Bald Eagle Winter Roost Surveys Conducted in the WMPP Focus Area.

Surveyor	Winter	Survey Mode	Number of Flights	Habitat Surveyed
Fidelity/Hayden-Wing	2002/2003	Aerial	1	Riparian/Upland
BLM	2003/2004	Aerial	3	Riparian
Fidelity/Hayden-Wing	2003/2004	Aerial	6	Riparian/Upland
BLM	2004/2005	Aerial	2	Riparian
Fidelity/Hayden-Wing	2004/2005	Aerial	3	Riparian/Upland
Fidelity/Hayden-Wing	2005/2006	Aerial	6	Riparian/Upland
Pinnacle/Western Land Services	2005/2006	Aerial	3	Riparian
Fidelity/Hayden-Wing	2006/2007	Aerial	6	Riparian/Upland
Fidelity/Hayden-Wing	2007/2008	Aerial	6	Riparian/Upland

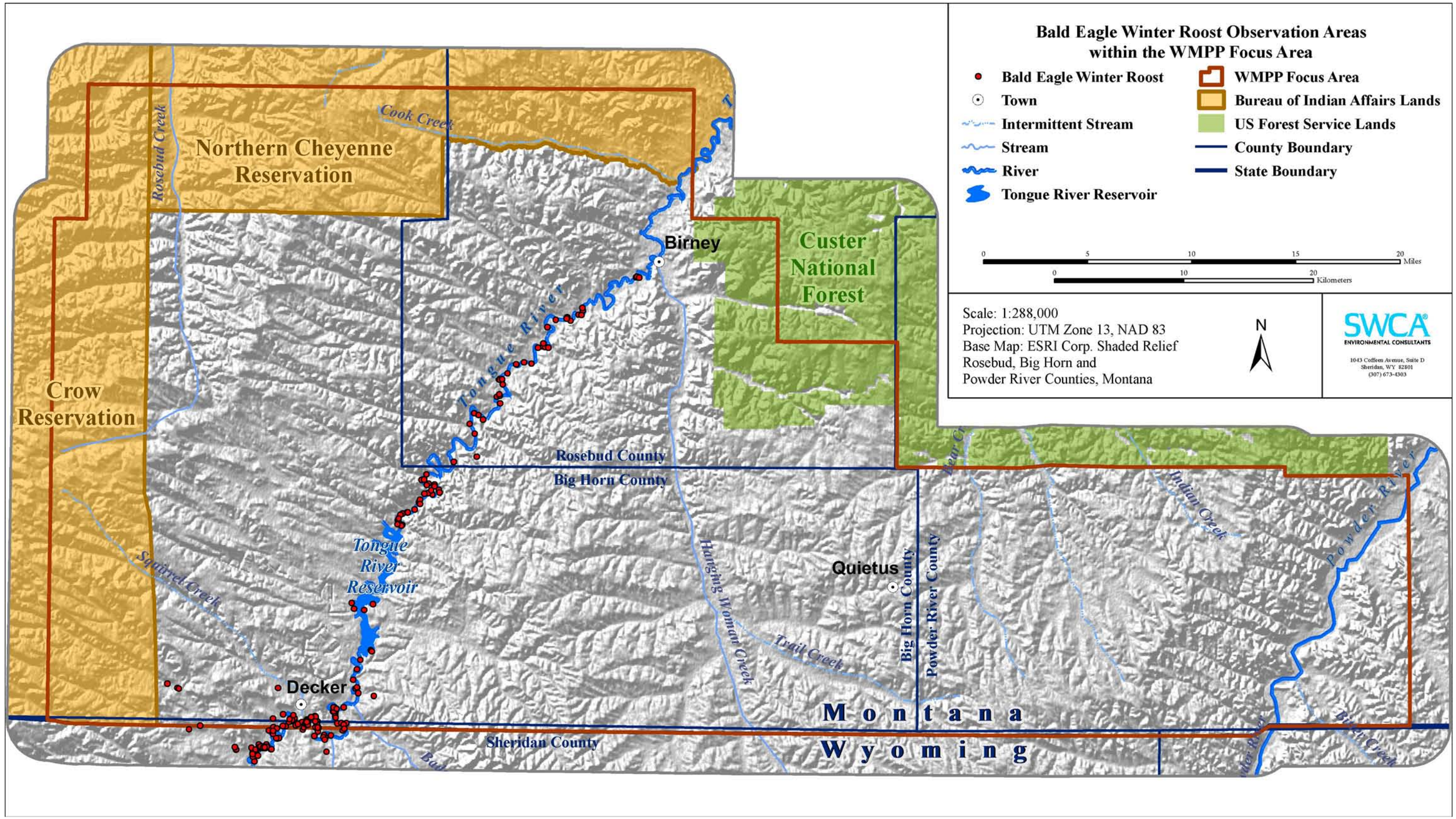

Figure 4. Bald eagle winter roost observation areas within the WMPP Focus Area.

Prairie Dogs

Only black-tailed prairie dogs (*Cynomys ludovicianus*) have been documented within the WMPP Focus Area. Prairie dog colonies within the WMPP Focus Area have been surveyed during operator- and BLM-funded surveys between 2003 and 2009 using aerial and ground survey methods (Appendix C, Table 1C). All survey data available within the WMPP Focus Area (Greystone 2004b, 2005; BLM 2009; Montana Natural Heritage Program 2009) were mapped, and overlapping colony boundaries were given the same colony identification number. In total, 240 unique towns were identified within or overlapping within the WMPP Focus Area. When multiple delineated boundaries were present for one colony, the largest delineated colony boundary was used to display the distribution of towns within the WMPP Focus Area (Figure 5). The size of each prairie dog colony, by survey date and method, is displayed in Table C1 (Appendix C).

The number of CBNG wells drilled annually and cumulatively within 0.25 mile of a prairie dog town was calculated and is displayed by colony identification number in Table C2 (see Appendix C). When multiple survey boundaries were present for one colony, a 0.25-mile buffer was placed around the largest delineated colony boundary. Forty-seven colonies have CBNG wells within 0.25 mile of their delineated boundary, representing a total of 422 wells. These colonies are primarily within Big Horn County (n = 43), with a few colonies overlapping into Sheridan County, Wyoming (n = 4). No prairie dog colonies within Powder River or Rosebud counties have CBNG wells within 0.25 mile of their colony boundaries.

Forty-eight of the 240 prairie dog colonies have been surveyed multiple times, either within the same year, by different methods, or across different years (see Appendix C, Table 1C). Only one colony (BIPD-003) was surveyed annually as required by the WMPP (BLM 2008b) and FSEIS (BLM 2008a). Of the colonies that had multiple years of survey data, changes in colony size over time could only be calculated for 11 of the colonies (see Appendix C, Table 1C). Aerial and ground survey methods are known to have varying degrees of accuracy, as aerial surveys may overestimate colony size. Change in colony size was not calculated if ground surveys were not conducted over multiple years (n = 23), multiple colonies had merged into one colony over time (n = 8), or if survey date or survey mode was unknown (n = 6). On average, 11 colonies increased in size by 9.56 acres. However, changes in size ranged from a loss of 79.6 acres to an increase of 81.4 acres. The number of wells present within 0.25 mile of these 11 colonies ranged from 0 to 29 wells. The quality of the data collected on colony boundaries between years is unknown. Additionally, the natural variation of prairie dog colony size over time in the WMPP Focus Area is unknown. No reference colonies have been identified by the BLM within the WMPP Focus Area. As a result, the response of colonies to CBNG development could not be compared with reference colonies. Data are currently insufficient to gauge the response of prairie dog colonies to energy development within the WMPP Focus Area.

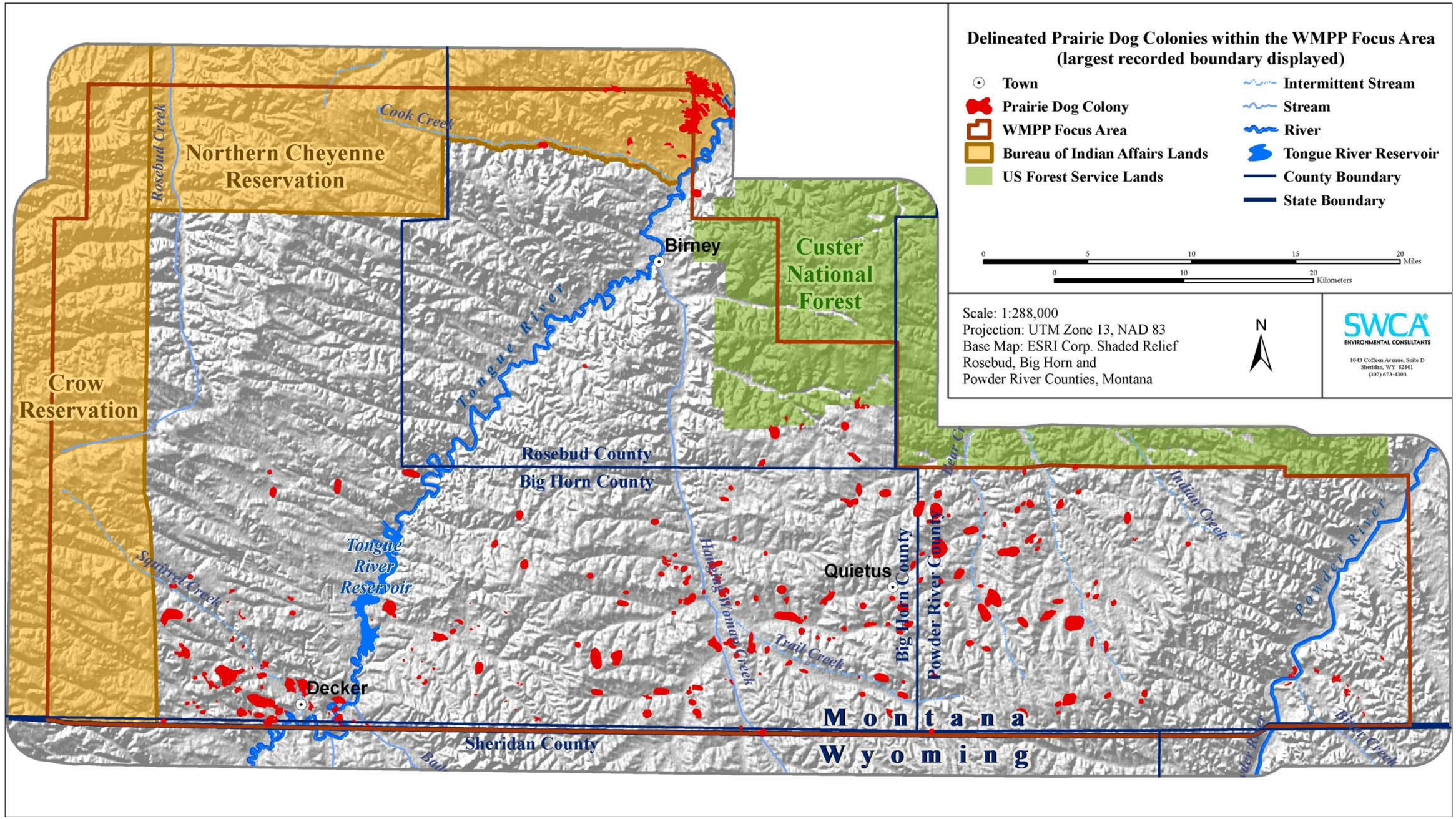

Figure 5. Delineated prairie dog colonies within the WMPP Focus Area (largest recorded boundary displayed).

Black-footed Ferrets

Black-footed ferret surveys have been completed within 10 of the prairie dog colonies within the WMPP Focus Area between 2003 and 2009 (Table 12). All surveys within the WMPP Focus Area have been conducted by Hayden-Wing on behalf of Fidelity following black-footed ferret survey guidelines (USFWS 1989; BLM 2008b). No black-footed ferrets were observed during any of the surveys (Hayden-Wing 2003c, 2003d, 2004, 2005; Fidelity 2009).

Waivers for black-footed ferret surveys within the WMPP Focus Area were granted to Fidelity for the Deer Creek and Pond Creek PODs (USFWS 2005). Other waivers for black-footed ferret surveys were also granted (personal communication, email from Dale Tribby, Biologist, BLM-MCFO, to Laura Burckhardt, SWCA Environmental Consultants, April 9, 2009). Decision documents outlining which POD boundaries waivers were granted were not made available by the USFWS during preparation of this report.

Table 12. Black-footed Ferret Surveys Completed within the WMPP Focus Area.

Prairie Dog Colony ID	Development Area	Start Date of Survey	Surveyor	Mode	Number Observed
BIPD-001	Badger Hills	7/16/2003	Fidelity/Hayden-Wing	Pick-up	0
BIPD-017	Pond Creek	10/24/2003	Fidelity/Hayden-Wing	Pick-up	0
BIPD-019	Pond Creek	10/24/2003	Fidelity/Hayden-Wing	Pick-up	0
BIPD-007	Dry Creek	8/24/2004	Fidelity/Hayden-Wing	Pick-up	0
BIPD-008	Dry Creek	8/24/2004	Fidelity/Hayden-Wing	Pick-up	0
BIPD-015	Pond Creek	8/24/2004	Fidelity/Hayden-Wing	Pick-up	0
BIPD-016	Pond Creek	8/24/2004	Fidelity/Hayden-Wing	Pick-up	0
BIPD-013	Pond Creek	8/24/2004	Fidelity/Hayden-Wing	Pick-up	0
BIPD-051	Dietz POD	5/8/2008	Fidelity/Hayden-Wing	Pick-up	0
BIPD-025	Unknown	7/2/2009	Fidelity/Hayden-Wing	Pick-up	0

Mountain Plover

Mountain plover habitat was modeled by Big Sky Conservation Institute in 2003 (Greystone 2004b) based on geographic information system (GIS) analysis using slope and vegetation coverage. The BLM-MCFO selected Greystone to verify the accuracy of this model and assess suitable habitat within the region. In 2004, Greystone conducted aerial and ground assessments in Big Horn, Powder River, and Rosebud counties to field verify approximately 50% (29 of the 61 areas) of the areas that were modeled as suitable habitat (Figure 6). These surveys were not conducted within the entire area classified as potential habitat by Big Sky Conservation Institute, but were of locations within these areas considered suitable by Greystone. No mountain plovers were observed and habitat surveyed indicated little potential mountain plover habitat (Greystone 2004b). In 2004 and 2005, Hayden-Wing was hired by Fidelity to assess mountain plover habitat suitability within prairie dog colonies near development areas (see Figure 6) (Hayden-Wing 2005; Fidelity 2009). No mountain plovers were observed during these surveys. The overall area within the WMPP Focus Area assessed by the BLM and Fidelity for suitable mountain plover habitat is displayed in Figure 6.

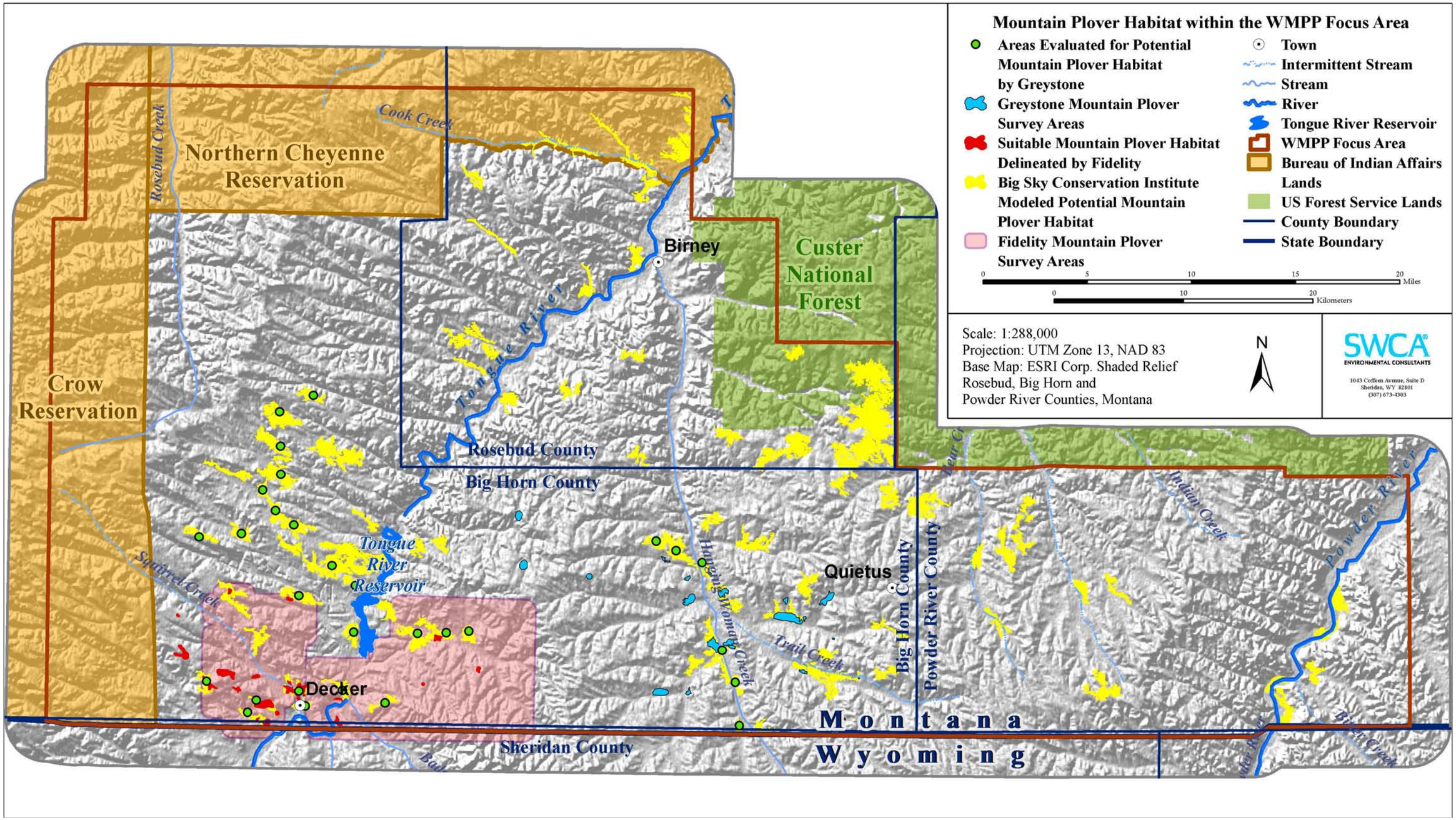

Figure 6. Mountain Plover Habitat within the WMPP Focus Area.

In 2008, Fidelity also conducted point observations for mountain plover within prairie dog colonies near their development areas (see Figure 6) (Fidelity 2009). Operators have also been conducting surveys for mountain plover within suitable habitat located within 0.5 mile of development areas. No mountain plovers have been observed within the WMPP Focus Area.

Acreage of suitable mountain plover habitat within the entire WMPP Focus Area could not be estimated based on the available data (Greystone 2004b; Fidelity 2009). In total, 979 acres of suitable mountain plover habitat areas are located within 0.5 miles of Fidelity development areas (Fidelity 2009). There are currently 143 CBNG wells that fall within 0.25 mile of suitable mountain plover habitat within 0.5 mile of Fidelity development areas (Table 13).

Sufficient data are not available at this time to determine if mountain plover habitat has increased or decreased within in the WMPP Focus Area. Additionally, assessment of trends in mountain plover nesting occupancy between reference areas and areas experiencing CBNG development could not be made. No nesting occupancy data are available within the WMPP Focus Area, and reference areas have not been established for comparison purposes.

Table 13. CBNG Wells within 0.25 Mile of Suitable Mountain Plover Habitat within 0.5 Mile of Fidelity Development Areas in the WMPP Focus Area.

Year	Count of Wells
1997	3
1998	7
1999	61
2000	13
2001	10
2002	0
2003	12
2004	8
2005	16
2006	10
2007	3
2008	0
2009	0
Grand Total	**143**

Sources: Fidelity (2009), Montana Board of Oil and Gas (2009), Wyoming Oil and Gas Commission (2009).

Gray Wolf/Canada Lynx/Grizzly Bears

No surveys were conducted for gray wolf, Canada lynx, or grizzly bears from 2000 to 2009. These species are not known or expected to occur within the WMPP Focus Area.

Sage-grouse

Lek Monitoring

Sage-grouse lek location surveys have been conducted throughout the entire WMPP Focus Area by operators, the BLM, and MFWP. These surveys have documented 51 sage-grouse

leks within the WMPP Focus Area (Figure 7) (Fidelity 2009; MFWP 2009a), primarily in Big Horn and Powder River counties. Seventeen of the 51 leks have been active since 2000.

Since 2003, operators have been required to conduct annual surveys within the POD, plus a 2-mile buffer, on federally managed surface acres and federal mineral estate lands. The BLM, MFWP, and researchers have conducted additional surveys throughout the WMPP Focus Area. In total, lek attendance surveys have been conducted on 43 of the 51 leks within the WMPP Focus Area (see Figure 7; Appendix D and E). Since 2003, 12 of these leks have been monitored annually for lek attendance (Fidelity 2009; MFWP 2009a). One of the unmonitored leks, BISG-029, is located within 2 miles of a POD on federally managed surface acres and federal mineral estate lands.

Based on available data, the annual lek attendance monitoring requirements (BLM 2008b) may not have been met for all leks. Monitoring requirements have largely been met within and adjacent to federally managed surface acres and federal mineral estate lands.

Non-reference Leks

There are 42 non-reference leks within the WMPP Focus Area, 17 of which are currently active (Table 14, see Figure 7). Twenty-eight non-reference leks have CBNG wells located within 2 miles of a lek. The average number of peak males observed on active non-reference leks is 4 (range = 1–12) (see Figure 7, Table 14, and Figures 1D–6D in Appendix D). The trend in active non-reference lek attendance and cumulative number of wells drilled since 2000 is displayed in Figure 8.

Within the last five years, lek attendance has declined by 13.7%; however, many of these leks (n = 29) experienced no change because lek attendance was already at 0 males/lek. Since 2003, lek attendance has declined by 36%; however, 23 leks experienced no change because lek attendance was already 0 males/lek.

Reference Leks

Reference leks have been established within the WMPP Focus Area (n = 9) and south of the WMPP Focus Area in Wyoming (n = 3) (see Figure 7). Reference leks were established so comparisons could be made between leks in developed and undeveloped areas. Of the 12 established reference leks, six currently have development (CBNG wells) within 2 miles of the lek (Table 15; see Figures 1E–3E in Appendix E). The average number of peak males observed on reference leks is 14 (range = 4–24) (see Table 15). The trend in reference lek activity and cumulative number of wells drilled since 2000 is displayed in Figure 9 (MFWP 2009a; WGFD 2009).

Within the last five years, average lek attendance increased by 44% (range = -76%–700%), and two leks increased in attendance by 240% and 700%, respectively. The other nine leks experienced an average decline in attendance of 55% (range = 0–100%). Annual lek attendance and CBNG wells within 2 miles of reference leks are displayed in Figures 1E–3E in Appendix E.

Development within 2 Miles of Leks

CBNG wells have been drilled within 2 miles of 30 leks (including reference leks) within the WMPP Focus Area. The number of wells within 2 miles of these leks ranges from 1 to 145 wells per lek ($\bar{x}$ = 22.39, standard error [SE] = 6.98). The number of wells within 2 miles of these reference leks ranges from 1 to 26 wells ($\bar{x}$ = 10.16, SE = 4.18).

Sage-grouse Habitat

Within the WMPP Focus Area 89,481 acres of crucial sage-grouse habitat and 725,790 acres of general sage-grouse habitat have been mapped (Figure 10). In 2003, winter habitat was surveyed and observations of sage-grouse were recorded. Additional winter observations of sage-grouse or sign were also recorded from 2001 to 2007. Sage-grouse leks are distributed across the WMPP Focus Area (see Figure 7); however, the total area of nesting habitat and areas used as migration corridors have not been mapped.

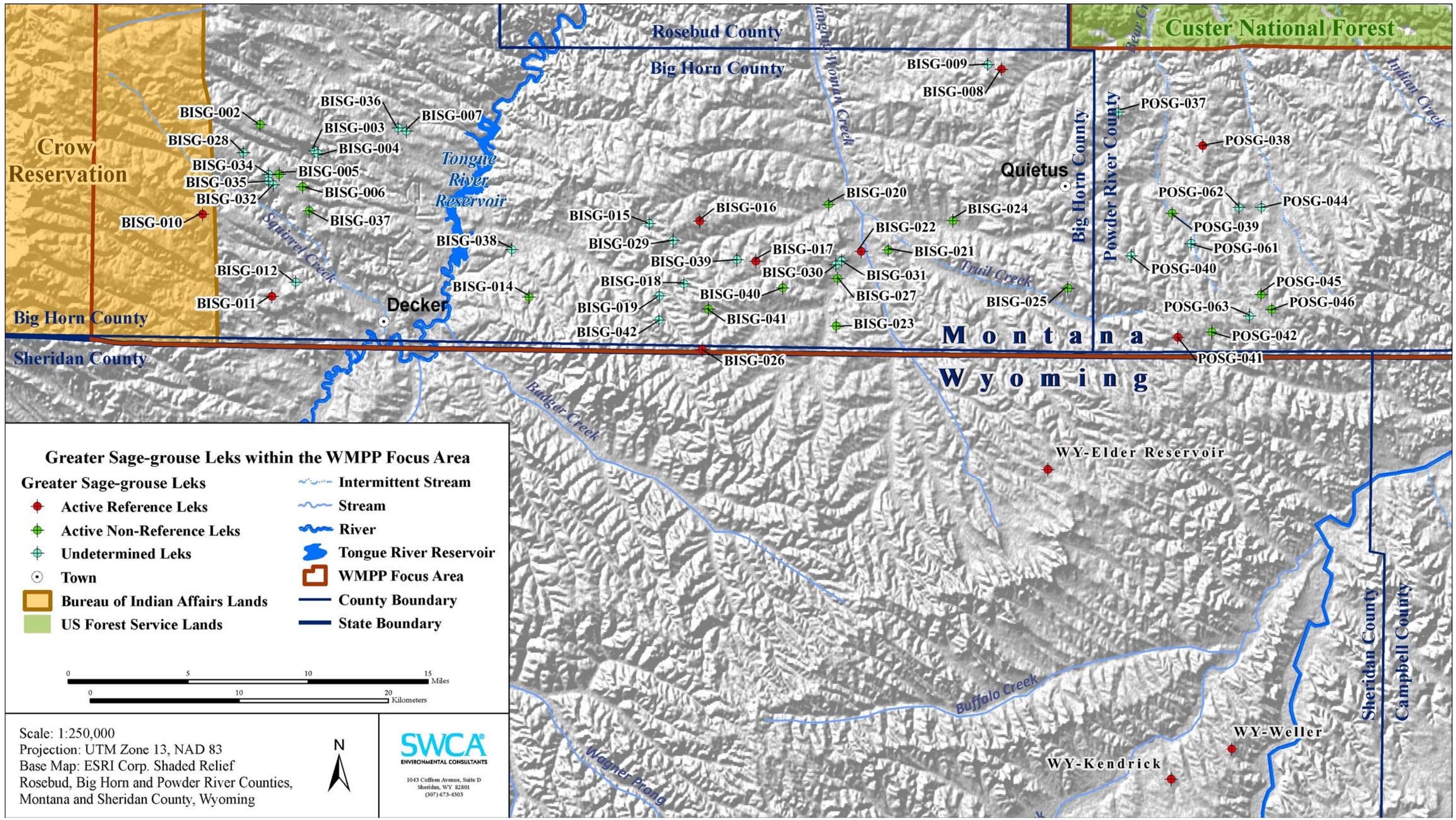

Figure 7. Sage-grouse leks within the WMPP Focus Area.

Table 14. Peak Number of Males and Cumulative Number of Wells Drilled Annually within 2 Miles of Active Non-reference Leks.

Lek Name		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Males/ Total Wells	Range of # Males
BISG-002	**# Males**	3	4	ND	0	0	0	0	0	0	0	**1**	**0–4**
	Total Wells	0	0	0	2	2	3	3	3	3	3	**3**	
BISG-005	**# Males**	ND	0	ND	1	4	14	0	0	0	0	**2**	**0–14**
	Total Wells	0	1	1	4	6	9	9	9	9	9	**9**	
BISG-006	**# Males**	ND	12	ND	0	ND	0	ND	2	4	0	**3**	**0–12**
	Total Wells	1	3	7	9	12	16	19	19	19	19	**19**	
BISG-014	**# Males**	5	0	ND	0	0	0	0	0	1	0	**1**	**0–5**
	Total Wells	2	2	2	32	32	104	110	131	144	145	**145**	
BISG-020	**# Males**	12	12	ND	0	ND	8	18	11	2	0	**8**	**0–18**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-021	**# Males**	ND	0	ND	2	ND	ND	ND	0	0	0	**0**	**0–2**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-023	**# Males**	10	8	6	0	ND	0	8	0	0	0	**4**	**0–10**
	Total Wells	0	0	0	0	0	16	17	18	18	18	**18**	
BISG-024	**# Males**	ND	2	0	0	ND	5	18	3	0	0	**4**	**0–18**
	Total Wells	0	0	0	0	0	0	0	0	0	1	**1**	
BISG-025	**# Males**	5	0	ND	0	ND	0	0	0	0	0	**1**	**0–5**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-027	**# Males**	ND	ND	ND	3	ND	0	0	0	0	0	**1**	**0–3**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-037	**# Males**	ND	30	ND	4	7	3	2	3	5	1	**7**	**1–30**
	Total Wells	0	3	7	1	14	18	24	28	28	28	**28**	

Lek Name		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Males/ Total Wells	Range of # Males
BISG-040	**# Males**	ND	0	4	0	ND	0	0	0	0	0	**1**	**0–4**
	Total Wells	0	0	0	1	1	1	1	1	1	1	**1**	
BISG-041	**# Males**	ND	2	ND	0	ND	ND	0	0	0	0	**0**	**0–2**
	Total Wells	0	0	0	0	0	0	0	1	1	1	**1**	
POSG-039	**# Males**	ND	ND	ND	5	ND	10	7	2	0	0	**4**	**0–10**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
POSG-042	**# Males**	12	6	ND	0	ND	0	0	0	1	0	**2**	**0–12**
	Total Wells	0	0	0	0	0	0	0	1	1	1	**1**	
POSG-045	**# Males**	ND	2	ND	0	ND	0	0	0	10	0	**2**	**0–10**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
POSG-046	**# Males**	ND	2	ND	0	ND	0	0	0	0	0	**0**	**0–2**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
Average of Peak Male Count		**12**	**7**	**5**	**2**	**3**	**4**	**3**	**3**	**3**	**1**		
Range of Peak Male Count		**3–35**	**0–30**	**0–10**	**0–13**	**0–7**	**0–21**	**0–18**	**0–26**	**0–34**	**0–20**		
Total Wells		**3**	**9**	**17**	**49**	**67**	**167**	**183**	**212**	**225**	**227**		

ND = No lek counts conducted.

Table 15. Peak Number of Males and Cumulative Number of Wells Drilled Annually within 2 Miles of Active Reference Leks.

Lek Name		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Males/ Total Wells	Range of # Males
BISG-008	**# Males**	12	27	7	0	0	1	3	5	6	8	**7**	**0–27**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-010	**# Males**	30	30	0	16	34	48	38	ND	17	10	**25**	**0–48**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-011	**# Males**	0	5	3	5	4	8	12	12	5	4	**6**	**0–12**
	Total Wells	23	23	23	23	24	26	26	26	26	26	**26**	
BISG-016	**# Males**	50	40	0	5	10	15	24	12	14	9	**18**	**0–50**
	Total Wells	0	0	0	0	0	0	1	1	1	1	**1**	
BISG-017	**# Males**	ND	0	ND	2	10	19	30	6	20	10	**12**	**0–30**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-022	**# Males**	30	21	ND	2	14	29	65	20	37	11	**25**	**2–65**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
BISG-026	**# Males**	ND	30	0	2	4	14	16	15	7	0	**10**	**0–30**
	Total Wells	0	0	0	0	0	0	0	0	13	13	**13**	
POSG-038	**# Males**	10	20	10	0	ND	13	14	2	5	3	**9**	**0–20**
	Total Wells	0	0	0	0	0	0	0	0	0	0	**0**	
POSG-041	**# Males**	35	30	10	13	ND	21	0	26	34	20	**21**	**0–35**
	Total Wells	0	0	0	0	0	0	0	1	1	1	**1**	
WY-Elder Reservoir	**# Males**	ND	ND	ND	ND	ND	ND	45	30	7	20	**26**	**7–45**
	Total Wells	0	0	0	1	1	1	2	2	2	2	**2**	
WY-Kendrick	**# Males**	0	ND	4	0	0	5	7	0	0	17	**4**	**0–17**
	Total Wells	0	0	0	1	1	1	1	1	4	17	**17**	

Lek Name		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Males/ Total Wells	Range of # Males
WY-Weller	**# Males**	ND	ND	ND	ND	7	14	13	21	12	9	**13**	**7–21**
	Total Wells	0	0	0	0	0	0	0	0	0	1	**1**	
Average of Peak Male Count		**21**	**23**	**4**	**5**	**9**	**17**	**22**	**14**	**14**	**10**		
Range of Peak Male Count		**0–50**	**0–40**	**0–10**	**0–16**	**0–34**	**1–48**	**3–65**	**0–30**	**0–37**	**0–20**		
Total Wells		**23**	**23**	**23**	**25**	**26**	**28**	**30**	**31**	**47**	**61**		

ND = No lek counts conducted.

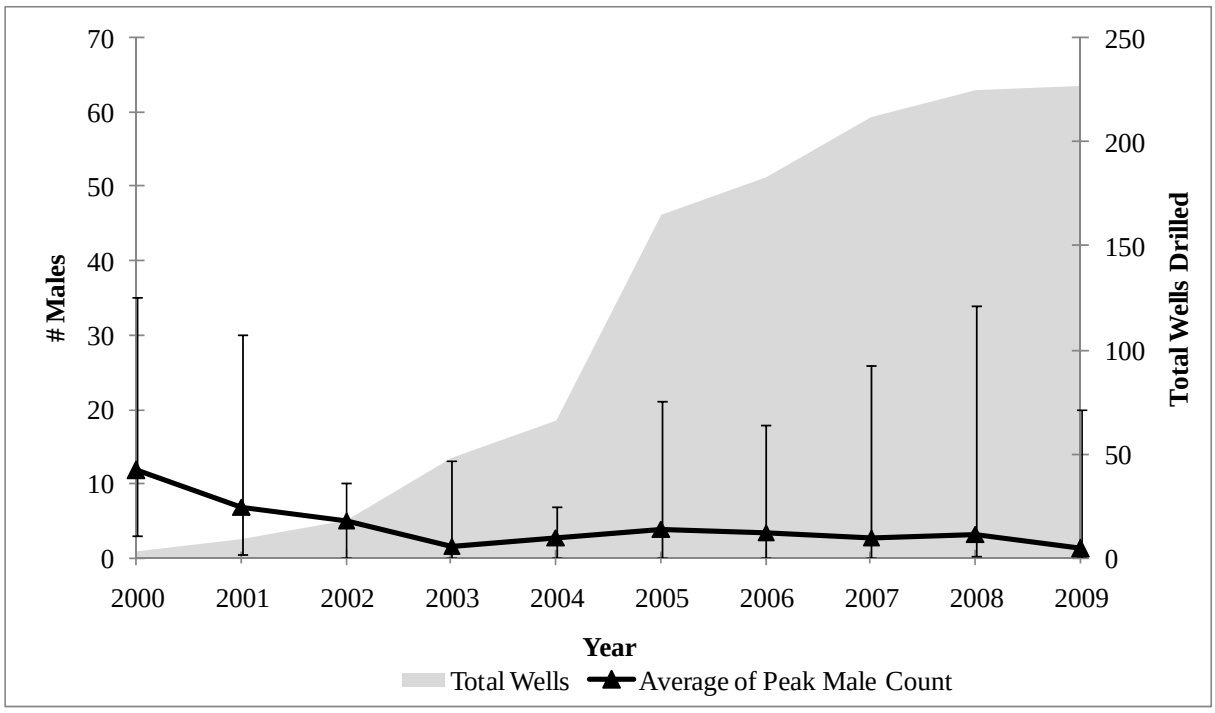

Figure 8. Summary of lek activity and number of wells within 2 miles of active non-reference leks (2000–2009) in the WMPP Focus Area.

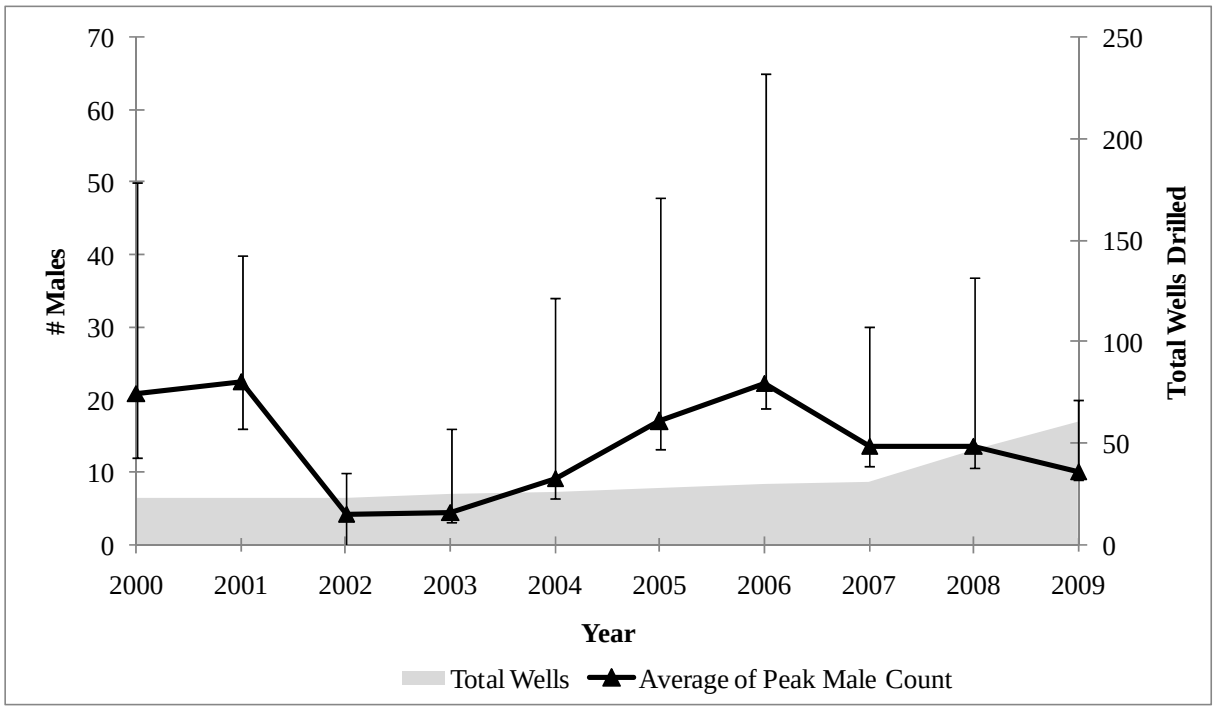

Figure 9. Summary of lek activity and number of wells within 2 miles of active reference leks (2000–2009) in the WMPP Focus Area.

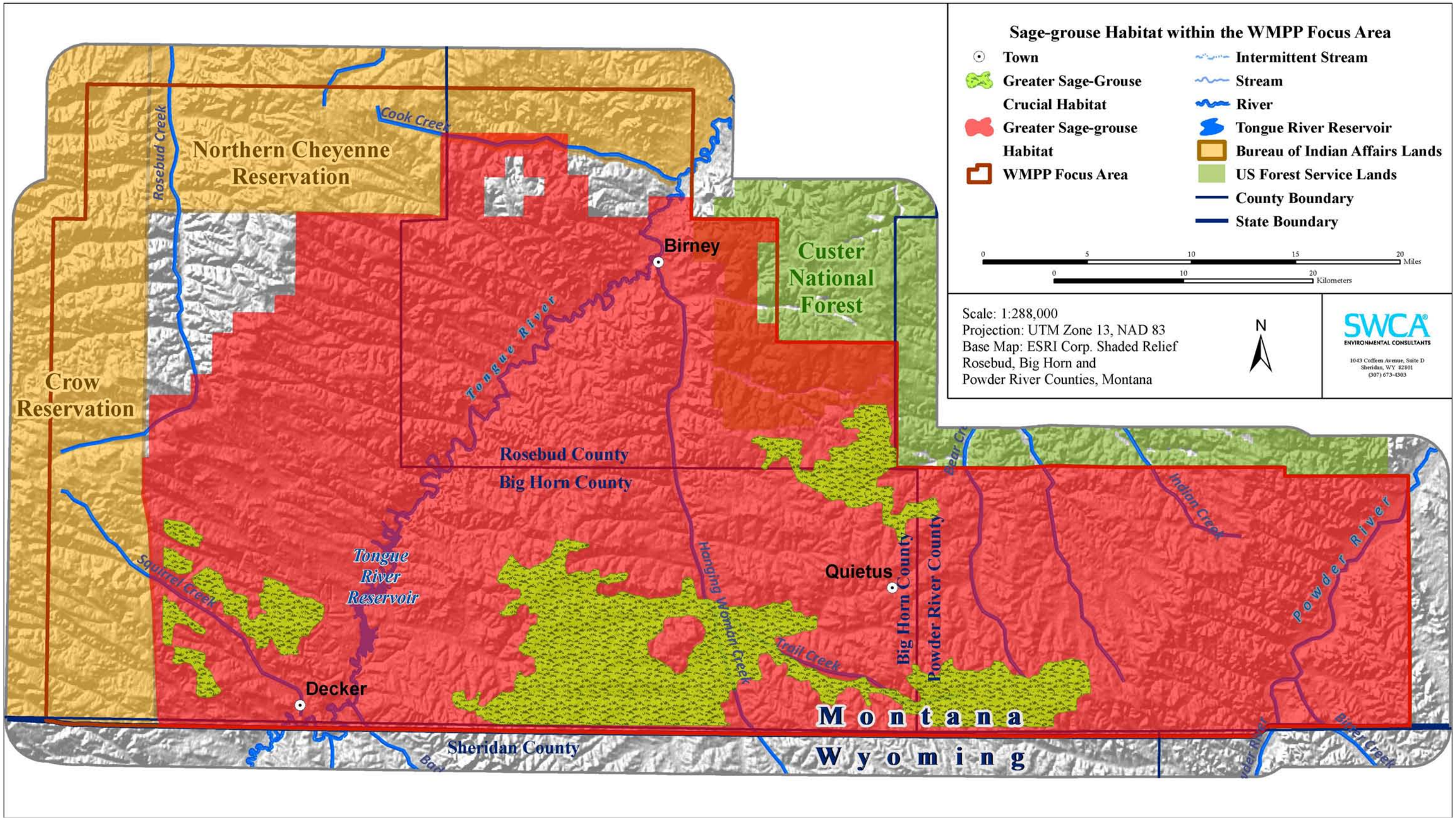

Figure 10. Sage-grouse habitat within the WMPP Focus Area.

Sharp-tailed Grouse

Sharp-tailed grouse leks are located throughout the WMPP Focus Area (Figure 11). In total, 129 sharp-tailed grouse leks have been located within the WMPP Focus Area (Fidelity 2009; MFWP 2009a). The total area inventoried for sharp-tailed leks is unknown. Operators have surveyed proposed development areas plus a 2-mile buffer within the WMPP Focus Area (see Figure 11). Lek attendance has been monitored primarily by operators on 42 of the 129 leks, concentrated in areas of development. The majority of lek attendance monitoring has occurred on leks within Big Horn County between 2004 and 2007. Of the 42 leks that have had attendance monitoring data collected, 13 leks have been active since 2000 (see Figure 11). On average, active leks had five males present (range = 0–16). Detailed information on lek attendance surveys and results is provided in Appendix F, Table 1F, which displays monitoring data for leks were birds were observed. Table 2F displays monitoring data for leks where no birds have been observed.

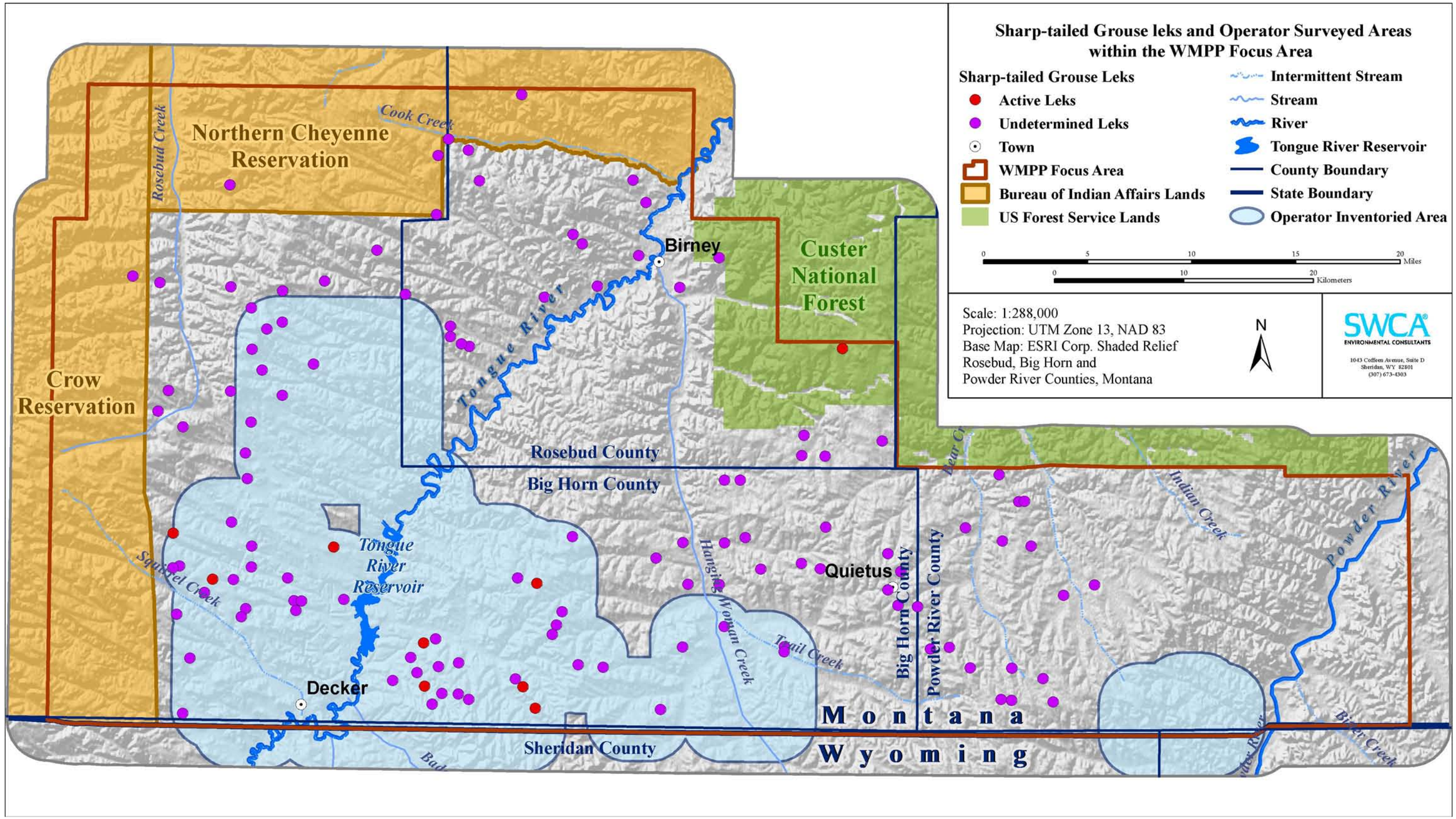

Figure 11. Sharp-tailed grouse leks and operator-surveyed areas within the WMPP Focus Area.

Big Game

Winter range for white-tailed deer, mule deer, and antelope is present within the WMPP Focus Area (Figure 12). Elk distribution areas also occur within the WMPP Focus Area (see Figure 12). Elk winter or parturition ranges have not been mapped within the WMPP Focus Area. Bighorn sheep are not known or expected to occur within the WMPP Focus Area.

Big game winter surveys and production surveys for mule deer and antelope have been conducted by Spring Creek Mine and Decker Coal Company since 1989 (Table 16). Additional aerial surveys for mule deer and antelope were conducted within the WMPP Focus Area between 2004 and 2009 (Figure 13, see Table 16). Big game ground surveys were also conducted by Fidelity in 2003 and 2004 within Big Horn County.

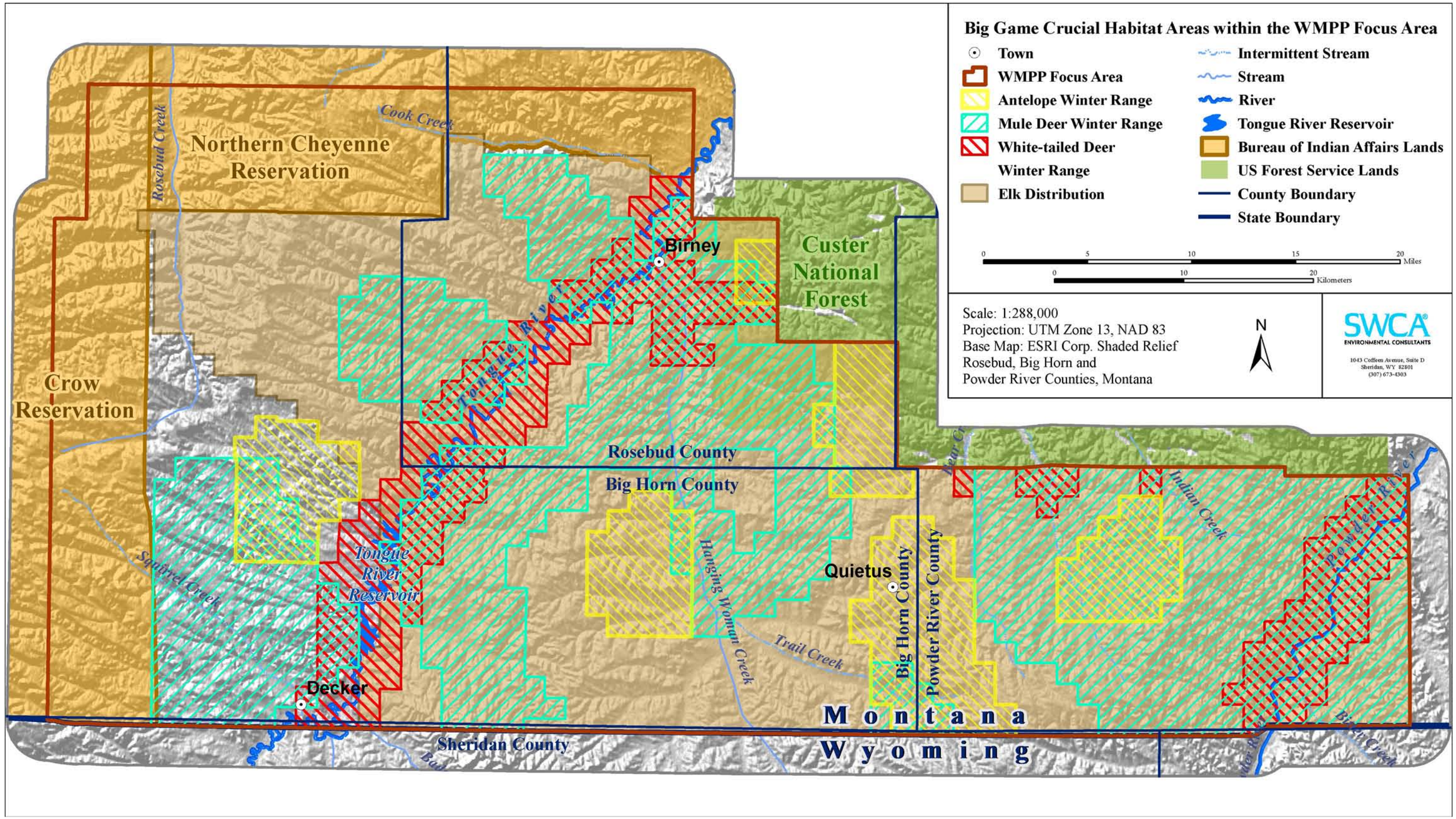

Figure 12. Big game crucial habitat areas within the WMPP Focus Area.

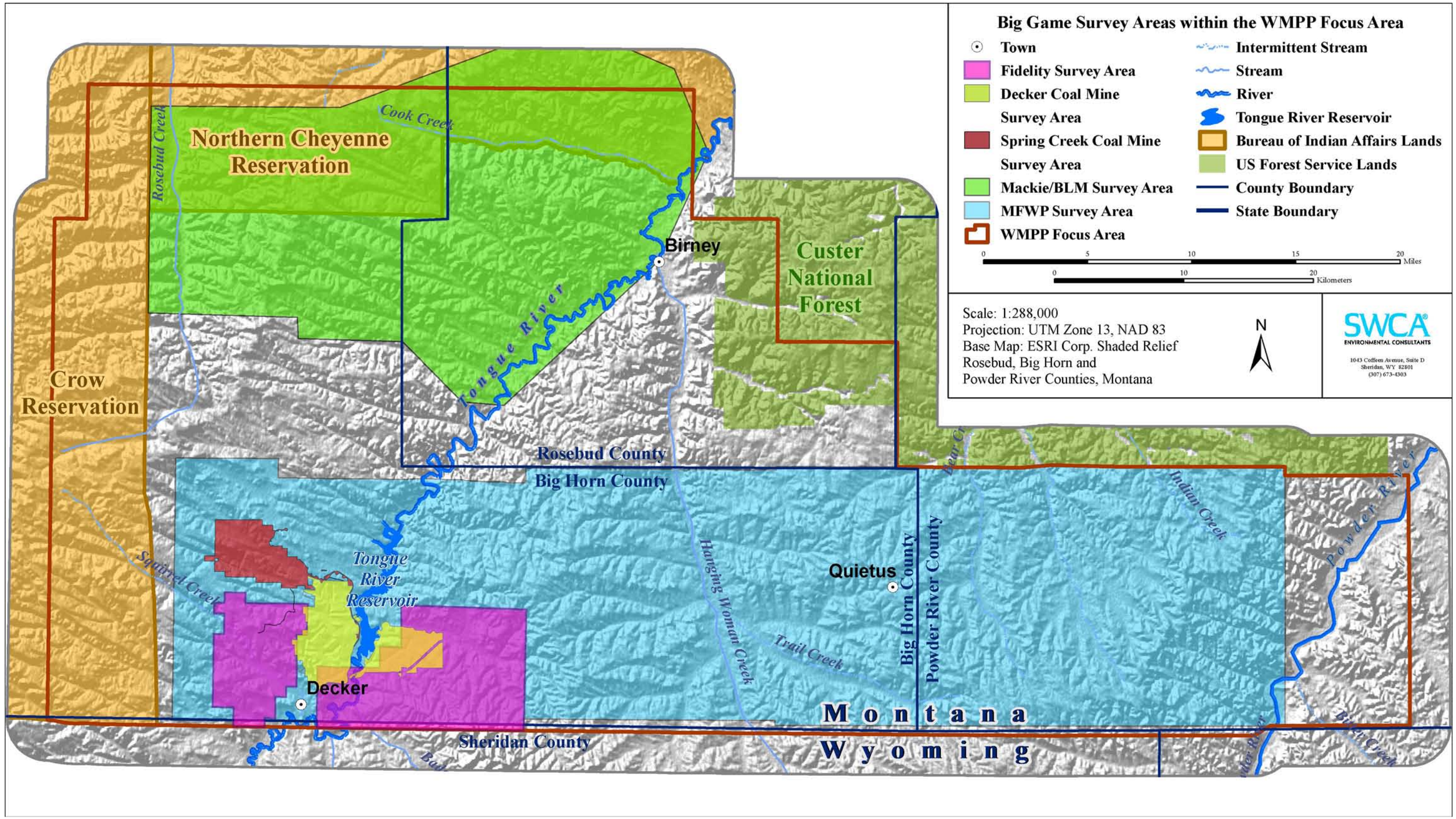

Figure 13. Big game survey areas within the WMPP Focus Area.

Table 16. Big Game Surveys Conducted within the WMPP Focus Area.

Proponent/ Surveyor	Years	Mode	Targeted Species	Survey Type
Spring Creek Mine/Jones and Stokes	1989–present	Air	Mule deer and antelope	Annual monitoring surveys for wintering big game
		Ground	Mule deer and antelope	Annual monitoring production surveys
Decker Coal Company/WWC Engineering	1998–present	Air	Mule deer, white-tailed deer[1], and antelope	Annual monitoring surveys for wintering big game
		Ground	Mule deer and antelope	Annual monitoring production surveys
Fidelity/Hayden-Wing	2003–2004	Ground	All	Annual monitoring surveys of Fidelity PODs
	2005–2008	Air	Mule deer	Annual monitoring surveys of Fidelity PODs
BLM/Mackie	2004–2005	Air	Mule deer	Mule deer surveys on southern portion of Northern Cheyenne Reservation
MFWP	2008–2009	Air	Antelope and mule deer	Baseline surveys

[1]In 2008, white-tailed deer were added to the targeted species.

Mule Deer Surveys

Spring Creek Mine has been conducting aerial winter surveys and ground production surveys for mule deer since 1989; however, trends can only be assessed using 1995–2008 data (Jones and Stokes 2008). From 1995 to 2008, the minimum population density for mule deer ranged from 0.8 to 8.5 mule deer/square mile. During 2008, winter mule deer density was near the long-term average of 4.8 mule deer/square mile (Jones and Stokes 2008). Production surveys indicate that the ratio of fawns per 100 does have fluctuated over the last 15 years (1994–2008), but yielded an average of 62:100 during that period (Jones and Stokes 2008).

Decker Coal Company has been conducting aerial winter surveys and ground production surveys for mule deer since 1998. From 1998 to 2008, an average of 603 (range = 256–1,153) mule deer were observed during the west side surveys, and 279 (range = 138–441) were observed during the east side surveys (Decker Coal Company 2008). No productivity data for mule deer were reported (Decker Coal Company 2008).

During the springs of 2004 and 2005, aerial surveys for mule deer were conducted on the southern portion of the Northern Cheyenne Reservation and adjacent public and private lands (see Figure 13). In 2004, three flights were conducted with reported sighting of 247 mule deer (Mackie 2004). In 2005, two flights were conducted with reported sightings of 221 mule deer (Mackie 2005). Along with mule deer, several other species including antelope, white-tailed deer, black bear (*Ursus americanus*), coyote (*Canis latrans*), and sharp-tailed grouse were also recorded.

In 2003 and 2004, Fidelity conducted ground observations for big game species within the development areas in Big Horn County (Hayden-Wing 2003b, 2005). From 2005 to 2008, aerial winter surveys for mule deer were conducted within Big Horn County development areas (Hayden-Wing 2006a, 2006b, 2008a, 2008b). Although different areas were surveyed between 2005–2006 and 2007–2008, the average number of mule deer observed per survey decreased over time. As the area surveyed was not consistent, an analysis of trend cannot be made at this time.

During the springs of 2008 and 2009, MFWP conducted baseline aerial surveys for mule deer (MFWP 2009c). In 2008, 3,327 mule deer (1,989 or 59.8% adults), 413 elk (329 or 79.6% adults), and 40 white-tailed deer (25 or 62.5% adults) were observed. In 2009, 2,129 mule deer (1,185 or 55.7% adults), 214 elk (163 or 76.2% adults), and 51 white-tailed deer (30 or 58.8% adults) were observed.

Antelope

Spring Creek Mine has been conducting aerial winter surveys and ground production surveys for antelope since 1989; however, trends can only be assessed using 1995–2008 data (Jones and Stokes 2008). From 1995 to 2008, the minimum winter population density for ranged from 0.6 to 4.2 animals/square mile (Jones and Stokes 2008). No productivity data for antelope was reported (Jones and Stokes 2008).

Decker Coal Company has been conducting aerial winter surveys and ground production surveys for antelope since 1998. From 1998 to 2008, an average of 209 (range = 71–372) antelope were observed during the west side surveys, and 256 (range = 99–444) were observed during the east side surveys (Decker Coal Company 2008). From 1998 to 2008, the number of bucks per 100 does ranged from 7 to 200, and the number of fawns per 100 does ranged from 0 to 133 (Decker Coal Company 2008).

During the summers of 2008 and 2009, MFWP conducted baseline aerial surveys for antelope (MFWP 2009c). In 2008, 1,382 antelope including 164 yearling bucks, 235 adult bucks, 711 does, and 272 fawns were observed. In 2009, 768 antelope were observed including 43 yearling bucks, 135 adult bucks, 454 does, and 136 fawns.

Response of Big Game to Energy Development

Survey data are not currently available to allow for the assessment of trends in big game species related to energy development. While multiple surveys have been conducted within the WMPP Focus Area, they have not been repeated over a broad enough time frame, or the survey protocol and data have not been analyzed to determine if they can be used for future trend analysis (personal communication, email from Windy Davis, Biologists, MFWP, to Laura Burckhardt, SWCA Environmental Consultants, September 30, 2009). Additionally, big game mortality related to project-related infrastructure or increased traffic within the WMPP Focus Area has not been reported.

General Wildlife

Various research and monitoring surveys have been conducted within the WMPP Focus Area for targeted non-game species or incidental general wildlife observations (see Appendix A). Results of these surveys have been used to assess the extent of avian surveys within the

WMPP Focus Area and generate a list of observed BLM special-status species within the WMPP Focus Area.

Avian Surveys

Avian surveys have been conducted throughout the WMPP Focus Area from 1996 to 2009 (Table 17, Figure 14). Surveys have consisted primarily of point count surveys either along roadways or waterways, and the number of each bird species observed (visually or audibly) has been recorded. Avian mortality information resulting from collisions with vehicles, electrocutions, well pit mortality, etc., has not been reported within the WMPP Focus Area.

Table 17. Avian Survey Point Counts Completed within the WMPP Focus Area.

Surveyor	Observer	Date	Year	Study Name	Citation
Avian Science Center	N/A	June 3–June 26	2002	Landbird Monitoring Program	Montana Natural Heritage Program 2009
		June 1–June 26	2003		
		June 1–July 7	2004		
		May 22–June 28	2006		
		May 21–June 30	2007		
		May 26–June 24	2008		
BLM	Atkinson and Hendricks	June 23–July 10	2007	BLM - Sagebrush Succession Point	Montana Natural Heritage Program 2009
Decker Coal Company	N/A	June 4–June 12	1996	Breeding Bird Survey Native Habitat	Montana Natural Heritage Program 2009
		June 14–June 25	1999		
		June 18–June 25	2002		
Montana State University	Bramblett	June 22	2002	Prairie Riparian Native Species Surveys	Montana Natural Heritage Program 2009
Rocky Mountain Bird Observatory	Unknown	June 15–July 22	2009	Unknown	Rocky Mountain Bird Observatory 2009
Spring Creek Coal Mine	Thunderbird Consulting	June 17–June 19	1996	Breeding Bird Surveys	Montana Natural Heritage Program 2009
		May 30–June 1	2001		
		June 5–June 7	2006		
U.S. Geological Survey	Skagen and Adams	June 10–June 11	2001	Roadside Surveys	Skagen and Adams 2001

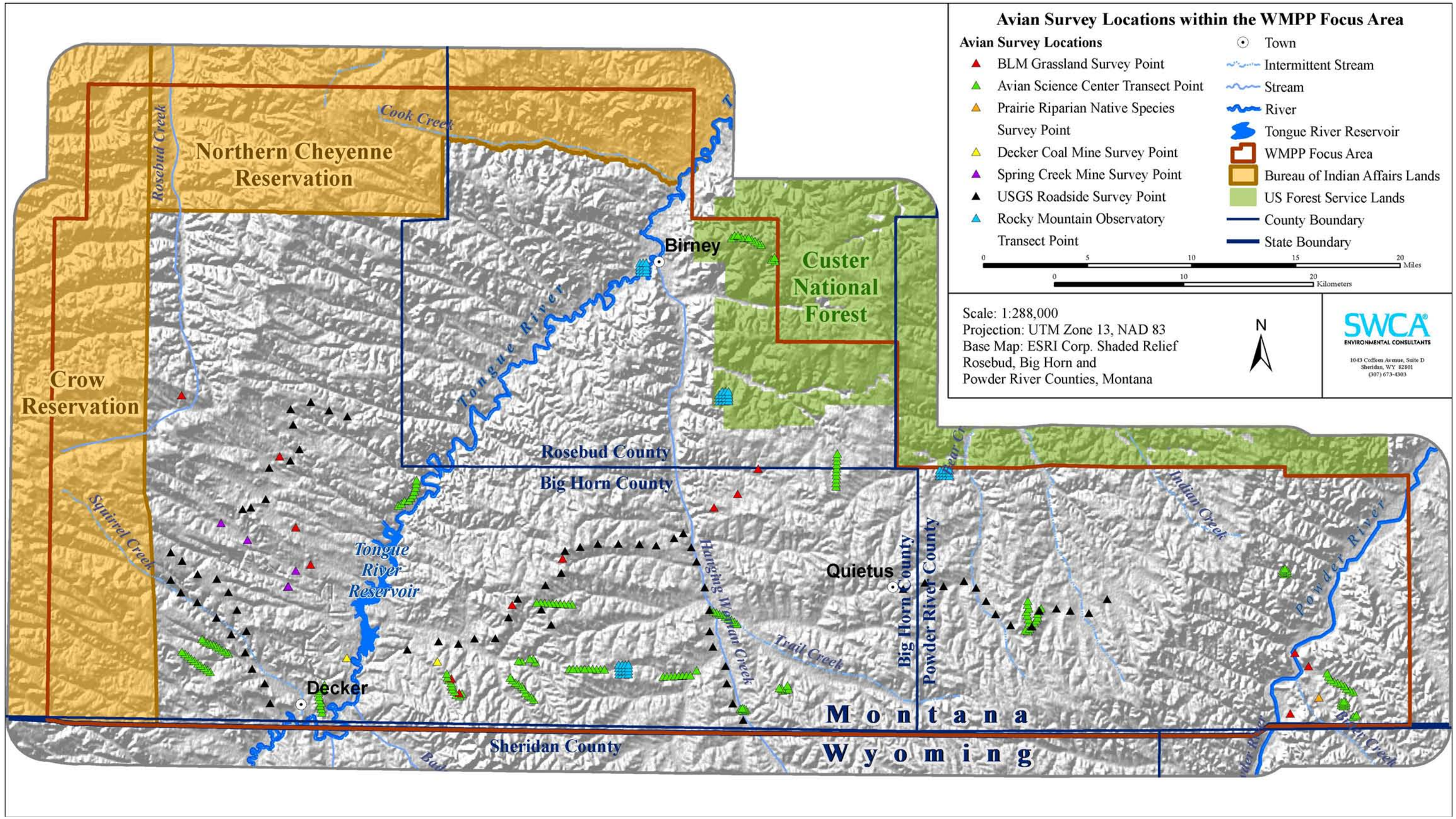

Figure 14. Avian survey locations within the WMPP Focus Area.

BLM Special-status Species

Operator- and agency-funded research efforts for non-game species have been conducted throughout the WMPP Focus Area (see Appendix A). Additionally, general observations of wildlife and vegetation species have been reported. Results of these survey efforts have been used to prepare a list of known or suspected BLM special-status species expected to occur in the WMPP Focus Area (Table 18).

Table 18. BLM Special-status Animal Species Known to Occur or Potentially Occur within the WMPP Focus Area.

Scientific Name	Common Name
Accipiter gentilis	northern goshawk
Ammodramus bairdii	Baird's sparrow
*Ammodramus leconteii**	Le Conte's sparrow
*Anthus spragueii**	Sprague's pipit
Antrozous pallidus	pallid bat
Apalone spinifera	spiny softshell
Aquila chrysaetos	golden eagle
Athene cunicularia	burrowing owl
Bufo cognatus	great plains toad
Buteo regalis	ferruginous hawk
Buteo swainsonii	Swainson's hawk
*Calcarius mccownii**	McCown's longspur
*Calcarius ornatus**	chestnut-collared longspur
Catoptrophorus semipalmatus	willet
Centrocercus urophasianus	sage-grouse
Chelydra serpentina	snapping turtle
Corynorhinus townsendii	Townsend's big-eared bat
*Cycleptus elongates**	blue sucker
Cynomys ludovicianus	black-tailed prairie dog
*Euderma maculatum**	spotted bat
*Gavia immer**	common loon
Haliaeetus leucocephalus	bald eagle
Heterodon nasicus	western hog-nosed snake
Lampropeltis triangulum	milksnake
Lanius ludovicianus	loggerhead shrike
Larus pipixcan	Franklin's gull
Macrhybopsis gelida	sturgeon chub
Melanerpes erythrocephalus	red-headed woodpecker
*Myotis evotis**	long-eared myotis
*Myotis volans**	long-legged myotis
Numenius americanus	long-billed curlew
*Oncorhynchus clarkii bouvieri**	Yellowstone cutthroat trout
Oreoscoptes montanus	sage thrasher
Phalaropus tricolor	Wilson's phalarope
Phrynosoma hernandesi	short-horned lizard
Picoides articusi	black-backed woodpecker
*Polyodon spathula**	paddlefish

Scientific Name	Common Name
Rana pipiens	northern leopard frog
Sander canadensis	sauger
*Sitta pygmaea**	pygmy nuthatch
Spea bombifrons	plains spadefoot
*Spiza Americana**	dickcissel
Spizella breweri	Brewer's sparrow

*Species potentially occurring within the WMPP Focus Area.
Sources: BLM (2008a), Montana Natural Heritage Program (2009).

Aquatic Species

Baseline studies and monitoring of aquatic species has been conducted by the BLM, MFWP, the U.S. Geological Survey, and operators under the direction and guidance of the PRB Interagency Aquatic Task Group (see Table 3A, Appendix A). To date, no federally protected species have been document within the WMPP Focus Area. Results of these survey efforts are maintained by the Powder River Basin Interagency Aquatic Task Group (2009).

SUMMARY/CONCLUSIONS

With the implementation of the WMPP, the WMPP Focus Area became one of the most intensely monitored areas in the Powder River and Billings RMP areas. This WMPP Project was designed to collect and organize all available wildlife monitoring data collected by various organizations in the WMPP Focus area; provide a summary of inventory, monitoring, and research conducted in the WMPP Focus Area from 2000 to 2009; assess change in wildlife populations in relation to CBNG development growth; and allow the BLM-MCFO to review the available data to determine if the guidelines set forth in the WMPP are being met. Research, inventory, and monitoring efforts have been conducted by agencies and operators within the WMPP Focus Area since 2000. All readily available data from these efforts were collected, analyzed, presented in this report, and stored in a database for the BLM-MCFO. Changes in wildlife populations in relation to CBNG development growth could not be assessed due to lack of consistent data collection efforts or because sufficient years of monitoring data do not exist for trend assessment (see individual species sections and Table 19 below). A summary of inventory, monitoring, and research conducted in the WMPP Focus Area for each species and an assessment of WMPP guideline compliance are provided below.

As a result of this report, the agencies responsible for managing wildlife species or their habitats, as well as those operators, landowners, and other governmental agencies, have a consolidated document summarizing the inventory and monitoring data collected related to CBNG development. In addition, the BLM can analyze the data collected, as well as the data not collected, and make a determination as to the need to amend the requirements for these data. Data collected can be used to identify data gaps, research needs, and areas where better wildlife data management needs to be incorporated.

This WMPP Project could not have been possible without the support of the many landowners, CBNG industry, and their contractors, coal mines and their contractors and governmental agencies. This support, willingness to provide the requested data, and patience is appreciated.

Table 19. Summary of Monitoring Requirements Not Currently Being Met within the WMPP Focus Area.

Species	Item	Location	Unit of Measure	Frequency and Duration	Requirements Met
Raptors	Productivity-selected undeveloped comparison area	Powder River and Billings RMP planning area	Nest success/failure species productivity	Every five years	No[1]
Prairie Dog	Active prairie dog colony	Specific project area plus 0.5-mile buffer	Occupancy	Annually	No[1]
	Established reference colonies	Powder River and Billings RMP planning area	Occupancy	Annually	No
Mountain Plover	Established reference nesting areas	Powder River and Billings RMP planning area	Occupancy	Twice yearly (April 15–June 30)	No
Sage-grouse	Established reference leks with no CBNG wells within 2 miles	Powder River and Billings RMP planning area	Number of males/lek	Annually	Partially; five reference leks have CBNG wells within 2-mile buffer
	Winter habitat	Specific project development areas plus 2-mile buffer	Occupancy	Annually	No[1]
Sharp-tailed Grouse	Lek attendance	Specific project development areas plus 2-mile buffer	Number of males/lek	Unknown	Criteria for survey requirements and measurement of change is not established
Big Game	Seasonal habitat reference area use	Powder River and Billings RMP planning area	Occupancy	Annually	No; reference areas not established
General Wildlife	Reporting of mortality due to project related infrastructure and activities	Project development areas	Mortality	Year-round	No; mortality information not currently reported

[1] Waived in whole or in part by the BLM.

RAPTORS

Survey requirements for active nest locations within 1 mile of project development areas have been met within the WMPP Focus Area. The total area within the WMPP Focus Area that has been surveyed for nests is unknown. In total, 359 unique raptor nest locations have been

recorded throughout the WMPP Focus Area (see Figure 3); however, the highest concentrations of nests fall within the required survey area for development areas (see Figure 2 for areas of development). Trends in nest occupancy have not been assessed due to insufficient data.

Survey requirements for raptor productivity within 1 mile of project development areas have been met within the WMPP Focus Area. Raptor nest occupancy and productivity monitoring has been conducted at all 359 nests (see Table 1B, Appendix B). Trends in nest success and overall productivity have not been assessed due to insufficient data and as a result of the BLM's decision to remove some requirements for nest productivity monitoring.

Survey requirements for raptor nests within undeveloped comparison areas have not been met. Select undeveloped comparison areas have not been established for nest productivity monitoring and impact assessments.

BALD EAGLES

Aerial bald eagle winter roost surveys have been conducted within the WMPP Focus Area by the BLM and operators (see Table 11). The overall extent of the WMPP Focus Area surveyed is unknown; however, surveys have been reported to have been conducted within upland and riparian habitats. The majority of survey efforts have been concentrated along the Tongue River.

PRAIRIE DOGS

Survey requirements for location of active prairie dog colonies within 0.5 mile of project development areas have been met within the WMPP Focus Area. In total, 240 unique towns were identified within or overlapping the WMPP Focus Area.

Annual activity survey requirements for prairie dog colonies within 0.5 mile of project development areas are not being met. Forty-eight of the 240 prairie dog colonies have been surveyed multiple times, either within the same year, by different methods, or across different years (see Appendix C, Table 1C). However, only one colony (BIPD-003) was surveyed annually as required by the WMPP (BLM 2008b) and FSEIS (BLM 2008a). The BLM has since decided to remove some requirements for annual monitoring.

No reference colonies have been identified by the BLM within the WMPP Focus Area. As a result, the response of colonies to CBNG development could not be compared with reference colonies. Forty-seven colonies have CBNG wells within 0.25 mile of their delineated boundary, representing a total of 422 wells. No mortalities related to project infrastructure have been reported. Data are currently insufficient to gauge the response of prairie dog colonies within the WMPP Focus Area to development.

BLACK-FOOTED FERRETS

Survey requirements for occupancy of active prairie dog colonies larger than 80 acres within 0.5 mile of project development areas have been met within the WMPP Focus Area. Black-footed ferret surveys have been completed within 10 of the prairie dog colonies within the

WMPP Focus Area between 2003 and 2009. No black-footed ferrets were observed during any of the surveys. As a result of dialog between the BLM and the USFWS, the requirement for future black-footed ferret surveys will likely be eliminated (personal communication, written comments from Dale Tribby, Biologist, BLM-MCFO, to Laura Burckhardt, SWCA Environmental Consultants, April 13, 2009).

MOUNTAIN PLOVER

Requirements for modeling potential mountain plover habitat have been met within the WMPP Focus Area. Potential habitat areas have been refined by field validation within approximately half of the modeled areas in the WMPP Focus Area. Survey requirements have also been met in areas of suitable habitat that fall within 0.5 mile of project development areas.

Reference mountain plover nesting areas not subject to CBNG development have not been established within the WMP Focus Area. Sufficient data are not available at this time to determine if mountain plover habitat has increased or decreased within in the WMPP Focus Area. Additionally, assessment of trends in mountain plover nesting occupancy between reference areas and areas experiencing CBNG development could not be made. Currently, 143 CBNG wells fall within 0.25 mile of suitable mountain plover habitat within the WMPP Focus Area.

GRAY WOLF/CANADA LYNX/GRIZZLY BEARS

No surveys have been conducted for gray wolf, Canada lynx, or grizzly bears. These species are not known or expected to occur within the WMPP Focus Area.

SAGE-GROUSE

Survey requirements for lek attendance monitoring within 2 miles of project development areas have largely been met within the WMPP Focus Area. Sage-grouse lek location surveys have been conducted throughout the entire WMPP Focus Area by operators, the BLM, and MFWP. Lek attendance surveys have been conducted within and adjacent to areas of development by operators, the BLM, MFWP, interest groups, and researchers. In total, 51 sage-grouse leks have been documented within the WMPP Focus Area (see Figure 7) (Fidelity 2009; MFWP 2009a); lek attendance surveys have been conducted on 43 of these (see Appendix D and E). Since 2000, 12 of the 43 leks have been monitored annually for lek attendance (Fidelity 2009; MFWP 2009a). One of the unmonitored leks, BISG-029, is within 2 miles of a POD on federally managed surface acres and federal mineral estate lands. Based on available data, the annual lek attendance monitoring requirements (BLM 2008b) are largely being met for all leks.

Reference Leks

Reference leks have been established within the WMPP Focus Area (n = 8) and south of the WMPP Focus Area in Wyoming (n = 3). Of the 11 established reference leks, five currently have development (CBNG wells) within 2 miles of the lek. Reference leks are designed to be used as a comparison between lek attendance in developed and undeveloped areas. New

reference leks may need to be identified due to development occurring within 2 miles of almost half of the established reference leks.

Development within 2 Miles of Leks

CBNG wells have been drilled within 2 miles of 30 leks (including reference leks) within the WMPP Focus Area (see Appendix D). The number of wells within 2 miles of these lek ranges from 1 to 145 wells per lek ($\bar{x}$ = 22.39, SE = 6.98). The number of wells within 2 miles of reference leks ranges from 1 to 26 wells ($\bar{x}$ = 10.16, SE = 4.18).

Changes in Lek Attendance

Lek attendance data can be used to demonstrate overall trends in activity. However, lek attendance data are not sufficient to determine if changes in attendance is related to CBNG development. Additionally, comparisons between lek attendance on reference and non-reference leks are problematic because almost half of the reference leks have development within a 2-mile buffer of the lek.

Sage-grouse Habitat

Winter observations of sage-grouse have been documented within the WMPP Focus Area. However, these surveys have not been conducted on an annual basis as required by the WMPP.

SHARP-TAILED GROUSE

The FSEIS and WMPP do not give specific guidance on how often surveys are required or what data are to be collected. No specific criteria for measuring effects are identified. In total, 129 sharp-tailed grouse leks have been located within the WMPP Focus Area. The total area inventoried for sharp-tailed leks is unknown. Operators have surveyed proposed development areas plus a 2-mile buffer within the WMPP Focus Area. Lek attendance has been monitored on 42 of the 129 leks. Lek attendance monitoring has been concentrated in areas of development and collected by operators.

BIG GAME

Survey requirements for seasonal habitat use by big game within 1 mile of project development areas have been met for mule deer and antelope within the WMPP Focus Area (see Table 16, Figure 13).

Big game seasonal habitat reference areas have not been established within the WMPP Focus Area. Surveys have been conducted outside development areas; however, surveys have not been repeated over a broad enough time frame or the survey protocol and data have not been analyzed to determine if they can be used for future trend analysis (personal communication, email from Windy Davis, Biologists, MFWP, to Laura Burckhardt, SWCA Environmental Consultants, September 30, 2009).

Survey data are not currently available to allow for the assessment of trends in big game species related to development. Additionally, big game mortality related to project-related infrastructure or increased traffic within the WMPP Focus Area has not been reported.

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Appendix A

Survey and Monitoring Conducted within the WMPP Focus Area 2000–2009

Table 1A. Monitoring and Research Conducted within the WMPP Focus Area (2000–2009).

Project Proponent	Project Conductor	Description	Start	End	General Results
BLM	BLM	Comprehensive landscape level sage-grouse lek surveys.	2000	2003	Surveyed 42 lek locations, 13 were active, with 109 sage-grouse observed.
BLM	BLM	Annual sage and sharp-tailed grouse lek counts	2000	Ongoing	Lek counts were conducted and results recorded and incorporated into the statewide database. Emphasis has been placed on sage-grouse.
BLM	USGS	Roadside avian surveys	2001	2001	Nearly 700 birds with 37 separate species were sighted. Species richness increased as habitat structure and diversity increased. Western Meadowlark was the most common sighted species.
BLM	BLM	Aerial prairie dog surveys	2001	2003	Document prairie dog colonies in the Montana portion of the Powder River Basin.
MFWP	MSU	2002 prairie riparian native species surveys	2002	2002	Point count surveys for birds on Bitter Creek.
BLM	BLM	Sage-grouse winter habitat survey	2002	2003	Surveyed 41,000 acres. 8 winter flocks, 173 sage-grouse were observed.
BLM, USFS, UofM	UofM	Breeding bird inventory	2002	Ongoing	Observations of bird species.
BLM	Montana Natural Heritage Program	Hanging Woman basin plant and animal resources	2003	2003	Compiled a biological inventory of the Hanging Woman Creek Basin.
BLM	Big Sky Conservation Institute	Mountain plover habitat	2003	2003	Computer modeling of mountain plover habitat as stipulated in the WMPP.
BLM	UofM	Impacts to CBNG development on sage-grouse	2003	2007	First documented impact of West Nile virus impacts on Sage-grouse. Radio collared sage-grouse for population study. Populations continued to be monitored with nest success normal at 40%–50%. Impacts to sage-grouse resulting from CBNG development documented. Habitat mapping in project utilizing Spot-5 imagery completed.
BLM	Greystone Environmental	Mountain plover habitat evaluation, and black-tailed prairie dog surveys	2004	2004	Identified new colonies and verified known/existing colonies. Documented 181 active colonies within the survey area. The Mountain Plover habitat model from the Big Sky Conservation Institute (Greystone 2004b) was found to overestimate the potential habitat within the project area.
BLM	Greystone Environmental	Raptor surveys and inventory for Big Horn County	2004	2004	35 raptor nests were documented, of the 35 documented, 23 were active. 7 separate species were documented.

Project Proponent	Project Conductor	Description	Start	End	General Results
BLM & MFWP	MFWP	Bald eagle productivity surveys	2004	2004	Surveys were completed in June.
BLM	BLM	Bald eagle winter roost surveys	2004	2005	In 2004, helicopter surveys completed on 3 separate days revealed a total of 62 bald eagle observations. Bald eagles were observed throughout the survey area where open water and or prey were available. In 2005, fixed wing aircraft surveys conducted on 2 separate days revealed a total of 19 observations. The majority of observations were along the Tongue River in areas containing mature cottonwoods.
BLM & BIA	Mackie/BLM	Mule deer surveys on and adjacent to a portion of the Northern Cheyenne Reservation	2004	2005	Densities of mule deer were generally 1–2 per square mile on public and private lands, and much lower on the Northern Cheyenne Reservation. Numbers of mule deer appear low compared to the potential habitat within the area. Population may have been underestimated by 1/2 to 2/3 due to sight ability.
BLM	Montana State University	Mosquito populations and production in the in the PRB	2004	2006	Found mosquito (*Culex tarsalis)* responsible for the spread of West Nile virus was to some extent dependent on emergent vegetation for reproduction. Provided recommendations for management of water produced as a result of CBNG development.
BLM	Montana Natural Heritage Program	Landscape-level breeding bird surveys	2007	2007	Point count surveys for birds.
MFWP, BLM, Avian Science Center	Avian Science Center	Bird monitoring surveys	2007	2007	Habitat was classified based on transects in the Baker Anticline and Decker/Tongue regions.
Aquatics Task Group	MT Natural Heritage Program & WY Natural Diversity Database	Herptile/Bat monitoring	2008	2010	Group documented occurrence of several species of herptiles, finding some species were more abundant than previously believed, larger range for some species than previously known and the importance of south facing rocky slopes to both herptiles and bats. In 2008, documented die off of Tiger Salamanders due to Rana virus.
BLM	BLM	Sage-grouse movements related to CBNG development	2008	2010	Objective was to look at general sage-grouse movements in the eastern Montana portion of the PRB. Several radio collared birds moved into Wyoming. In general, movements were not large.
BLM	UofM	Sage-grouse population viability analysis	2009	2010	Report to be submitted in summer 2010. Objective is to look at different stressors affecting sage-grouse populations and impact of these stressors individually or in combination with one another on sage-grouse populations through time.

BIA = Bureau of Indian Affairs; UofM = University of Montana.

Table 2A. Monitoring Conducted by Operators within the WMPP Focus Area (2000–2009).

Project Proponent	Project Conductor	Description/Area	Year	Species Surveyed	General Results	Project Citation
Decker Coal Company	Decker Coal Company	Annual wildlife surveys on Decker Coal Mine	2000–2008	Big game, raptors, waterfowl, sage-grouse, sharp-tailed grouse, passerine birds	Annual count of the vertebrate fauna.	Decker Coal Company 2008
Spring Creek Mine	Jones and Stokes	Annual wildlife surveys on Spring Creek Mine	2000–2008	Big game, raptors, bald eagles, waterfowl, sage-grouse, sharp-tailed grouse, turkeys, lagomorphs, bats, amphibians and reptiles	Annual count of the vertebrate fauna.	Jones and Stokes 2008
Fidelity	Hayden-Wing	Baseline wildlife inventory in Coal Creek, Badger Hills, Dry Creek	2002	Raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse	Surveys documented: 44 raptor nests, 1 bald eagle nest, 11 black-tailed prairie dog colonies, 5 mountain plover habitat patches, 7 sage-grouse leks, and 4 sharp-tailed grouse leks.	Hayden-Wing 2002
Fidelity	Hayden-Wing	Bald eagle surveys along the Tongue River	2003	Bald eagles	Survey documented 53 bald eagles throughout the survey area.	Hayden-Wing 2003a
Fidelity	Hayden-Wing	Baseline wildlife inventory in Coal Creek, Badger Hills, Dry Creek PODs	2003	Raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, black-footed ferret	Survey documented: 46 raptor nests , 1 bald eagle nest, 96 bald eagles observed, 15 black-tailed prairie dog colonies, 18 mountain plover habitat patches, no mountain plover, 9 sage-grouse leks, 9 sharp-tailed grouse leks, no black-footed ferrets.	Hayden-Wing 2003b
Fidelity	Hayden-Wing	Black-footed ferret survey in Badger Hills PODs	2003	Black-footed ferrets	No black-footed ferrets were observed.	Hayden-Wing 2003c
Fidelity	Hayden-Wing	Black-footed ferret survey in Sheridan County, Wyoming, and Pond Creek POD in Big Horn County, Montana	2003	Black-footed ferrets	No black-footed ferrets were observed.	Hayden-Wing 2003d

Project Proponent	Project Conductor	Description/Area	Year	Species Surveyed	General Results	Project Citation
Fidelity	Hayden-Wing	Wildlife surveys for Coal Creek, Badger Hills, Dry Creek and Deer Creek, Pond Creek	2003–2004	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, black-footed ferrets	Survey documented: 43 bald eagles, 33 bald eagle locations along the Tongue River, 2 bald eagle nests, 20 sage-grouse leks, 26 sharp-tailed grouse leks, 72 raptor nests, 20 mountain plover habitat patches, no mountain plover, 29 black-tailed prairie dog colonies, no black-footed ferrets.	Hayden-Wing 2005
Fidelity	Hayden-Wing	Black-footed ferret survey in Pond Creek and Dry Creek PODs	2004	Black-footed ferret	Six black-tailed prairie dog colonies were surveyed; no black-footed ferrets were sighted.	Hayden-Wing 2004
Fidelity	Hayden-Wing	Wildlife surveys for Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Pond Creek, Spring Creek, and Deer Creek South	2004–2005	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, mule deer	Survey documented: 79 bald eagles, 26 sage-grouse leks, 29 sharp-tailed grouse leks, 81 raptor nests, 1 active bald eagle nest, 21 mountain plover habitat patches, no mountain plover were observed, 35 black-tailed prairie dog colonies, 369 mule deer counted on winter range.	Hayden-Wing 2006a
Nance Petroleum Corporation	Greystone	Trail Creek POD black-tailed prairie dog surveys	2005	Black-tailed prairie dog	Survey documented 10 active black-tailed prairie dog colonies; burrowing owl nests were found in 3 colonies.	Greystone 2005
Petro-Canada Resources	Hayden-Wing	East of Hanging Woman Creek	2005	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, black-footed ferrets	No survey results are available.	BLM 2005
Pinnacle	Western Land Services	Coal Creek POD surveys	2005	Bald eagle winter roosts	Bald eagles observed along the Tongue River.	Western Land Services 2006
Fidelity	Hayden-Wing	Wildlife surveys for Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Pond Creek, Spring Creek, and Deer Creek South, and Corral Creek	2005–2006	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, mule deer	Survey documented: 91 bald eagles, 29 sage-grouse leks, 36 sharp-tailed grouse leks, 95 raptor nests (21 new, 44 active, and 52 inactive), 1 bald eagle nest, 21 mountain plover habitat patches, no mountain plover observed, and 36 black-tailed prairie dog colonies; mule deer were counted on the critical winter range.	Hayden-Wing 2006b

Project Proponent	Project Conductor	Description/Area	Year	Species Surveyed	General Results	Project Citation
Fidelity	Hayden-Wing	Badger Hills, Coal Creek, Corral Creek, Decker Mine East, Deer Creek North PODs sage-grouse nesting habitat	2006	Sage-grouse habitat	Survey documented 6 sage-grouse leks.	Hayden-Wing 2007
Fidelity	Hayden-Wing	Wildlife surveys for Coal Creek, Badger Hills, Dry Creek, Deer Creek North, Deer Creek South, Pond Creek, Spring Creek, and, and Corral Creek, and Decker Mine East	2006–2007	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, mule deer	Survey documented: 92 bald eagle observations, 24 sage-grouse leks, 31 sharp-tailed grouse leks, 141 raptor nests, 21 mountain plover habitat patches, no mountain plover were documented, and 47 black-tailed prairie dog colonies; mule deer were counted on the critical winter range.	Hayden-Wing 2008a
Fidelity	Hayden-Wing	Annual wildlife surveys in Coal Creek, Badger Hills, Deer Creek North, Deer Creek South, Corral Creek, Decker Mine East, Penson	2008	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse, mule deer	Survey documented: 76 bald eagles observations, 24 sage-grouse leks, 32 sharp-tailed grouse leks, 96 raptor nests, 7 mountain plover habitat patches, no mountain plover, and 27 black-tailed prairie dog colonies; mule deer were counted on the critical winter range.	Hayden-Wing 2008b
Pearl Field Services	Arcadis	Forks Ranch POD wildlife surveys	2008	Bald eagles, raptors, black-tailed prairie dog, mountain plover, sage-grouse, sharp-tailed grouse Ute Ladies-tresses	Survey documented: no bald eagle roosts, 27 raptor nests, 5 sage-grouse leks, no sharp-tailed grouse, no mountain plover habitat, and potential Ute Ladies-tresses habitat exists.	Arcadis 2008
Fidelity	Hayden-Wing	Annual wildlife surveys	2008–2009	Bald eagles, raptors, black-tailed prairie dog, mountain plover, burrowing owls, sage-grouse, sharp-tailed grouse, mule deer	Survey documented: 92 bald eagle observations, 37 sage-grouse leks, 44 sharp-tailed grouse leks, 197 raptor nests, no mountain plover, and 4 black-tailed prairie dog colonies.	Fidelity 2009

Table 3A. Aquatic Research and Monitoring Conducted in the WMPP Focus Area (2000–2009).

Project Proponent	Project Conductor	Description	Start	End	General Results
MFWP	MFWP	Fish surveys on Tongue River Reservoir	1960s	Ongoing	Cyclic patterns in fish populations, abundance, and diversity over the past 40 years. Currently these cyclic patterns cannot be attributed to CBNG development or other activities within the Tongue River Watershed.
MTDEQ, EPA, BLM, USGS	Tetra Tech and USGS	Aquatic biological data for Hanging Woman, Otter, and Pumpkin creeks	1999	2004, may be ongoing for some sites	Insufficient data to determine trends in biological diversity. Information will be used to develop Total Maximum Daily Loads and provide baseline information for research and monitoring within the Tongue and Powder River drainages.
BLM	Confluence Consulting Inc.	Biological, physical, chemical integrity of streams in the Tongue River Basin	2002	2003	Streams that may be affected by CBNG development should be managed based on an understanding of the potential biological integrity of the area streams.
EPA	MFWP and USGS	Toxicity of salt from CBNG on fish in the Tongue and Powder River drainages	2003	Ongoing	Percent survival significantly decreased for fathead minnows at 30 days in 625 mg NaHCO3/L. Fish species, water quality, fish diversity and physical habitat were highly variable within the 15 sampled sites in the Tongue and Powder drainages. In situ and laboratory bioassays were conducted to gather the data necessary to derive water quality criteria for sodium bicarbonate following EPA guidelines.
MFWP	MFWP	Fish sampling and habitat on Rosebud, Young's, Hanging Woman, Waddle, Pumpkin, and Spring creeks and Little Powder, Powder and Tongue rivers	2003	Ongoing	A final report in 2000 indicated historically the Tongue River facilitated a considerable sauger migration for spawning, but recent years have experienced little migration movements. There is insufficient data to determine the cause of this change. Trends in biological diversity are not apparent on the study area streams.

Project Proponent	Project Conductor	Description	Start	End	General Results
Aquatics Task Group	Montana State University	Effects of CBNG on Fish Assemblages	2004	2008	Species richness and index of biotic integrity (IBI) scores were similar between developed and undeveloped sites. No strong relationships existed between overall IBI scores or most IBI metric scores and the number or density of CBNG wells in a drainage area. Streams composed largely or entirely of product water were inhabited by reproducing populations of several species of fish. Other evidence suggested that CBNG may negatively affect fish assemblages over time. Conductivity was on average higher in treatment streams and was negatively related to biotic integrity. Bicarbonate, one of the primary salts in product water, appeared to be harmful to some species of fish. One salt-tolerant non-native species, northern plains killifish, was observed almost exclusively in treatment streams.
BLM	Confluence Consulting Inc.	Biological integrity of streams in Tongue River basin and Rosebud Creek.	2004	2005	Provided baseline data.
BLM	Maxim Technologies	Baseline Amphibian and Reptile surveys	2004	2005	Several locations within the study area harbor special-status herptile species.
Aquatics Task Group	USGS	Assessment of Aquatic communities	2005	2008	The project established current conditions for aquatic biota and their habitat in the PRB. Samples and measurements of habitat and macroinvertebrate, algal, and fish communities were collected from sites located on the mainstem Tongue and Powder Rivers and on various tributaries.

EPA = U.S. Environmental Protection Agency; MTDEQ = Montana Department of Environmental Quality; USGS = U.S. Geological Survey.

Appendix B
Raptor Nest Monitoring within the WMPP Focus Area

Table 1B. Raptor Nest Monitoring Data within the WMPP Focus Area.

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
AMKE09S39E2401	American Kestrel	2008	6/26/2008	Active Nest	0	0
AMKE09S39E2801	American Kestrel	2008	6/26/2008	Active Nest	0	0
AMKE09S42E0901	American Kestrel	2004	5/1/2004	Active Nest	0	0
BAEA06S42E1301	Bald Eagle	2005	3/1/2005	Active Nest	0	2
BAEA07S41E0701	Bald Eagle	1979	6/30/1979	Unknown	0	0
BAEA07S41E1401	Bald Eagle	1992	3/1/1992	Active Nest	0	0
BAEA08S41E0501	Bald Eagle	1984	3/20/1984	Unknown	0	0
BAEA08S41E0502	Bald Eagle	2004	5/21/2004	Active Nest	0	3
BAEA08S41E0503	Bald Eagle	1995	3/1/1995	Active Nest	0	1
		1996	3/1/1996	Active Nest	0	1
		1997	3/1/1997	Active Nest	0	2
		1998	3/1/1998	Active Nest	0	2
		1999	3/1/1999	Active Nest	0	3
		2001	3/1/2001	Active Nest	0	2
		2002	3/1/2002	Active Nest	0	2
		2003	3/1/2003	Active Nest	0	2
		2004	3/1/2004	Active Nest	0	2
		2005	3/1/2005	Active Nest	0	0
BAEA08S41E0504	Bald Eagle	1984	8/1/1984	Occupied	0	0
BAEA08S41E0505	Bald Eagle	1993	8/1/1993	Active Nest	0	1
BAEA08S41E1801	Bald Eagle	1975	6/1/1975	Unknown	0	0
BAEA09N40E3301	Bald Eagle	2007	6/22/2007	Active But Failed	0	0
BAEA09S40E3301	Bald Eagle	2002	5/28/2002	Active Nest	0	0
		2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	1
			5/11/2004	Active Nest	0	0
			6/3/2004	Active Nest	0	2
			6/18/2004	Active Nest	0	1
			6/28/2004	Active Nest	0	2
		2005	4/22/2005	Active Nest	0	3
			6/21/2005	Active Nest	0	3
		2006	2/23/2006	Active Nest	0	0
			4/29/2006	Abandoned	0	0
			6/6/2006	Active Nest	0	2
			6/30/2006	Abandoned	0	1

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
BAEA09S40E3302	Bald Eagle	2000	3/1/2000	Active Nest	0	1
		2002	3/1/2002	Active Nest	0	1
		2003	3/1/2003	Active Nest	0	1
		2005	3/1/2005	Active Nest	0	3
BAEA09S40E3303	Bald Eagle	1999	3/1/1999	Inactive Nest	0	0
		2004	3/1/2004	Active Nest	0	2
BAEA09S40E3304	Bald Eagle	2001	8/1/2001	Active Nest	0	1
BUOW08S39E3401	Burrowing Owl	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
BUOW08S39E3402	Burrowing Owl	2000	7/31/2000	Active Nest	0	2
BUOW08S43E2301	Burrowing Owl	1979	4/1/1979	Active Nest	0	5
BUOW08S45E2401	Burrowing Owl	1979	1/1/1979	Unknown	0	0
BUOW09S39E0201	Burrowing Owl	2005	7/5/2005	Active Nest	0	0
		2006	6/7/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S39E0202	Burrowing Owl	2001	6/1/2001	Active Nest	0	4
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
BUOW09S39E0203	Burrowing Owl	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
BUOW09S39E0204	Burrowing Owl	2005	6/1/2005	Active Nest	0	0
BUOW09S39E0205	Burrowing Owl	2001	4/15/2001	Active Nest	0	4
BUOW09S39E0206	Burrowing Owl	1997	7/15/1997	Active Nest	0	4
BUOW09S39E0207	Burrowing Owl	1998	7/28/1998	Active Nest	0	8
BUOW09S39E0208	Burrowing Owl	1999	7/28/1999	Active Nest	0	6
BUOW09S39E0209	Burrowing Owl	2000	7/31/2000	Active Nest	0	7

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
BUOW09S39E2301	Burrowing Owl	2004	4/23/2004	Inactive Nest	0	0
		2005	6/21/2005	Inactive Nest	0	0
			7/6/2005	Inactive Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S39E2501	Burrowing Owl	1984	1/1/1984	Unknown	0	0
BUOW09S39E3601	Burrowing Owl	2005	6/21/2005	Inactive Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
			7/12/2006	Inactive Nest	0	5
		2007	6/26/2007	Active Nest	0	0
BUOW09S39E3602	Burrowing Owl	2006	7/12/2006	Active Nest	0	3
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S40E0101	Burrowing Owl	2006	7/12/2006	Active Nest	0	1
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S40E1901	Burrowing Owl	2004	4/23/2004	Active Nest	0	0
		2005	6/21/2005	Inactive Nest	0	0
			7/6/2005	Inactive Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S40E2001	Burrowing Owl	2006	7/12/2006	Active Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S41E0401	Burrowing Owl	2004	6/28/2004	Active Nest	0	0
			8/20/2004	Active Nest	0	0
		2005	6/22/2005	Active Nest	0	0
			7/6/2005	Active Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S41E0801	Burrowing Owl	2004	8/20/2004	Active Nest	0	0
		2005	6/22/2005	Inactive Nest	0	0
			7/6/2005	Inactive Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S41E0802	Burrowing Owl	2004	8/20/2004	Active Nest	0	0
		2005	6/22/2005	Inactive Nest	0	0
			7/6/2005	Inactive Nest	0	0
		2006	6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
BUOW09S43E1601	Burrowing Owl	2004	5/18/2004	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
COBO09S40E1901	Common Barn Owl	2004	5/20/2004	Active Nest	0	0
COHA09S41E3501	Cooper's Hawk	2003	8/3/2003	Active Nest	0	2
GHOW05S42E2601	Great Horned Owl	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	2
GHOW06S40E2501	Great Horned Owl	1983	1/1/1983	Unknown	0	0
GHOW06S42E0101	Great Horned Owl	1975	6/1/1975	Unknown	0	0
		1981	1/1/1981	Active Nest	0	1
GHOW06S42E2801	Great Horned Owl	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	0
GHOW08S39E1901	Great Horned Owl	2005	6/1/2005	Active Nest	0	0
GHOW08S39E2301	Great Horned Owl	1976	1/1/1976	Active Nest	0	0
GHOW08S39E3401	Great Horned Owl	1998	6/1/1998	Gone	0	0
GHOW08S40E1901	Great Horned Owl	2004	6/1/2004	Active Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
GHOW08S40E1902	Great Horned Owl	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
GHOW08S40E2901	Great Horned Owl	1995	6/1/1995	Gone	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
GHOW08S40E3401	Great Horned Owl	1981	1/1/1981	Active Nest	0	0
GHOW09S39E0401	Great Horned Owl	2007	6/26/2007	Active Nest	0	0
GHOW09S39E1401	Great Horned Owl	1976	1/1/1976	Active Nest	0	0
		1977	1/1/1977	Active Nest	0	0
		1978	1/1/1978	Active Nest	0	0
		1979	1/1/1979	Active Nest	0	0
		1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Unknown	0	0
		1982	1/1/1982	Unknown	0	0
		1983	1/1/1983	Unknown	0	0
		1984	1/1/1984	Active Nest	0	0
GHOW09S39E1402	Great Horned Owl	2004	5/20/2004	Active Nest	0	2

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
GHOW09S39E1501	Great Horned Owl	2002	5/28/2002	Active Nest	0	0
		2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
		2005	4/28/2005	Active Nest	0	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/8/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
GHOW09S39E2301	Great Horned Owl	1975	1/1/1975	Inactive Nest	0	0
		1976	1/1/1976	Inactive Nest	0	0
		1977	1/1/1977	Inactive Nest	0	0
		1978	1/1/1978	Inactive Nest	0	0
		1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0
		1982	1/1/1982	Inactive Nest	0	0
		1983	1/1/1983	Inactive Nest	0	0
		1984	1/1/1984	Inactive Nest	0	0
GHOW09S39E2401	Great Horned Owl	2004	4/23/2004	Active Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/26/2006	Active Nest	0	0
			4/29/2006	Active Nest	0	0
			6/7/2006	Active But Failed	0	0
GHOW09S39E3401	Great Horned Owl	2004	5/20/2004	Active Nest	0	3
GHOW09S39E3403	Great Horned Owl	2007	Unknown	Unknown	0	0
		2008	5/10/2008	Did Not Locate	0	0
			6/11/2008	Inactive Nest	0	0
			Unknown	Unknown	0	0
		2009	Unknown	Unknown	0	0
GHOW09S40E0201	Great Horned Owl	2007	6/26/2007	Active Nest	0	0
GHOW09S40E1101	Great Horned Owl	2006	12/14/2006	Active Nest	0	0
GHOW09S40E1801	Great Horned Owl	2007	5/4/2007	Inactive Nest	0	0
GHOW09S40E1901	Great Horned Owl	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	6/7/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
GHOW09S40E2401	Great Horned Owl	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Did Not Locate	0	0
			6/23/2005	Inactive Nest	0	0
		2006	4/29/2006	Active Nest	0	1
			6/6/2006	Active Nest	0	0
GHOW09S40E2802	Great Horned Owl	2007	6/26/2007	Active But Failed	0	0
GHOW09S40E3001	Great Horned Owl	2003	5/13/2003	Inactive Nest	No Data	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/8/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
GHOW09S41E0101	Great Horned Owl	2006	6/6/2006	Active Nest	0	0
			6/29/2006	Active Nest	0	0
		2007	5/4/2007	Active But Failed	0	0
GHOW09S41E0601	Great Horned Owl	2008	6/26/2008	Active Nest	0	0
GHOW09S41E0801	Great Horned Owl	2007	6/26/2007	Active Nest	0	0
GHOW09S41E1201	Great Horned Owl	2007	6/26/2007	Active Nest	0	0
GHOW09S41E1501	Great Horned Owl	2007	6/26/2007	Active But Failed	0	0
GHOW09S41E2201	Great Horned Owl	2007	5/4/2007	Inactive Nest	0	0
GHOW09S48E0101	Great Horned Owl	1983	4/1/1983	Active Nest	0	0
GHOW09S48E0501	Great Horned Owl	1975	6/1/1975	Unknown	0	0
GOEA07.5S41E3301	Golden Eagle	1980	6/1/1980	Inactive Nest	0	0
		1981	6/1/1981	Active Nest	0	2
		1982	6/1/1982	Inactive Nest	0	0
GOEA07S41E0701	Golden Eagle	2003	5/17/2003	Active Nest	0	0
GOEA08S39E0501	Golden Eagle	2004	5/20/2004	Active Nest	0	2
GOEA08S39E1901	Golden Eagle	2001	6/1/2001	Active Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Active Nest	0	1
		2004	6/1/2004	Active Nest	0	2
		2005	6/1/2005	Active Nest	0	1
GOEA08S39E2001	Golden Eagle	2001	6/1/2001	Gone	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
GOEA08S39E2002	Golden Eagle	2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
GOEA08S39E2301	Golden Eagle	1976	1/1/1976	Active Nest	0	0
GOEA08S39E2501	Golden Eagle	1976	1/1/1976	Inactive Nest	0	0
GOEA08S39E2601	Golden Eagle	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
GOEA08S40E1401	Golden Eagle	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	1
		1982	1/1/1982	Active Nest	0	0
		1984	1/1/1984	Active Nest	0	0
GOEA08S40E1901	Golden Eagle	1978	1/1/1978	Active Nest	0	0
		1986	1/1/1986	Inactive Nest	0	0
GOEA08S40E1902	Golden Eagle	2003	6/1/2003	Active Nest	0	1
GOEA08S40E3501	Golden Eagle	2004	4/23/2004	Active Nest	0	0
		2005	4/22/2005	Active Nest	3	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/7/2006	Unknown	0	0
			6/30/2006	Gone	0	0
		2007	5/4/2007	Gone	0	0
GOEA08S43E0901	Golden Eagle	1979	5/16/1979	Inactive Nest	0	0
GOEA08S43E0902	Golden Eagle	Unknown	Unknown	Inactive Nest	0	0
GOEA08S46E2801	Golden Eagle	2005	5/31/2005	Inactive Nest	0	0
GOEA09S38E0101	Golden Eagle	1984	1/1/1984	Unknown	0	0
GOEA09S38E0102	Golden Eagle	2007	6/26/2007	Active Nest	0	0
GOEA09S39E1301	Golden Eagle	1979	1/1/1979	Active Nest	0	0
		1980	1/1/1980	Inactive Nest	0	0
GOEA09S39E1501	Golden Eagle	2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Unknown	0	0
			6/8/2006	Inactive Nest	0	0
		2007	4/23/2007	Inactive Nest	0	0
			5/13/2007	Active Nest	0	0
			5/28/2007	Inactive Nest	0	0
GOEA09S39E1601	Golden Eagle	1984	1/1/1984	Active Nest	0	1
GOEA09S39E2401	Golden Eagle	2007	6/26/2007	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
GOEA09S39E3501	Golden Eagle	1981	6/1/1981	Active Nest	0	2
		1982	6/1/1982	INDE	0	0
		2002	5/28/2002	Active Nest	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
			6/21/2005	Inactive Nest	0	0
		2006	4/29/2006	Occupied	0	0
			6/6/2006	Active Nest	0	2
			6/29/2006	Active Nest	0	1
GOEA09S40E1801	Golden Eagle	1982	1/1/1982	Active Nest	0	2
		1983	1/1/1983	Active Nest	0	2
		1984	1/1/1984	Active Nest	0	1
GOEA09S40E3001	Golden Eagle	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
			5/20/2004	Active Nest	0	2
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Occupied	0	0
			6/6/2006	Active Nest	0	1
			6/8/2006	Active Nest	0	0
			6/30/2006	Active Nest	0	1
		2007	5/4/2007	Inactive Nest	0	2
GOEA09S41E0501	Golden Eagle	2007	5/4/2007	Gone	0	0
GOEA09S41E0601	Golden Eagle	1980	1/1/1980	Unknown	0	0
		1981	1/1/1981	Unknown	0	0
GOEA09S41E0602	Golden Eagle	1977	1/1/1977	Active Nest	0	0
		1978	1/1/1978	Active Nest	0	0
		1979	1/1/1979	Active Nest	0	1
		1980	1/1/1980	Unknown	0	0
		1981	1/1/1981	Unknown	0	0
		1984	1/1/1984	Active Nest	0	1
GOEA09S41E0603	Golden Eagle	1981	1/1/1981	Inactive Nest	0	0
GOEA09S41E1401	Golden Eagle	2004	5/18/2004	Active Nest	0	2
		2005	4/5/2005	Active Nest	0	0
			4/22/2005	Active Nest	0	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Active Nest	0	2
			6/6/2006	Active Nest	0	1
			6/29/2006	Active Nest	0	1
		2007	6/26/2007	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
GOEA09S41E1501	Golden Eagle	2007	5/4/2007	Gone	0	0
GOEA09S41E2201	Golden Eagle	1977	1/1/1977	Active Nest	0	0
		1978	1/1/1978	Active Nest	0	0
		1979	1/1/1979	Active Nest	0	0
		1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	0	0
GOEA09S41E2401	Golden Eagle	1977	1/1/1977	Active Nest	0	0
		1978	1/1/1978	Active Nest	0	1
		1979	1/1/1979	Active Nest	0	0
		1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	0	0
GOEA09S41E3501	Golden Eagle	2005	6/22/2005	Active Nest	0	0
		2006	4/29/2006	Active Nest	0	1
			6/6/2006	Active Nest	0	1
			6/30/2006	Active Nest	0	2
		2007	6/26/2007	Active Nest	0	0
GOEA09S43E1101	Golden Eagle	1979	5/16/1979	Inactive Nest	0	0
GOEA09S43E1102	Golden Eagle	1975	6/1/1975	Unknown	0	0
GOEA09S44E1201	Golden Eagle	2005	5/31/2005	Active Nest	0	1
GOEA09S47E1301	Golden Eagle	1975	6/1/1975	Unknown	0	0
GOEA09S48E0401	Golden Eagle	2005	6/2/2005	Inactive Nest	0	0
			8/25/2005	Did Not Locate	0	0
GOEA09S48E0501	Golden Eagle	2005	6/2/2005	Active Nest	0	1
			8/25/2005	Active Nest	0	0
GOEA09S48E1901	Golden Eagle	2005	6/1/2005	Active Nest	0	2
			8/25/2005	Active Nest	0	0
GOEA09S48E1902	Golden Eagle	2006	6/19/2006	Active Nest	0	2
OSPR08S39E2501	Osprey	2001	6/1/2001	Active Nest	0	3
		2002	6/1/2002	Active Nest	0	2
		2003	6/1/2003	Active Nest	0	2
		2004	6/1/2004	Inactive Nest	0	2
		2005	6/1/2005	Active Nest	0	3
OSPR08S39E2502	Osprey	2001	6/1/2001	Active Nest	0	2
OSPR08S39E2601	Osprey	2001	7/15/2001	Active Nest	0	3
OSPR08S40E2701	Osprey	2004	5/19/2004	Active Nest	0	1
OSPR08S40E2702	Osprey	2008	6/26/2008	Active Nest	0	0
OSPR08S40E3001	Osprey	2002	6/1/2002	Active But Failed	0	0
		2003	6/1/2003	Active But Failed	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
OSPR08S40E3002	Osprey	2002	6/1/2002	Active Nest	0	0
OSPR08S40E3003	Osprey	2002	6/1/2002	Active Nest	0	0
OSPR08S40E3401	Osprey	2004	5/20/2004	Active Nest	0	0
OSPR09S40E1101	Osprey	1981	1/1/1981	Active But Failed	0	0
OSPR09S40E1102	Osprey	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Active Nest	0	0
		2007	6/26/2007	Active Nest	0	0
OSPR09S40E1103	Osprey	2004	4/23/2004	Destroyed Nest	0	0
		2007	5/13/2007	Gone	0	0
OSPR09S40E1501	Osprey	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active But Failed	0	0
OSPR09S40E1502	Osprey	1975	6/1/1975	Unknown	0	0
OSPR09S40E1601	Osprey	2004	5/20/2004	Active Nest	0	0
OSPR09S40E1701	Osprey	2004	5/20/2004	Active Nest	0	0
OSPR09S40E2901	Osprey	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Destroyed Nest	0	0
		2007	5/4/2007	Gone	0	0
OSPR09S40E2902	Osprey	2005	5/6/2005	Occupied	0	0
			6/21/2005	Occupied	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
PEFA09S39E3302	Peregrine Falcon	2007	5/4/2007	Inactive Nest	0	0
PRFA06S40E2501	Prairie Falcon	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active But Failed	0	0
PRFA06S40E3401	Prairie Falcon	1980	1/1/1980	Unknown	0	0
		1981	1/1/1981	Active Nest	0	4
PRFA06S41E0701	Prairie Falcon	Unknown	Unknown	Active Nest	0	4
PRFA06S41E0801	Prairie Falcon	1979	1/1/1979	Active Nest	0	0
PRFA06S42E2001	Prairie Falcon	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	5	3
PRFA07.5S41E3401	Prairie Falcon	1981	6/1/1981	Active Nest	0	1
PRFA07.5S41E3501	Prairie Falcon	1981	6/1/1981	Inactive Nest	0	0
PRFA07S41E1601	Prairie Falcon	1980	1/1/1980	Active Nest	0	1
		1981	1/1/1981	Occupied	0	0
PRFA07S43E1201	Prairie Falcon	2004	6/13/2004	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
PRFA08S38E2201	Prairie Falcon	1983	1/1/1983	Active Nest	0	1
		1984	1/1/1984	Active Nest	0	3
		1985	1/1/1985	Active Nest	0	0
		1986	1/1/1986	Active Nest	0	4
		1987	1/1/1987	Active Nest	0	3
		Unknown	Unknown	Unknown	0	0
PRFA08S38E3301	Prairie Falcon	1985	1/1/1985	Active Nest	0	0
		1986	1/1/1986	Active Nest	0	0
		Unknown	Unknown	Unknown	0	0
PRFA08S39E0501	Prairie Falcon	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Active Nest	4	4
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
PRFA08S39E1401	Prairie Falcon	2001	6/1/2001	Active Nest	0	0
		2002	6/1/2002	Active Nest	0	2
		2003	6/1/2003	Active Nest	0	1
		2005	6/1/2005	Inactive Nest	0	0
PRFA08S39E1402	Prairie Falcon	2001	6/1/2001	Active Nest	0	1
PRFA08S39E2301	Prairie Falcon	1976	1/1/1976	Active Nest	0	0
PRFA08S46E0901	Prairie Falcon	2001	6/1/2001	Active Nest	4	4
PRFA08S48E0201	Prairie Falcon	2005	6/1/2005	Active Nest	0	0
			8/25/2005	Active Nest	0	0
PRFA08S48E2201	Prairie Falcon	2008	7/6/2008	Occupied	0	0
PRFA09S38E1401	Prairie Falcon	1985	1/1/1985	Active Nest	0	0
		1986	1/1/1986	Inactive Nest	0	0
		Unknown	Unknown	Unknown	0	0
PRFA09S38E2301	Prairie Falcon	1984	1/1/1984	Active Nest	0	0
		1985	1/1/1985	Active Nest	0	0
		1986	1/1/1986	Active Nest	0	0
		Unknown	Unknown	Unknown	0	0
PRFA09S39E1201	Prairie Falcon	1982	1/1/1982	Active Nest	0	0
		1983	1/1/1983	Inactive Nest	0	0
		1984	1/1/1984	Inactive Nest	0	0
		1985	1/1/1985	Inactive Nest	0	0
		1986	1/1/1986	Inactive Nest	0	0
		1987	1/1/1987	Inactive Nest	0	0
PRFA09S39E1202	Prairie Falcon	2005	6/1/2005	Unknown	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
PRFA09S39E1401	Prairie Falcon	1982	1/1/1982	Inactive Nest	0	0
		1983	1/1/1983	Active Nest	0	4
		1984	1/1/1984	Occupied	0	0
		1985	1/1/1985	Occupied	0	0
		1986	1/1/1986	Inactive Nest	0	4
		2002	5/28/2002	Active Nest	0	0
		2003	5/13/2003	Occupied	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/7/2006	Did Not Locate	0	0
			7/12/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
PRFA09S39E1402	Prairie Falcon	2006	7/12/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
PRFA09S39E1403	Prairie Falcon	2004	Unknown	Inactive Nest	0	0
		2005	Unknown	Inactive Nest	0	0
		2006	Unknown	Unknown	0	0
		2007	Unknown	Unknown	0	0
		2008	Unknown	Unknown	0	0
		2009	Unknown	Unknown	0	0
PRFA09S39E3301	Prairie Falcon	2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/28/2007	Inactive Nest	0	0
PRFA09S39E3401	Prairie Falcon	1984	1/1/1984	Active Nest	0	0
		1985	1/1/1985	Inactive Nest	0	0
		1986	1/1/1986	Inactive Nest	0	0
PRFA09S39E3402	Prairie Falcon	2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Occupied	0	0
			6/6/2006	Unknown	0	0
			6/8/2006	Occupied	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
PRFA09S39E3404	Prairie Falcon	2007	Unknown	Unknown	0	0
		2008	5/10/2008	Did Not Locate	0	0
			6/11/2008	Inactive Nest	0	0
			Unknown	Unknown	0	0
		2009	Unknown	Unknown	0	0
PRFA09S40E1901	Prairie Falcon	1982	6/1/1982	Inactive Nest	0	0
		1983	6/1/1983	Active Nest	0	3
		1984	6/1/1984	Active Nest	0	5
		1985	6/1/1985	Inactive Nest	0	0
		1986	6/1/1986	Inactive Nest	0	0
		2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Unknown	0	0
			6/7/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	4
PRFA09S40E1902	Prairie Falcon	2004	Unknown	Inactive Nest	0	0
		2005	Unknown	Inactive Nest	0	0
		2006	Unknown	Unknown	0	0
		2007	Unknown	Unknown	0	0
		2008	Unknown	Unknown	0	0
		2009	Unknown	Unknown	0	0
PRFA09S40E2901	Prairie Falcon	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	6/1/2005	Gone	0	0
PRFA09S40E3001	Prairie Falcon	2003	5/13/2003	Inactive Nest	0	No Data
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Did Not Locate	0	0
			6/30/2006	Inactive Nest	0	0
		2007	5/28/2007	Inactive Nest	0	0
PRFA09S43E0901	Prairie Falcon	1979	7/2/1979	Active Nest	0	1
PRFA09S48E0101	Prairie Falcon	1979	7/3/1979	Active Nest	0	0
PRFA09S48E1101	Prairie Falcon	2005	6/2/2005	Inactive Nest	0	0
PRFA09S48E1801	Prairie Falcon	1975	6/1/1975	Unknown	0	0
		2006	6/28/2006	Active Nest	0	1

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
PRFA09S48E1901	Prairie Falcon	2006	6/19/2006	Active Nest	0	2
PRFA09S48E2001	Prairie Falcon	1975	6/1/1975	Unknown	0	0
RTHA05S41E2201	Red-tailed Hawk	1981	1/1/1981	Inactive Nest	0	0
RTHA05S41E2301	Red-tailed Hawk	1981	1/1/1981	Inactive Nest	0	0
RTHA05S41E3301	Red-tailed Hawk	1981	1/1/1981	Inactive Nest	0	0
RTHA05S42E2601	Red-tailed Hawk	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	3
RTHA06S39E1801	Red-tailed Hawk	2004	5/21/2004	Active Nest	0	0
RTHA06S41E2001	Red-tailed Hawk	1979	7/6/1979	Active Nest	0	2
RTHA06S41E2701	Red-tailed Hawk	1979	5/7/1979	Active Nest	0	1
RTHA06S41E3201	Red-tailed Hawk	1980	1/1/1980	Unknown	0	0
		1981	1/1/1981	Unknown	0	0
RTHA06S41E3202	Red-tailed Hawk	1975	6/1/1975	Unknown	0	0
RTHA06S42E1301	Red-tailed Hawk	1981	1/1/1981	Active Nest	3	0
RTHA06S42E2201	Red-tailed Hawk	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	1
RTHA06S42E2801	Red-tailed Hawk	1981	1/1/1981	Active Nest	1	0
RTHA06S42E2802	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	2	0
RTHA06S42E2901	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0
RTHA07.5S41E3301	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA07S39E1701	Red-tailed Hawk	2008	6/21/2008	Occupied	0	0
RTHA07S39E2201	Red-tailed Hawk	1981	1/1/1981	Active Nest	0	1
RTHA07S40E1801	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
RTHA07S41E0601	Red-tailed Hawk	1980	1/1/1980	Unknown	0	0
		1981	1/1/1981	Unknown	0	0
RTHA07S41E0701	Red-tailed Hawk	1991	12/14/1991	Active Nest	0	0
RTHA07S41E1101	Red-tailed Hawk	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active Nest	0	0
RTHA07S41E1201	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA07S41E1401	Red-tailed Hawk	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Active But Failed	2	0
RTHA07S41E2301	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0
RTHA07S42E0601	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	0
		1981	1/1/1981	Active Nest	0	0
RTHA08S39E1001	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Active Nest	1	1
		2005	6/1/2005	Occupied	0	0
RTHA08S39E1002	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
RTHA08S39E1003	Red-tailed Hawk	2001	6/1/2001	Unknown	0	0
RTHA08S39E1101	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Destroyed Nest	0	0
RTHA08S39E1102	Red-tailed Hawk	2002	6/1/2002	Active Nest	0	1
		2003	6/1/2003	Destroyed Nest	0	0
RTHA08S39E1103	Red-tailed Hawk	2002	6/1/2002	Inactive Alternative Nest	0	0
		2003	6/1/2003	Destroyed Nest	No Data	0
RTHA08S39E1104	Red-tailed Hawk	2003	6/1/2003	Active Nest	0	1
		2004	6/1/2004	Active Nest	1	1
		2005	6/1/2005	Active Nest	1	1
RTHA08S39E1105	Red-tailed Hawk	2005	6/1/2005	Inactive Nest	0	0
RTHA08S39E1106	Red-tailed Hawk	1994	6/1/1994	Destroyed Nest	0	0
RTHA08S39E1107	Red-tailed Hawk	2003	6/1/2003	Active Nest	0	1
RTHA08S39E1201	Red-tailed Hawk	1997	6/1/1997	Gone	0	0
RTHA08S39E1202	Red-tailed Hawk	1997	6/1/1997	Gone	0	0
		2004	6/1/2004	Occupied	0	0
		2005	6/1/2005	Inactive Nest	0	0
RTHA08S39E2001	Red-tailed Hawk	2004	6/1/2004	Active Nest	0	1
		2005	6/1/2005	Active Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA08S39E2301	Red-tailed Hawk	1996	6/1/1996	Gone	0	0
RTHA08S39E2302	Red-tailed Hawk	2006	12/31/2006	Active Nest	0	0
RTHA08S39E2501	Red-tailed Hawk	1994	6/1/1994	Gone	0	0
RTHA08S39E2601	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/23/2005	Did Not Locate	0	0
		2006	4/29/2006	Inactive Nest	0	0
RTHA08S39E2701	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Did Not Locate	0	0
		2006	4/29/2006	Active Nest	0	0
RTHA08S39E2702	Red-tailed Hawk	1994	6/1/1994	Gone	0	0
RTHA08S39E2703	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Active Nest	0	3
		2005	6/1/2005	Inactive Nest	0	0
RTHA08S39E3401	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Active Nest	0	0
			6/21/2005	Active Nest	0	2
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Active But Failed	0	0
		2007	6/26/2007	Inactive Nest	0	0
RTHA08S39E3402	Red-tailed Hawk	1994	6/1/1994	Gone	0	0
RTHA08S39E3403	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Active But Failed	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Active Nest	0	1
RTHA08S39E3404	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	0
			Unknown	Unknown	No Data	2
RTHA08S40E0101	Red-tailed Hawk	1981	1/1/1981	Active Nest	0	0
RTHA08S40E0301	Red-tailed Hawk	2004	5/20/2004	Active Nest	0	0
RTHA08S40E1201	Red-tailed Hawk	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA08S40E1501	Red-tailed Hawk	2004	5/19/2004	Active Nest	0	0
RTHA08S40E2901	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	2
RTHA08S40E2902	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
RTHA08S40E2903	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	1
RTHA08S40E3201	Red-tailed Hawk	2001	6/1/2001	Active Nest	0	2
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Active Nest	0	1
		2004	6/1/2004	Active Nest	0	1
		2005	6/1/2005	Inactive Nest	0	0
RTHA08S40E3401	Red-tailed Hawk	1980	1/1/1980	Active Nest	0	1
RTHA08S41E0501	Red-tailed Hawk	1981	1/1/1981	Active Nest	0	0
RTHA08S41E0701	Red-tailed Hawk	2004	5/21/2004	Inactive Nest	0	0
RTHA08S42E1301	Red-tailed Hawk	2004	5/18/2004	Inactive Nest	0	0
RTHA08S43E1801	Red-tailed Hawk	1979	5/8/1979	Active Nest	0	1
			7/14/1979	Active But Failed	0	0
RTHA08S43E2901	Red-tailed Hawk	1979	5/16/1979	Active Nest	0	0
RTHA08S43E2902	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA08S43E3301	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA08S44E1801	Red-tailed Hawk	1979	7/12/1979	Active Nest	0	3
RTHA08S48E2701	Red-tailed Hawk	1983	4/1/1983	Active Nest	0	0
RTHA08S48E2702	Red-tailed Hawk	1975	6/1/1975	Unknown	0	0
RTHA09S39E0201	Red-tailed Hawk	2004	4/23/2004	Inactive Dilapidated Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
		2006	4/29/2006	Did Not Locate	0	0
			5/7/2006	Gone	0	0
		2007	5/13/2007	Gone	0	0
RTHA09S39E0202	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/21/2005	Inactive Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/7/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S39E0203	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Gone	0	0
RTHA09S39E0204	Red-tailed Hawk	2001	6/1/2001	Inactive Nest	0	0
		2002	6/1/2002	Inactive Nest	0	0
		2003	6/1/2003	Inactive Nest	0	0
		2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
RTHA09S39E0205	Red-tailed Hawk	2004	6/1/2004	Inactive Nest	0	0
		2005	6/1/2005	Inactive Nest	0	0
RTHA09S39E0401	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/25/2005	Active Nest	0	0
			4/28/2005	Active Nest	0	0
			6/21/2005	Unknown	0	0
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Active Nest	0	1
			6/29/2006	Active Nest	0	0
RTHA09S39E0402	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/26/2005	Active Nest	0	0
			4/28/2005	Active Nest	0	1
		2006	4/29/2006	Active Nest	0	0
		2007	6/26/2007	Active Nest	0	0
		Unknown	UNKN	Active Nest	0	1
RTHA09S39E1001	Red-tailed Hawk	2004	5/20/2004	Active Nest	0	0
RTHA09S39E1002	Red-tailed Hawk	2003	5/13/2003	Did Not Locate	0	0
		2007	5/28/2007	Inactive Nest	0	0
RTHA09S39E1003	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/26/2005	Did Not Locate	0	0
			4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/7/2006	Did Not Locate	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S39E1004	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/26/2005	Active Nest	0	0
			4/28/2005	Active Nest	0	0
			6/21/2005	Unknown	0	0
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Active Nest	0	1
			6/30/2006	Active Nest	0	2

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
		2007	6/26/2007	Active Nest	0	0
RTHA09S39E1301	Red-tailed Hawk	2005	6/22/2005	Active But Failed	0	0
		2006	3/31/2006	Inactive Nest	0	0
			4/29/2006	Active But Failed	0	0
			6/7/2006	Active Nest	0	0
		2007	6/26/2007	Inactive Nest	0	0
RTHA09S39E1401	Red-tailed Hawk	1984	1/1/1984	Active Nest	0	0
RTHA09S39E1402	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
		2005	4/26/2005	Active Nest	0	0
			4/28/2005	Active Nest	0	0
			6/21/2005	Active Nest	0	2
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Active Nest	0	1
			6/29/2006	Active Nest	0	2
		2007	6/26/2007	Active Nest	0	0
RTHA09S39E1501	Red-tailed Hawk	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Did Not Locate	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/21/2005	Inactive Nest	0	0
		2006	4/29/2006	Unknown	0	0
			6/8/2006	Inactive Nest	0	0
RTHA09S39E2001	Red-tailed Hawk	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
RTHA09S39E2401	Red-tailed Hawk	2006	6/7/2006	Active Nest	0	1
			6/29/2006	Active Nest	0	0
		2007	5/4/2007	Gone	0	0
RTHA09S39E2701	Red-tailed Hawk	2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
		2007	5/28/2007	Inactive Nest	0	0
			6/6/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S39E2901	Red-tailed Hawk	2002	5/28/2002	Active Nest	0	0
		2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Active Nest	0	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Active Nest	0	0
			6/6/2006	Active Nest	0	2
RTHA09S39E3401	Red-tailed Hawk	2002	5/28/2002	Gone	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Gone	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/6/2006	Gone	0	0
RTHA09S39E3501	Red-tailed Hawk	2007	5/4/2007	Inactive Nest	0	0
RTHA09S40E0101	Red-tailed Hawk	1981	6/1/1981	Inactive Nest	0	0
		2004	4/23/2004	Active Nest	0	0
			6/27/2004	INDE	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S40E0102	Red-tailed Hawk	2008	6/29/2008	Active Nest	0	0
RTHA09S40E0201	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Did Not Locate	0	0
			6/22/2005	Did Not Locate	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/7/2006	Unknown	0	0
			6/30/2006	Gone	0	0
		2007	5/4/2007	Gone	0	0
RTHA09S40E0202	Red-tailed Hawk	2007	6/26/2007	Active Nest	0	0
RTHA09S40E1701	Red-tailed Hawk	2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Destroyed Nest	0	0
		2007	6/26/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S40E1801	Red-tailed Hawk	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	3/31/2006	Active Nest	0	0
			4/4/2006	Active Nest	0	0
			4/12/2006	Active Nest	0	0
			4/25/2006	Active Nest	0	0
			4/26/2006	Active Nest	0	2
			4/29/2006	Active Nest	0	0
			6/2/2006	Active Nest	0	2
			6/6/2006	Unknown	0	0
			6/7/2006	Active Nest	0	0
			6/29/2006	Active Nest	0	0
RTHA09S40E1802	Red-tailed Hawk	2002	5/28/2002	Gone	0	0
		2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Inactive Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/7/2006	Gone	0	0
RTHA09S40E2201	Red-tailed Hawk	2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Did Not Locate	0	0
		2005	4/22/2005	Did Not Locate	0	0
			6/23/2005	Gone	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/27/2006	Gone	0	0
		2007	5/4/2007	Gone	0	0
RTHA09S40E2202	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/8/2006	Did Not Locate	0	0
		2007	6/26/2007	Active Nest	0	0
RTHA09S40E2401	Red-tailed Hawk	2007	6/26/2007	Active Nest	0	0
RTHA09S40E2501	Red-tailed Hawk	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Dilapidated Nest	0	0
		2004	4/23/2004	Destroyed Nest	No Data	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S40E2701	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
			6/30/2004	Active Nest	0	1
		2005	4/22/2005	Active Nest	0	0
			6/23/2005	Active Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/7/2006	Active Nest	0	0
			6/30/2006	Active Nest	0	1
		Unknown	Unknown	Active Nest	0	0
RTHA09S40E2702	Red-tailed Hawk	2003	5/13/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Did Not Locate	0	0
			6/23/2005	Did Not Locate	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/30/2006	Gone	0	0
		2007	6/26/2007	Gone	0	0
RTHA09S40E2703	Red-tailed Hawk	2002	5/28/2002	Inactive Nest	0	0
		2003	5/13/2003	Inactive Nest	No Data	0
		2004	4/23/2004	Destroyed Nest	0	0
RTHA09S40E2801	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Active Nest	0	0
			6/21/2005	Active But Failed	0	0
		2006	4/29/2006	Active Nest	0	0
			6/6/2006	Abandoned	0	0
			6/30/2006	Abandoned	0	2
		2007	6/26/2007	Active Nest	0	0
RTHA09S40E2802	Red-tailed Hawk	2004	4/23/2004	Active Nest	0	0
		2005	4/22/2005	Active Nest	0	0
			6/21/2005	Active Nest	0	1
		2006	4/29/2006	Active Nest	0	1
			6/6/2006	Active But Failed	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S40E3101	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
		2005	4/28/2005	Active Nest	0	0
			6/21/2005	Active Nest	0	0
		2006	4/29/2006	Active Nest	0	0
			6/6/2006	Active Nest	0	0
			6/8/2006	Active Nest	0	1
			6/29/2006	Active Nest	0	1
		2007	6/26/2007	Active Nest	0	0
RTHA09S40E3201	Red-tailed Hawk	1984	1/1/1984	Active Nest	0	2
RTHA09S40E3202	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Active Nest	0	0
		2005	4/22/2005	Active Nest	0	1
			6/21/2005	Unknown	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/8/2006	Occupied	0	0
			6/30/2006	Active Nest	0	2
		2007	6/26/2007	Inactive Nest	0	0
RTHA09S40E3203	Red-tailed Hawk	2003	5/13/2003	Destroyed Nest	0	0
		2005	4/22/2005	Active Nest	0	0
			6/21/2005	Active Nest	0	2
		2006	4/29/2006	Did Not Locate	0	0
			6/8/2006	Inactive Nest	0	0
			6/30/2006	Inactive Nest	0	0
		2007	5/28/2007	Inactive Nest	0	0
RTHA09S40E3401	Red-tailed Hawk	2003	5/13/2003	Active Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/8/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S40E3402	Red-tailed Hawk	2008	6/26/2008	Active Nest	0	0
RTHA09S41E0101	Red-tailed Hawk	2005	4/22/2005	Active Nest	0	0
			6/22/2005	Active Nest	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S41E0102	Red-tailed Hawk	2006	6/6/2006	Active Nest	0	3
			6/30/2006	Active Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S41E0601	Red-tailed Hawk	2005	4/6/2005	Inactive Nest	0	0
			4/22/2005	Active Nest	0	0
			6/22/2005	Active But Failed	0	0
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Active But Failed	0	0
		2007	5/4/2007	Gone	0	0
RTHA09S41E0701	Red-tailed Hawk	2005	6/22/2005	Active Nest	0	0
		2006	4/29/2006	Active Nest	0	0
			6/7/2006	Unknown	0	0
			6/30/2006	Inactive Nest	0	0
		2007	6/26/2007	Active Nest	0	0
RTHA09S41E0702	Red-tailed Hawk	2006	6/30/2006	Active Nest	0	3
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S41E1101	Red-tailed Hawk	2005	4/22/2005	Did Not Locate	0	0
		2006	6/1/2006	Gone	0	1
		2007	6/26/2007	Inactive Nest	0	0
RTHA09S41E1102	Red-tailed Hawk	2006	4/29/2006	Unknown	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	No Data	No Data
RTHA09S41E1103	Red-tailed Hawk	2006	6/6/2006	Active But Failed	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S41E1301	Red-tailed Hawk	2004	5/18/2004	Inactive Nest	0	0
		2006	1/26/2006	Unknown	0	0
			6/29/2006	Unknown	0	0
			7/12/2006	Inactive Nest	0	0
RTHA09S41E1501	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Active Nest	0	0
			6/21/2005	Active But Failed	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/6/2006	Occupied	0	0
			6/30/2006	Inactive Nest	0	0
RTHA09S41E1601	Red-tailed Hawk	2006	6/28/2006	Inactive Nest	0	0
		2007	6/26/2007	Active Nest	0	0
RTHA09S41E1602	Red-tailed Hawk	2007	6/26/2007	FAIL	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S41E1701	Red-tailed Hawk	2005	6/22/2005	Active Nest	0	3
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
		2007	6/26/2007	Active Nest	0	0
RTHA09S41E2001	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Active Nest	0	2
			6/22/2005	Active Nest	0	2
		2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/13/2007	Inactive Nest	0	0
RTHA09S41E2201	Red-tailed Hawk	2003	5/28/2003	Inactive Nest	0	0
		2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Active Nest	0	0
			6/22/2005	Active But Failed	0	0
		2006	4/29/2006	Occupied	0	0
			6/6/2006	Inactive Nest	0	0
RTHA09S41E2801	Red-tailed Hawk	2006	4/29/2006	Unknown	0	0
			6/6/2006	Occupied	0	0
			6/30/2006	Active Nest	0	1
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S41E3001	Red-tailed Hawk	2004	4/23/2004	Inactive Nest	0	0
		2005	4/22/2005	Did Not Locate	0	0
			6/23/2005	Gone	0	0
		2006	4/29/2006	Did Not Locate	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/13/2007	Active But Failed	0	0
RTHA09S41E3002	Red-tailed Hawk	2006	4/29/2006	Inactive Nest	0	0
			6/6/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
RTHA09S41E3201	Red-tailed Hawk	2005	10/18/2005	Unknown	0	0
		2006	6/30/2006	Active Nest	0	2
		2007	6/26/2007	Active Nest	0	0
RTHA09S42E0301	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA09S42E0601	Red-tailed Hawk	2005	4/22/2005	Inactive Nest	0	0
RTHA09S42E0701	Red-tailed Hawk	2005	5/4/2005	Inactive Nest	0	0
RTHA09S42E1301	Red-tailed Hawk	2003	7/21/2003	Active Nest	0	0
RTHA09S43E0301	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
RTHA09S43E1001	Red-tailed Hawk	1979	5/16/1979	Active Nest	0	2
RTHA09S43E1101	Red-tailed Hawk	1979	5/16/1979	Active Nest	0	0
RTHA09S43E1201	Red-tailed Hawk	1979	5/16/1979	Active Nest	0	0
RTHA09S43E2101	Red-tailed Hawk	1979	5/8/1979	Active Nest	0	3
RTHA09S43E2701	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA09S43E3401	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA09S43E3501	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA09S44E0501	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA09S44E0801	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA09S44E0802	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
RTHA09S48E1101	Red-tailed Hawk	2005	6/2/2005	Inactive Nest	0	0
RTHA09S48E1901	Red-tailed Hawk	1983	7/5/1983	Unknown	0	0
RTHA09S48E1902	Red-tailed Hawk	1983	7/6/1983	Active Nest	0	0
RTHA10S42E0201	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA10S42E0301	Red-tailed Hawk	2004	5/18/2004	Active Nest	0	0
RTHA10S43E0301	Red-tailed Hawk	2004	5/19/2004	Inactive Nest	0	0
SWHA09S40E0201	Swainson's Hawk	2006	4/29/2006	Active But Failed	0	0
			6/7/2006	Unknown	0	0
			6/30/2006	Active But Failed	0	0
UNBU06S40E2501	Unknown *Buteo*	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0
UNBU07S40E2701	Unknown *Buteo*	1980	1/1/1980	Inactive Nest	0	0
		1981	1/1/1981	Inactive Nest	0	0
UNBU09S39E3501	Unknown *Buteo*	2007	5/4/2007	Gone	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
UNBU09S41E0601	Unknown *Buteo*	2005	4/6/2005	Inactive Nest	0	0
			4/22/2005	Inactive Nest	0	0
			6/22/2005	Inactive Nest	0	0
		2006	4/29/2006	Inactive Nest	0	0
			6/7/2006	Inactive Nest	0	0
		2007	5/4/2007	Inactive Nest	0	0
UNRA06S41E3001	Unknown Raptor	2004	5/21/2004	Inactive Nest	0	0
UNRA08S38E2501	Unknown Raptor	2004	5/20/2004	Unknown	0	0
UNRA08S40E3501	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA08S48E3301	Unknown Raptor	2005	1/12/2005	Unknown	0	0
			10/30/2005	Active Nest	0	0
UNRA08S48E3302	Unknown Raptor	2006	1/12/2006	Unknown	0	0
UNRA09S39E2701	Unknown Raptor	2008	5/4/2008	Inactive Nest	0	0
UNRA09S39E2702	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S39E3301	Unknown Raptor	2006	6/6/2006	Inactive Nest	0	0
UNRA09S39E3501	Unknown Raptor	2004	4/23/2004	Inactive Nest	0	0
		2005	4/28/2005	Did Not Locate	0	0
			6/22/2005	Gone	0	0
		2006	4/29/2006	Gone	0	0
			6/6/2006	Gone	0	0
UNRA09S40E2401	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S40E2601	Unknown Raptor	2006	6/30/2006	Gone	0	0
		2007	5/4/2007	Inactive Nest	0	0
UNRA09S40E2701	Unknown Raptor	2007	6/26/2007	Active Nest	0	0
UNRA09S41E0101	Unknown Raptor	2006	6/6/2006	Inactive Nest	0	0
UNRA09S41E0102	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E0103	Unknown Raptor	2006	6/6/2006	Inactive Nest	0	0
UNRA09S41E0301	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E0302	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E0303	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E0501	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0

Raptor Nest ID	Species Name	Year	Date	Nest Activity Status	# Eggs	# Young
UNRA09S41E1201	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E1301	Unknown Raptor	2007	5/4/2007	Inactive Nest	0	0
UNRA09S41E1601	Unknown Raptor	2008	5/4/2008	Inactive Nest	0	0
UNRA09S41E1701	Unknown Raptor	2008	5/4/2008	Inactive Nest	0	0
UNRA09S47E1301	Unknown Raptor	1983	7/6/1983	Inactive Nest	0	0
UNRA09S47E1302	Unknown Raptor	1983	7/6/1983	Inactive Nest	0	0
UNRA09S48E0801	Unknown Raptor	2005	8/25/2005	Unknown	0	0

APPENDIX C

Data Tables for Delineated Prairie Dog Colonies within the WMPP Focus Area

Table 1C. Delineated Prairie Dog Colonies within the WMPP Focus Area with Survey Date, Surveyor, Mode, Status, Size, Change in Size over Time, and CBNG Wells within 0.25 Mile of Colony Indicated.

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-001	*/*/2003	Fidelity/Hayden-Wing	Ground	–	81.83	-79.60	25
	3/1/2004	BLM/Greystone	Aerial	Active	74.84		
	5/1/2004	Fidelity/Hayden	Ground	–	40.08		
	1/10/2008	Fidelity/Hayden	Ground	Inactive	2.23		
BIPD-002	4/29/2005	Pearl/Arcadis	Ground	Active	11.90	ND	0
BIPD-003	6/1/2003	Fidelity/Hayden-Wing	Ground	Active	20.41	+7.10	17
	3/1/2004	BLM/Greystone	Aerial	Active	63.37		
	3/1/2004	BLM/Greystone	Aerial	Active	70.54		
	9/16/2004	BLM/Greystone	Aerial	Active	62.91		
	4/4/2005	Pearl/Arcadis	Ground	Active	27.51		
BIPD-004[2]	3/1/2004	BLM/Greystone	Aerial	Active	45.65	NC	40
	3/1/2004	BLM/Greystone	Aerial	Active	46.34		
	5/1/2004	Fidelity/Hayden-Wing	Ground	Active	142.09		
	5/3/2004	BLM/Greystone	Ground	Active	38.27		
	5/3/2004	BLM/Greystone	Ground	Active	94.69		
	5/3/2004	BLM/Greystone	Ground	Active	3.91		
	9/16/2004	BLM/Greystone	Aerial	Active	12.89		
BIPD-005	7/25/2008	Pearl/Arcadis	Ground	Active	5.81	ND	0
BIPD-006	7/25/2008	Pearl/Arcadis	Ground	Active	14.17	ND	0
BIPD-007	6/1/2003	Fidelity/Hayden-Wing	Ground	Active	215.05	0.00	29
	3/1/2004	BLM/Greystone	Aerial	Active	318.51		
	5/3/2004	BLM/Greystone	Ground	Active	129.91		
	6/1/2004	Fidelity/Hayden	Ground	Active	215.05		
BIPD-008	6/1/2003	Fidelity/Hayden	Ground	Active	16.84	NC	13
	3/1/2004	BLM/Greystone	Aerial	Active	52.63		
BIPD-010[2]	3/1/2004	BLM/Greystone	Aerial	Active	144.34	NC	28
	5/4/2004	BLM/Greystone	Ground	Active	71.37		
	5/4/2004	BLM/Greystone	Ground	Inactive	3.57		
	6/2/2005	Fidelity/Hayden	Ground	–	80.93		
	7/23/2008	Fidelity/Hayden	Ground	Active	130.77		
BIPD-011	3/1/2004	BLM/Greystone	Aerial	Active	91.72	+47.47	22
	5/4/2004	BLM/Greystone	Ground	Active	70.96		
	6/2/2005	Fidelity/Hayden	Ground	–	55.34		
	7/23/2008	Fidelity/Hayden	Ground	Active	118.44		

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-012	6/1/2003	Fidelity/Hayden-Wing	Ground	Active	7.64	NC	15
	3/1/2004	BLM/Greystone	Aerial	Active	17.35		
BIPD-013[2]	3/1/2004	BLM/Greystone	Aerial	Active	159.67	NC	1
	3/1/2004	BLM/Greystone	Aerial	Active	38.57		
	8/24/2004	Fidelity/Hayden-Wing	Ground	–	237.07		
	9/16/2004	BLM/Greystone	Aerial	Active	39.63		
	9/16/2004	BLM/Greystone	Aerial	Active	37.01		
	7/3/2006	Fidelity/Hayden-Wing	Ground	Active	274.01		
	5/1/2009	Fidelity/Hayden-Wing	Ground	–	126.56		
BIPD-014	3/1/2004	BLM/Greystone	Aerial	Active	92.96	NC	0
	5/1/2004	Fidelity/Hayden-Wing	Ground	–	130.72		
BIPD-015[2]	5/1/2003	Fidelity/Hayden-Wing	Ground	Active	64.04	NC	0
	3/1/2004	BLM/Greystone	Aerial	Active	17.42		
	3/1/2004	BLM/Greystone	Aerial	Active	13.66		
	5/1/2004	Fidelity/Hayden-Wing	Ground	Active	64.04		
	6/2/2005	Fidelity/Hayden-Wing	Ground	Active	67.74		
BIPD-016	5/1/2003	Fidelity/Hayden-Wing	Ground	Active	36.05	0.00	0
	5/1/2004	Fidelity/Hayden-Wing	Ground	Active	36.05		
BIPD-017	6/1/2003	Fidelity/Hayden-Wing	Ground	–	6.50	ND	3
BIPD-018	6/1/2003	Fidelity/Hayden-Wing	Ground	–	2.48	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	19.13		
BIPD-019	6/1/2003	Fidelity/Hayden-Wing	Ground	–	2.65	ND	6
BIPD-020	5/4/2004	BLM/Greystone	Ground	Active	42.23	+81.37	19
	6/2/2005	Fidelity/Hayden-Wing	Ground	–	68.63		
	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	123.60		
BIPD-021	6/1/2003	Fidelity/Hayden-Wing	Ground	–	14.80	+12.14	7
	1/9/2008	Fidelity/Hayden-Wing	Ground	Active	26.95		
BIPD-022	5/1/2004	Fidelity/Hayden-Wing	Ground	–	10.88	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	13.24		
BIPD-023	5/1/2004	Fidelity/Hayden-Wing	Ground	–	20.22	ND	0

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-024	5/1/2004	Fidelity/Hayden-Wing	Ground	–	3.12	ND	3
BIPD-025	5/1/2004	Fidelity/Hayden-Wing	Ground	Active	5.11	ND	10
BIPD-026	5/24/2007	Fidelity/Hayden-Wing	Ground	Active	8.14	ND	0
BIPD-027[2]	5/1/2004	Fidelity/Hayden-Wing	Ground	–	6.27	NC	15
	5/1/2004	Fidelity/Hayden-Wing	Ground	–	0.60		
	7/23/2008	Fidelity/Hayden-Wing	Ground	Active	29.96		
BIPD-028	3/1/2004	BLM/Greystone	Aerial	Active	112.73	+2.57	0
	5/1/2004	Fidelity/Hayden-Wing	Ground	–	27.28		0
	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	29.85		0
BIPD-029	6/2/2005	Fidelity/Hayden-Wing	Ground	Inactive	2.35	ND	0
BIPD-030	3/1/2004	BLM/Greystone	Aerial	Active	195.14	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	116.40		0
	6/2/2005	Fidelity/Hayden-Wing	Ground	–	25.69		0
BIPD-031	6/2/2005	Fidelity/Hayden-Wing	Ground	Inactive	0.23	ND	6
BIPD-032	6/2/2005	Fidelity/Hayden-Wing	Ground	–	4.62	+10.09	0
	7/23/2008	Fidelity/Hayden-Wing	Ground	Active	14.72		0
BIPD-033	1/24/2006	Fidelity/Hayden-Wing	Ground	–	3.07	-2.14	8
	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	0.93		
BIPD-034	7/13/2006	Fidelity/Hayden-Wing	Ground	Active	7.26	ND	0
BIPD-035	3/1/2004	BLM/Greystone	Aerial	Active	202.18	+26.17	1
	7/12/2006	Fidelity/Hayden-Wing	Ground	Active	144.38		
	1/9/2008	Fidelity/Hayden-Wing	Ground	Active	170.55		
BIPD-036	7/12/2006	Fidelity/Hayden-Wing	Ground	Inactive	4.10	ND	0
BIPD-037	10/27/2006	Fidelity/Hayden-Wing	Ground	Active	4.44	ND	1
BIPD-038	10/27/2006	Fidelity/Hayden-Wing	Ground	Active	4.17	ND	2
BIPD-039	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	5.53	ND	1
BIPD-040	12/16/2008	Fidelity/Hayden-Wing	Ground	Active	6.21	ND	3

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-041	11/14/2006	Fidelity/Hayden-Wing	Ground	Active	4.73	ND	13
BIPD-044	5/24/2007	Fidelity/Hayden-Wing	Ground	Active	3.28	ND	1
BIPD-045	5/23/2007	Fidelity/Hayden-Wing	Ground	Active	3.72	ND	0
BIPD-046	1/9/2008	Fidelity/Hayden-Wing	Ground	Active	2.19	ND	0
BIPD-047	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	2.15	ND	0
BIPD-048	1/10/2008	Fidelity/Hayden-Wing	Ground	Active	1.80	ND	0
BIPD-049	1/8/2008	Fidelity/Hayden-Wing	Ground	Inactive	1.37	ND	3
BIPD-050	1/9/2008	Fidelity/Hayden-Wing	Ground	Inactive	5.21	ND	7
BIPD-051	5/8/2008	Fidelity/Hayden-Wing	Ground	Active	0.51	ND	6
BIPD-052	9/16/2004	BLM/Greystone	Aerial	Active	86.05	NC	15
	12/16/2008	Fidelity/Hayden-Wing	Ground	Active	25.83		
BIPD-053	12/16/2008	Fidelity/Hayden-Wing	Ground	Active	3.55	ND	3
BIPD-055	7/9/2009	Fidelity/Hayden-Wing	Ground	Active	1.38	ND	1
BIPD-056	7/12/2009	Fidelity/Hayden-Wing	Ground	Active	2.84	ND	4
BIPD-057	7/18/2009	Fidelity/Hayden-Wing	Ground	Active	42.93	ND	11
BIPD-058	7/18/2009	Fidelity/Hayden-Wing	Ground	Active	2.46	ND	3
BIPD-059	5/11/2005	Pearl/Arcadis	Ground	Active	1.34	ND	0
BIPD-060	9/16/2004	BLM/Greystone	Aerial	Active	12.48	NC	6
	Unknown	Fidelity/Hayden-Wing	Ground	–	5.53		
BIPD-061	Unknown	Unknown[2]	Unknown	–	129.04	ND	0
BIPD-062	3/1/2004	BLM/Greystone	Aerial	Active	12.41	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	18.74		
BIPD-063	3/1/2004	BLM/Greystone	Aerial	Active	58.49	NC	7
	5/6/2004	BLM/Greystone	Ground	Active	29.18		
BIPD-064	3/1/2004	BLM/Greystone	Aerial	Active	14.00	ND	9
BIPD-065	3/1/2004	BLM/Greystone	Aerial	Active	181.41	ND	0
BIPD-066	3/1/2004	BLM/Greystone	Aerial	Active	80.79	ND	0
BIPD-067	3/1/2004	BLM/Greystone	Aerial	Active	74.37	ND	0
BIPD-069	3/1/2004	BLM/Greystone	Aerial	Active	39.18	ND	0
BIPD-070	3/1/2004	BLM/Greystone	Aerial	Active	83.13	ND	0
BIPD-071	3/1/2004	BLM/Greystone	Aerial	Active	101.87	ND	0
BIPD-072	3/1/2004	BLM/Greystone	Aerial	Active	42.39	ND	0

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-073	3/1/2004	BLM/Greystone	Aerial	Active	46.04	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	67.79		
BIPD-074	3/1/2004	BLM/Greystone	Aerial	Active	21.47	NC	0
BIPD-075	3/1/2004	BLM/Greystone	Aerial	Active	22.39		
BIPD-076[2]	3/1/2004	BLM/Greystone	Aerial	Active	16.06	NC	0
	3/1/2004	BLM/Greystone	Aerial	Active	19.48		
	9/16/2004	BLM/Greystone	Aerial	Active	50.16		
BIPD-077	3/1/2004	BLM/Greystone	Aerial	Active	83.96	ND	0
BIPD-078	3/1/2004	BLM/Greystone	Aerial	Active	36.96	ND	0
BIPD-079	3/1/2004	BLM/Greystone	Aerial	Active	88.81	ND	0
BIPD-080	3/1/2004	BLM/Greystone	Aerial	Active	35.18	ND	0
BIPD-081	3/1/2004	BLM/Greystone	Aerial	Active	32.42	ND	0
BIPD-082	3/1/2004	BLM/Greystone	Aerial	Active	141.96	ND	0
BIPD-083	3/1/2004	BLM/Greystone	Aerial	Active	11.67	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	47.92		
BIPD-084	3/1/2004	BLM/Greystone	Aerial	Active	19.12	ND	0
BIPD-085	3/1/2004	BLM/Greystone	Aerial	Inactive	25.90	ND	0
BIPD-086	3/1/2004	BLM/Greystone	Aerial	Inactive	107.03	ND	0
BIPD-087	3/1/2004	BLM/Greystone	Aerial	Inactive	64.30	ND	0
BIPD-088	3/1/2004	BLM/Greystone	Aerial	Active	41.49	ND	0
BIPD-089	3/1/2004	BLM/Greystone	Aerial	Active	67.28	ND	0
BIPD-090	3/1/2004	BLM/Greystone	Aerial	Active	72.09	ND	0
BIPD-091	3/1/2004	BLM/Greystone	Aerial	Inactive	24.70	ND	0
BIPD-092	9/16/2004	BLM/Greystone	Aerial	Active	14.93	ND	0
BIPD-093	9/16/2004	BLM/Greystone	Aerial	Active	15.35	ND	0
BIPD-094	9/16/2004	BLM/Greystone	Aerial	Active	48.82	ND	0
BIPD-095	9/16/2004	BLM/Greystone	Aerial	Active	25.35	ND	0
BIPD-096	9/16/2004	BLM/Greystone	Aerial	Active	44.72	ND	0
BIPD-097	9/16/2004	BLM/Greystone	Aerial	Active	10.83	ND	0
BIPD-098	9/16/2004	BLM/Greystone	Aerial	Active	21.80	ND	0
BIPD-099	9/16/2004	BLM/Greystone	Aerial	Active	16.63	ND	0
BIPD-100	9/16/2004	BLM/Greystone	Aerial	Active	17.44	ND	0
BIPD-101	9/16/2004	BLM/Greystone	Aerial	Active	30.14	ND	0
BIPD-102	9/16/2004	BLM/Greystone	Aerial	Active	17.25	ND	0
BIPD-103	9/16/2004	BLM/Greystone	Aerial	Active	23.05	ND	0
BIPD-104	9/16/2004	BLM/Greystone	Aerial	Active	31.77	ND	0
BIPD-105	9/16/2004	BLM/Greystone	Aerial	Active	17.76	ND	0
BIPD-106	9/16/2004	BLM/Greystone	Aerial	Active	15.45	ND	0
BIPD-107	9/16/2004	BLM/Greystone	Aerial	Active	31.23	ND	0
BIPD-108	9/16/2004	BLM/Greystone	Aerial	Active	22.19	ND	0
BIPD-109	9/16/2004	BLM/Greystone	Aerial	Active	54.40	ND	0
BIPD-110	9/16/2004	BLM/Greystone	Aerial	Active	31.25	ND	0

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-111	9/16/2004	BLM/Greystone	Aerial	Active	46.91	ND	0
BIPD-112	9/16/2004	BLM/Greystone	Aerial	Active	82.28	ND	0
BIPD-113	9/16/2004	BLM/Greystone	Aerial	Active	259.26	ND	0
BIPD-114	9/16/2004	BLM/Greystone	Aerial	Active	36.09	ND	0
BIPD-115	9/16/2004	BLM/Greystone	Aerial	Active	37.64	ND	0
BIPD-116	9/16/2004	BLM/Greystone	Aerial	Active	74.80	ND	0
BIPD-117	5/5/2004	BLM/Greystone	Ground	Active	13.49	ND	0
BIPD-118	3/1/2004	BLM/Greystone	Aerial	Active	241.23	NC	0
	5/5/2004	BLM/Greystone	Ground	Active	67.93		
BIPD-119	5/5/2004	BLM/Greystone	Ground	Active	29.22	ND	0
BIPD-120[2]	3/1/2004	BLM/Greystone	Aerial	Active	66.58	NC	0
	5/5/2004	BLM/Greystone	Ground	Active	62.08		
	5/5/2004	BLM/Greystone	Ground	Active	5.34		
BIPD-122	5/5/2004	BLM/Greystone	Ground	Active	4.84	ND	0
BIPD-123	3/1/2004	BLM/Greystone	Aerial	Active	131.64	NC	0
	5/6/2004	BLM/Greystone	Ground	Active	4.94		
BIPD-125	3/1/2004	BLM/Greystone	Aerial	Active	85.45	NC	0
	5/6/2004	BLM/Greystone	Ground	Active	55.94		
BIPD-131	5/6/2004	BLM/Greystone	Ground	Active	24.43	ND	0
BIPD-132	3/1/2004	BLM/Greystone	Aerial	Active	52.81	NC	0
	5/5/2004	BLM/Greystone	Ground	Active	54.28		
BIPD-133	5/5/2004	BLM/Greystone	Ground	Active	28.74	ND	0
BIPD-134	5/5/2004	BLM/Greystone	Ground	Active	5.05	ND	0
BIPD-135	3/1/2004	BLM/Greystone	Aerial	Active	20.94	NC	0
	5/6/2004	BLM/Greystone	Ground	Active	82.55		
BIPD-137	5/6/2004	BLM/Greystone	Ground	Active	6.95	ND	0
BIPD-138	5/6/2004	BLM/Greystone	Ground	Active	24.51	ND	0
BIPD-139	3/1/2004	BLM/Greystone	Aerial	Active	98.73	NC	0
	5/5/2004	BLM/Greystone	Ground	Active	100.60		
	Unknown	Unknown[3]	Unknown	–	9.78		
BIPD-140	5/6/2004	BLM/Greystone	Ground	Active	29.71	ND	0
BIPD-141	5/5/2004	BLM/Greystone	Ground	Active	3.61	ND	0
BIPD-142	9/16/2004	BLM/Greystone	Aerial	Active	88.10	ND	7
BIPD-143	9/16/2004	BLM/Greystone	Aerial	Active	53.18	ND	0
BIPD-144	9/16/2004	BLM/Greystone	Aerial	Active	32.69	ND	17
BIPD-145	9/16/2004	BLM/Greystone	Aerial	Active	46.40	ND	4
BIPD-146	9/16/2004	BLM/Greystone	Aerial	Active	17.26	ND	0
BIPD-147	9/16/2004	BLM/Greystone	Aerial	Active	6.25	ND	0
BIPD-148	9/16/2004	BLM/Greystone	Aerial	Active	16.03	ND	0
BIPD-149	9/16/2004	BLM/Greystone	Aerial	Active	11.11	ND	0
BIPD-150	9/16/2004	BLM/Greystone	Aerial	Active	16.40	ND	1
BIPD-151	9/16/2004	BLM/Greystone	Aerial	Active	11.85	ND	9

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
BIPD-152	9/16/2004	BLM/Greystone	Aerial	Active	32.41	ND	0
BIPD-153	9/16/2004	BLM/Greystone	Aerial	Active	25.60	ND	0
BIPD-154	9/16/2004	BLM/Greystone	Aerial	Active	74.78	ND	0
BIPD-155	9/16/2004	BLM/Greystone	Aerial	Active	20.57	ND	0
BIPD-156	9/16/2004	BLM/Greystone	Aerial	Active	122.24	ND	1
BIPD-157	9/16/2004	BLM/Greystone	Aerial	Active	146.87	ND	0
BIPD-158	5/6/2004	BLM/Greystone	Ground	Active	24.74	ND	0
BIPD-159	5/6/2004	BLM/Greystone	Ground	Active	44.73	ND	0
POPD-002	3/1/2004	BLM/Greystone	Aerial	Active	19.06	ND	0
POPD-005	3/1/2004	BLM/Greystone	Aerial	Inactive	35.58	ND	0
POPD-006	3/1/2004	BLM/Greystone	Aerial	Inactive	65.21	ND	0
POPD-007	3/1/2004	BLM/Greystone	Aerial	Inactive	226.95	ND	0
POPD-008[2]	3/1/2004	BLM/Greystone	Aerial	Active	107.59	NC	0
	3/1/2004	BLM/Greystone	Aerial	Active	62.08		
	9/16/2004	BLM/Greystone	Aerial	Active	173.48		
POPD-010	3/1/2004	BLM/Greystone	Aerial	Active	17.89	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	13.24		
POPD-011	3/1/2004	BLM/Greystone	Aerial	Active	130.69	ND	0
POPD-012	3/1/2004	BLM/Greystone	Aerial	Active	111.49	ND	0
POPD-013	3/1/2004	BLM/Greystone	Aerial	Active	51.15	ND	0
POPD-014	3/1/2004	BLM/Greystone	Aerial	Active	240.65	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	64.00		
POPD-015	3/1/2004	BLM/Greystone	Aerial	Active	112.00	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	98.12		
POPD-016	3/1/2004	BLM/Greystone	Aerial	Active	43.04	ND	0
POPD-017	3/1/2004	BLM/Greystone	Aerial	Active	68.47	ND	0
POPD-018	3/1/2004	BLM/Greystone	Aerial	Active	234.11	ND	0
POPD-019	3/1/2004	BLM/Greystone	Aerial	Active	27.01	ND	0
POPD-020	3/1/2004	BLM/Greystone	Aerial	Active	19.06	ND	0
POPD-021	3/1/2004	BLM/Greystone	Aerial	Active	40.84	ND	0
POPD-022	3/1/2004	BLM/Greystone	Aerial	Active	69.27	NC	0
	Unknown	Unknown[3]	Unknown	–	21.16		
POPD-023	3/1/2004	BLM/Greystone	Aerial	Active	19.95	ND	0
POPD-024	3/1/2004	BLM/Greystone	Aerial	Active	20.15	ND	0
POPD-025	3/1/2004	BLM/Greystone	Aerial	Inactive	103.86	ND	0
POPD-026	3/1/2004	BLM/Greystone	Aerial	Active	117.76	ND	0
POPD-027	3/1/2004	BLM/Greystone	Aerial	Active	64.05	ND	0
POPD-028	3/1/2004	BLM/Greystone	Aerial	Active	148.62	ND	0
POPD-029	3/1/2004	BLM/Greystone	Aerial	Active	30.31	ND	0
POPD-030	3/1/2004	BLM/Greystone	Aerial	Active	30.96	ND	0
POPD-031	3/1/2004	BLM/Greystone	Aerial	Active	70.52	ND	0

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
POPD-032	3/1/2004	BLM/Greystone	Aerial	Active	35.65	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	307.95		
POPD-033	3/1/2004	BLM/Greystone	Aerial	Active	190.09	ND	0
POPD-034	3/1/2004	BLM/Greystone	Aerial	Active	38.95	ND	0
POPD-035	3/1/2004	BLM/Greystone	Aerial	Active	14.08	ND	0
POPD-036	3/1/2004	BLM/Greystone	Aerial	Active	20.12	ND	0
POPD-037	3/1/2004	BLM/Greystone	Aerial	Active	19.14	ND	0
POPD-038	3/1/2004	BLM/Greystone	Aerial	Active	32.18	ND	0
POPD-039	3/1/2004	BLM/Greystone	Aerial	Active	39.45	ND	0
POPD-040	3/1/2004	BLM/Greystone	Aerial	Active	32.17	ND	0
POPD-041	3/1/2004	BLM/Greystone	Aerial	Active	55.63	ND	0
POPD-042	3/1/2004	BLM/Greystone	Aerial	Active	41.21	ND	0
POPD-043	3/1/2004	BLM/Greystone	Aerial	Active	85.77	ND	0
POPD-044	3/1/2004	BLM/Greystone	Aerial	Active	46.61	ND	0
POPD-045	3/1/2004	BLM/Greystone	Aerial	Active	23.43	ND	0
POPD-048	9/16/2004	BLM/Greystone	Aerial	Active	27.44	ND	0
POPD-050	9/16/2004	BLM/Greystone	Aerial	Active	13.14	ND	0
POPD-051	9/16/2004	BLM/Greystone	Aerial	Active	12.68	ND	0
POPD-052	9/16/2004	BLM/Greystone	Aerial	Active	18.35	ND	0
POPD-055	9/16/2004	BLM/Greystone	Aerial	Active	20.93	ND	0
POPD-057	9/16/2004	BLM/Greystone	Aerial	Active	29.81	ND	0
POPD-058	9/16/2004	BLM/Greystone	Aerial	Active	26.99	ND	0
POPD-059	Unknown	Unknown[3]	Unknown	–	4.85	ND	0
POPD-060	Unknown	Unknown[3]	Unknown	–	61.09	ND	0
POPD-061	Unknown	Unknown[3]	Unknown	–	0.74	ND	0
POPD-062	Unknown	Unknown[3]	Unknown	–	7.59	ND	0
POPD-063	Unknown	Unknown[3]	Unknown	–	65.04	ND	0
POPD-064	Unknown	Unknown[3]	Unknown	–	2.05	ND	0
POPD-065	Unknown	Unknown[3]	Unknown	–	10.88	ND	0
POPD-066	Unknown	Unknown[3]	Unknown	–	11.62	NC	0
	Unknown	Unknown[3]	Unknown	–	32.06		
POPD-067	Unknown	Unknown[3]	Unknown	–	33.11	ND	0
POPD-068	Unknown	Unknown[3]	Unknown	–	2.29	ND	0
POPD-069	Unknown	Unknown[3]	Unknown	–	1.82	ND	0
POPD-070	Unknown	Unknown[3]	Unknown	–	4.82	ND	0
POPD-071	Unknown	Unknown[3]	Unknown	–	2.64	ND	0
POPD-072	Unknown	Unknown[3]	Unknown	–	50.13	ND	0
POPD-073	Unknown	Unknown[3]	Unknown	–	4.44	ND	0
POPD-074	Unknown	Unknown[3]	Unknown	–	17.16	ND	0
POPD-075	Unknown	Unknown[3]	Unknown	–	15.91	ND	0
POPD-076	3/1/2004	BLM/Greystone	Aerial	Active	29.43	ND	0

Colony ID	Date Mapped	Operator/Surveyor	Survey Mode[1]	Status	Acres	Change in Size	Wells
POPD-077	3/1/2004	BLM/Greystone	Aerial	Active	85.73	NC	0
	9/16/2004	BLM/Greystone	Aerial	Active	97.53		
ROPD-001	3/1/2004	BLM/Greystone	Aerial	Active	44.77	NC	0
	Unknown	Unknown[3]	Unknown	–	6.40		
ROPD-002	3/1/2004	BLM/Greystone	Aerial	Active	74.97	ND	0
ROPD-003	9/16/2004	BLM/Greystone	Aerial	Active	124.10	NC	0
	Unknown	Unknown[3]	Unknown	–	19.20		
ROPD-004	9/16/2004	BLM/Greystone	Aerial	Active	71.97	ND	0
ROPD-005	9/16/2004	BLM/Greystone	Aerial	Active	16.12	ND	0
ROPD-006	Unknown	Unknown[3]	Unknown	–	726.08	ND	0
ROPD-007	9/16/2004	BLM/Greystone	Aerial	Active	41.18	NC	0
	Unknown	Unknown[3]	Unknown	–	0.41		
	Unknown	Unknown[3]	Unknown	–	26.71		
ROPD-008	Unknown	Unknown[3]	Unknown	–	1.94	ND	0
ROPD-009	Unknown	Unknown[3]	Unknown	–	14.05	ND	0
ROPD-010	Unknown	Unknown[3]	Unknown	–	9.19	ND	0
ROPD-011	Unknown	Unknown[3]	Unknown	–	81.09	ND	0
ROPD-012	Unknown	Unknown[3]	Unknown	–	931.07	ND	0
ROPD-013	Unknown	Unknown[3]	Unknown	–	35.78	ND	0
ROPD-014	Unknown	Unknown[3]	Unknown	–	0.90	ND	0
ROPD-015	Unknown	Unknown[3]	Unknown	–	91.50	ND	0
ROPD-016	Unknown	Unknown[3]	Unknown	–	17.34	ND	0
ROPD-017	Unknown	Unknown[3]	Unknown	–	5.09	ND	0
ROPD-018	Unknown	Unknown[3]	Unknown	–	14.44	ND	0
ROPD-019	Unknown	Unknown[3]	Unknown	–	26.87	ND	0
ROPD-020	Unknown	Unknown[3]	Unknown	–	4.02	ND	0
ROPD-021	Unknown	Unknown[3]	Unknown	–	7.33	ND	0
ROPD-022	Unknown	Unknown[3]	Unknown	–	2.41	ND	0
ROPD-023	*/*/2004	BLM/Greystone	Aerial	Active	91.22	ND	0
SHPD-001	6/1/2003	Fidelity/Hayden-Wing	Ground	–	6.26	ND	4
SHPD-002	11/13/2006	Fidelity/Hayden-Wing	Ground	Inactive	8.67	ND	10
SHPD-003	4/26/2005	Pearl/Arcadis	Ground	Active	28.16	ND	2
SHPD-004	4/26/2005	Pearl/Arcadis	Ground	Active	18.56	ND	3
SHPD-005	9/16/2004	BLM/Greystone	Aerial	Active	27.45	ND	0

Colony ID County Codes: BI = Big Horn County, PO = Powder River County, RO = Rosebud County, SH = Sheridan County.

[1] Survey methods have varying degrees of accuracy. Aerial surveys may overestimate colony size.

[2]Indicates colonies that were originally surveyed as separate towns, however, over time became overlapping. When colonies overlapped they were given the same colony name.

[3]Surveyor information is unknown (Data Source = Montana Natural Heritage Program 2009)

NC = Not able to calculate due to lack of like survey modes across years or inconsistencies in colony sizes between surveyors.

ND = No data available to calculate change in size over time.

Table 2C. Number of CBNG Wells Drilled within 0.25 mile of Delineated Prairie Dog Colonies within WMPP Focus Area by Colony Number (ID) and Year.

Colony ID	Year	Number of Wells	Total Wells
BIPD-001	1997	1	25
	2003	18	
	2006	6	
BIPD-003	2001	8	17
	2003	9	
BIPD-004	1999	23	40
	2001	8	
	2003	1	
	2004	8	
BIPD-007	1997	1	29
	1999	23	
	2000	2	
	2005	3	
BIPD-008	1997	1	13
	2000	12	
BIPD-010	1998	4	28
	1999	15	
	2000	9	
BIPD-011	1997	1	22
	1998	2	
	1999	14	
	2000	5	
BIPD-012	1999	1	15
	2005	14	
BIPD-013	1999	1	1
BIPD-017	2003	1	3
	2004	1	
	2006	1	
BIPD-019	2002	1	6
	2003	1	
	2004	1	
	2005	1	
	2006	2	
BIPD-020	2005	7	19
	2006	7	
	2007	5	
BIPD-021	2005	3	7
	2006	4	

Colony ID	Year	Number of Wells	Total Wells
BIPD-024	2002	1	3
	2004	1	
	2005	1	
BIPD-025	1999	9	10
	2003	1	
BIPD-027	1998	6	15
	1999	7	
	2003	2	
BIPD-031	2005	3	6
	2006	3	
BIPD-033	2005	3	8
	2006	5	
BIPD-035	2008	1	1
BIPD-037	2007	1	1
BIPD-038	2008	2	2
BIPD-039	2008	1	1
BIPD-040	2000	3	3
BIPD-041	2003	10	13
	2006	3	
BIPD-044	1997	1	1
BIPD-049	2005	3	3
BIPD-050	2005	7	7
BIPD-051	2006	5	6
	2007	1	
BIPD-052	1998	1	15
	1999	1	
	2000	11	
	2004	2	
BIPD-053	2000	3	3
BIPD-055	2008	1	1
BIPD-056	2001	3	4
	2003	1	
BIPD-057	1997	1	11
	2000	6	
	2001	4	
BIPD-058	1999	1	3
	2000	2	
BIPD-060	2003	1	6
	2004	1	
	2006	2	
	2007	2	

Colony ID	Year	Number of Wells	Total Wells
BIPD-063	1999	1	7
	2000	3	
	2004	3	
BIPD-064	2005	6	9
	2006	3	
BIPD-142	2005	4	7
	2006	2	
	2007	1	
BIPD-144	2005	5	17
	2006	12	
BIPD-145	2001	3	4
	2003	1	
BIPD-150	2002	1	1
BIPD-151	1999	4	9
	2000	5	
BIPD-156	2003	1	1
SHPD-001	2001	3	4
	2003	1	
SHPD-002	2002	1	10
	2003	9	
SHPD-003	2004	2	2
SHPD-004	2004	2	3
	2007	1	
Total Wells			**422**

Colony ID County Codes: BI = Big Horn County, PO = Powder River County, RO= Rosebud County, SH= Sheridan County

APPENDIX D

Sage-grouse Lek Attendance Figures For Non-reference Leks with Attendance History

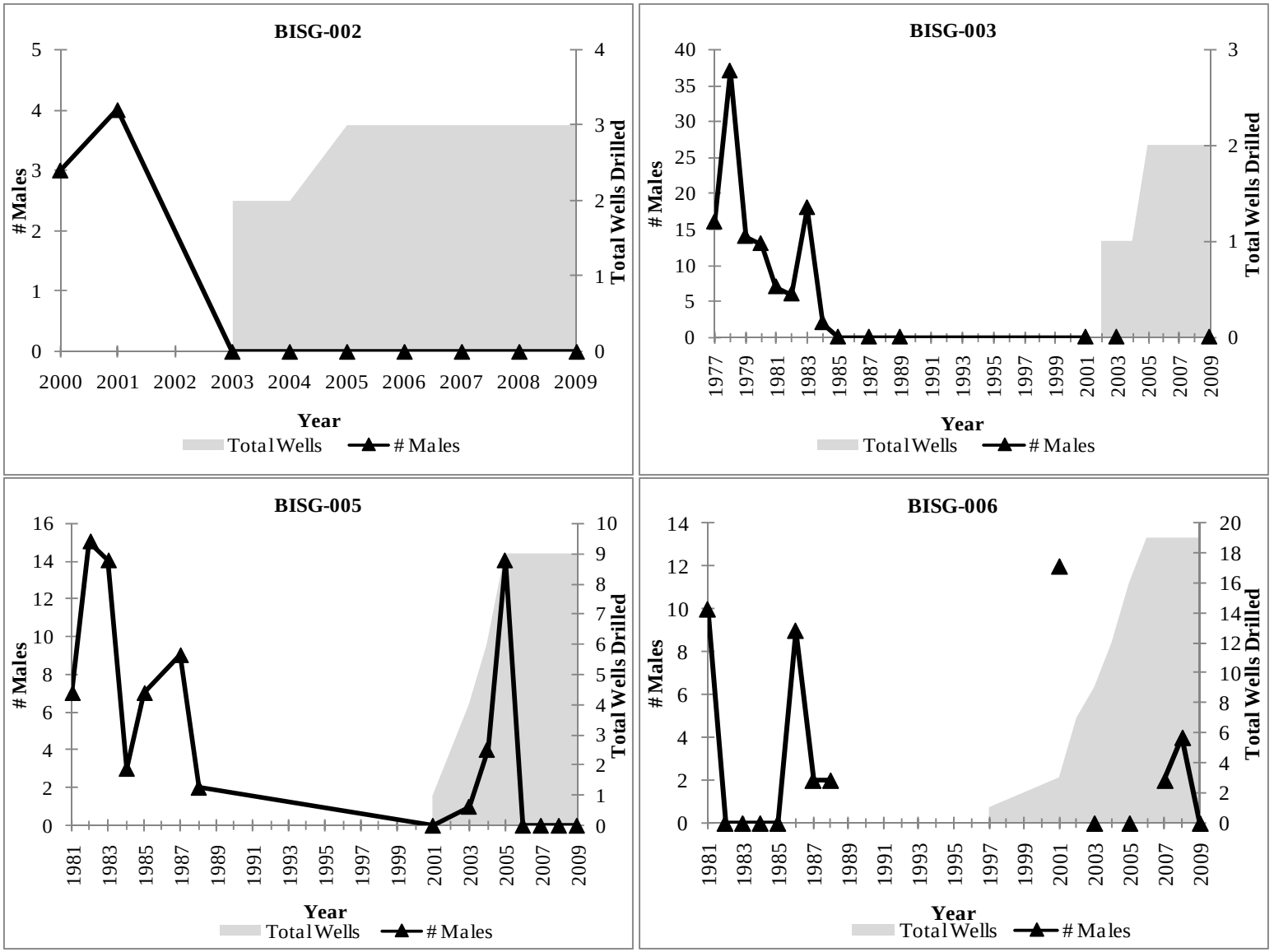

Figure 1D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

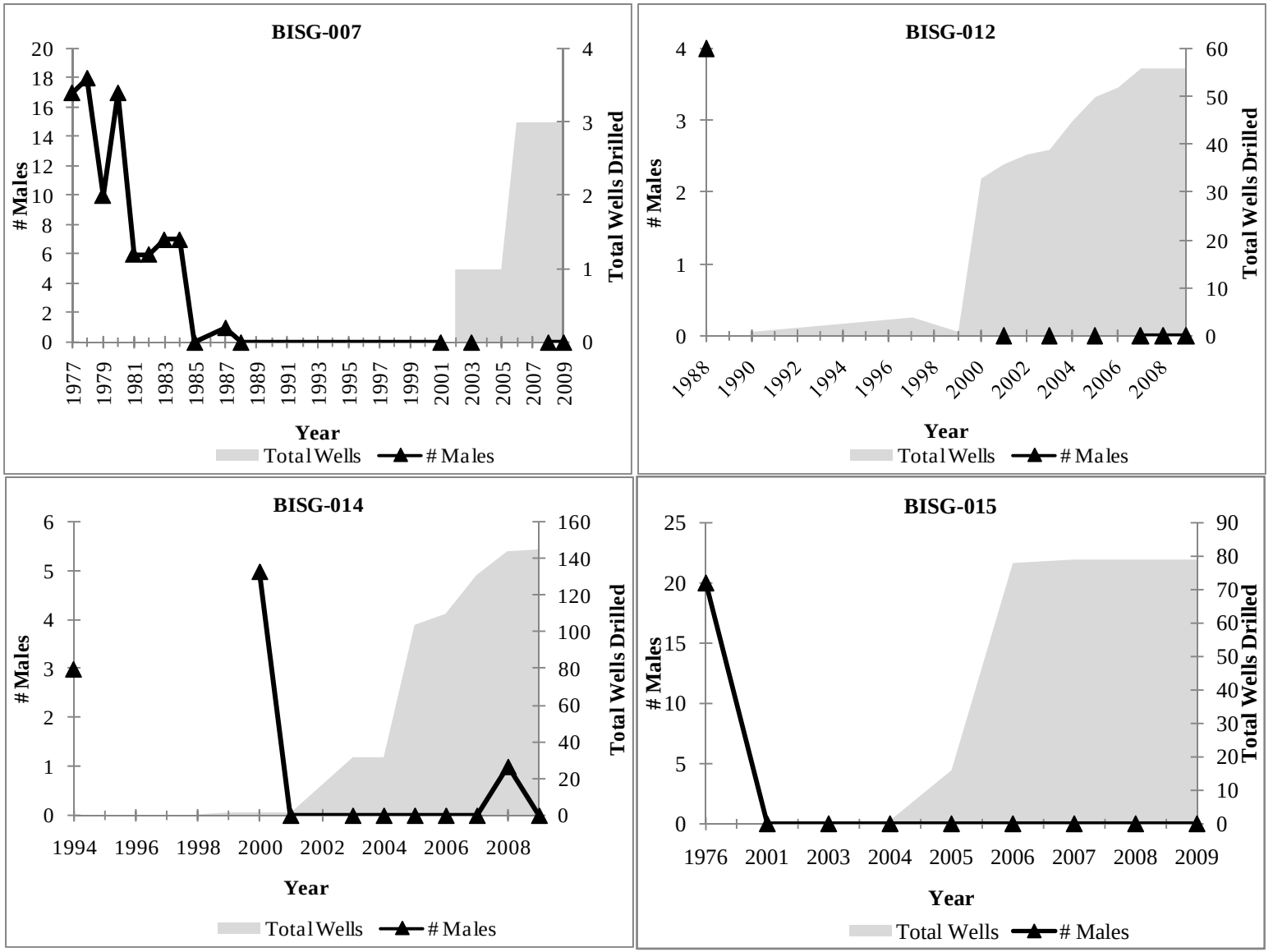

Figure 2D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

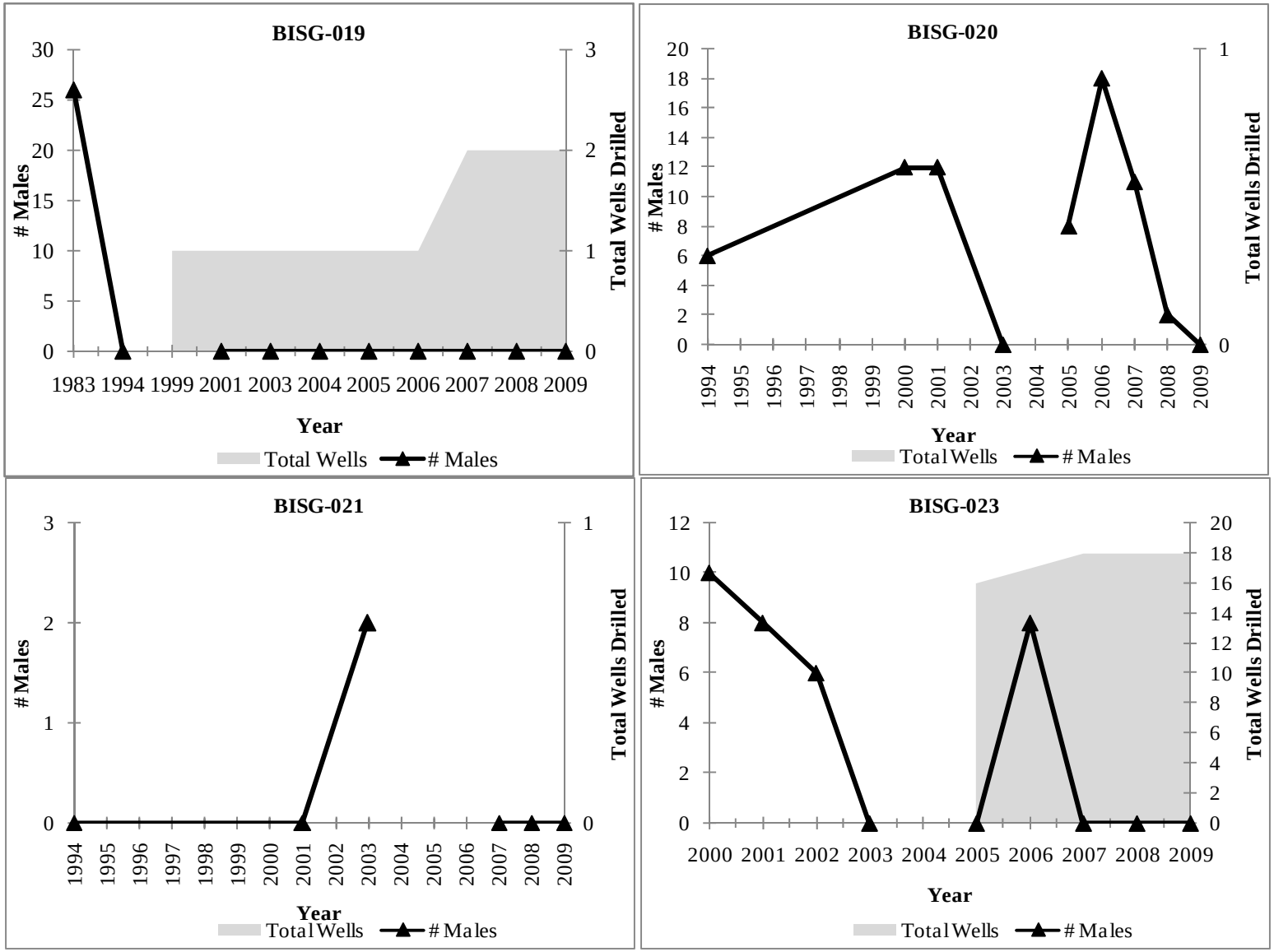

Figure 3D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

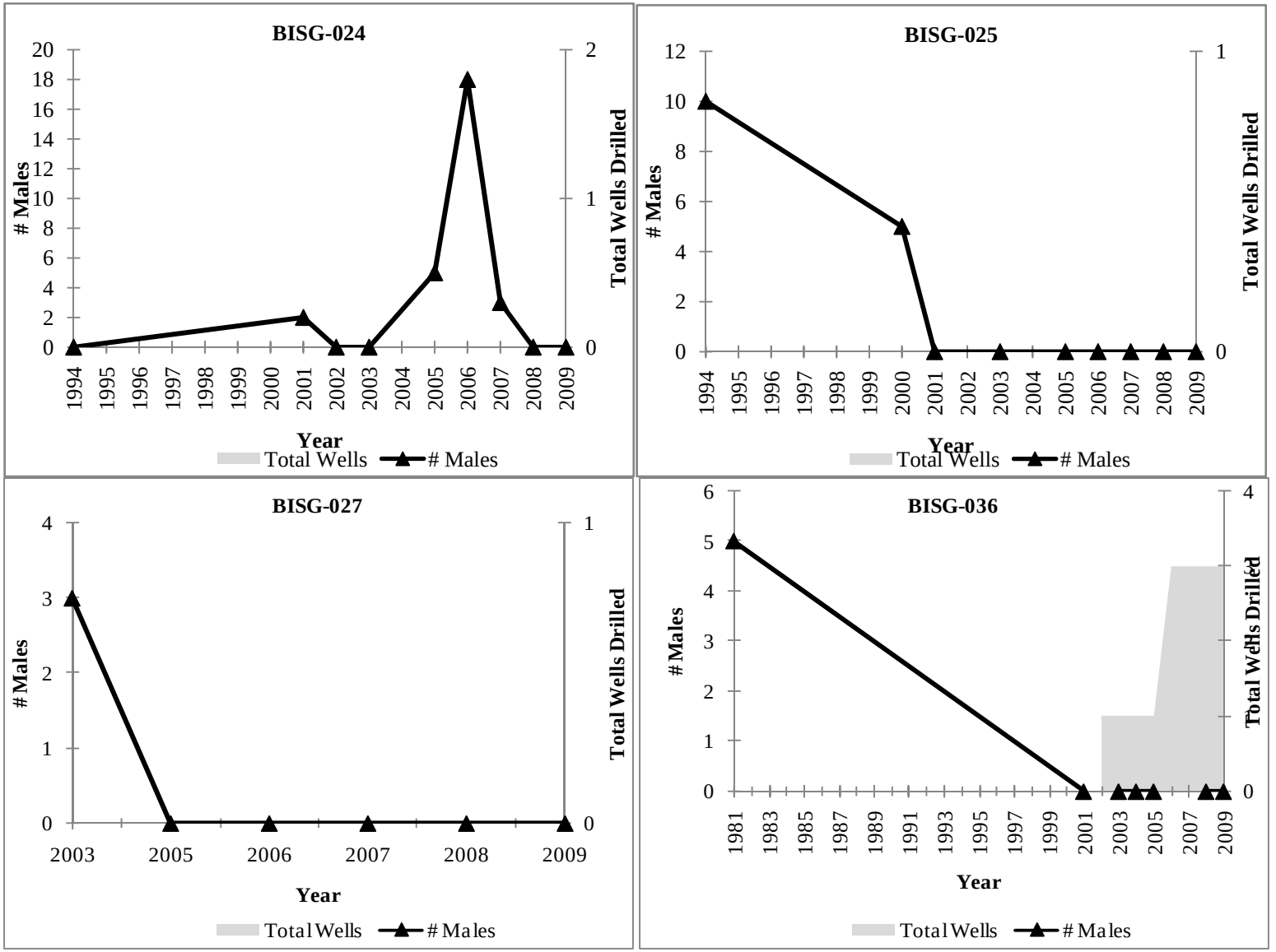

Figure 4D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

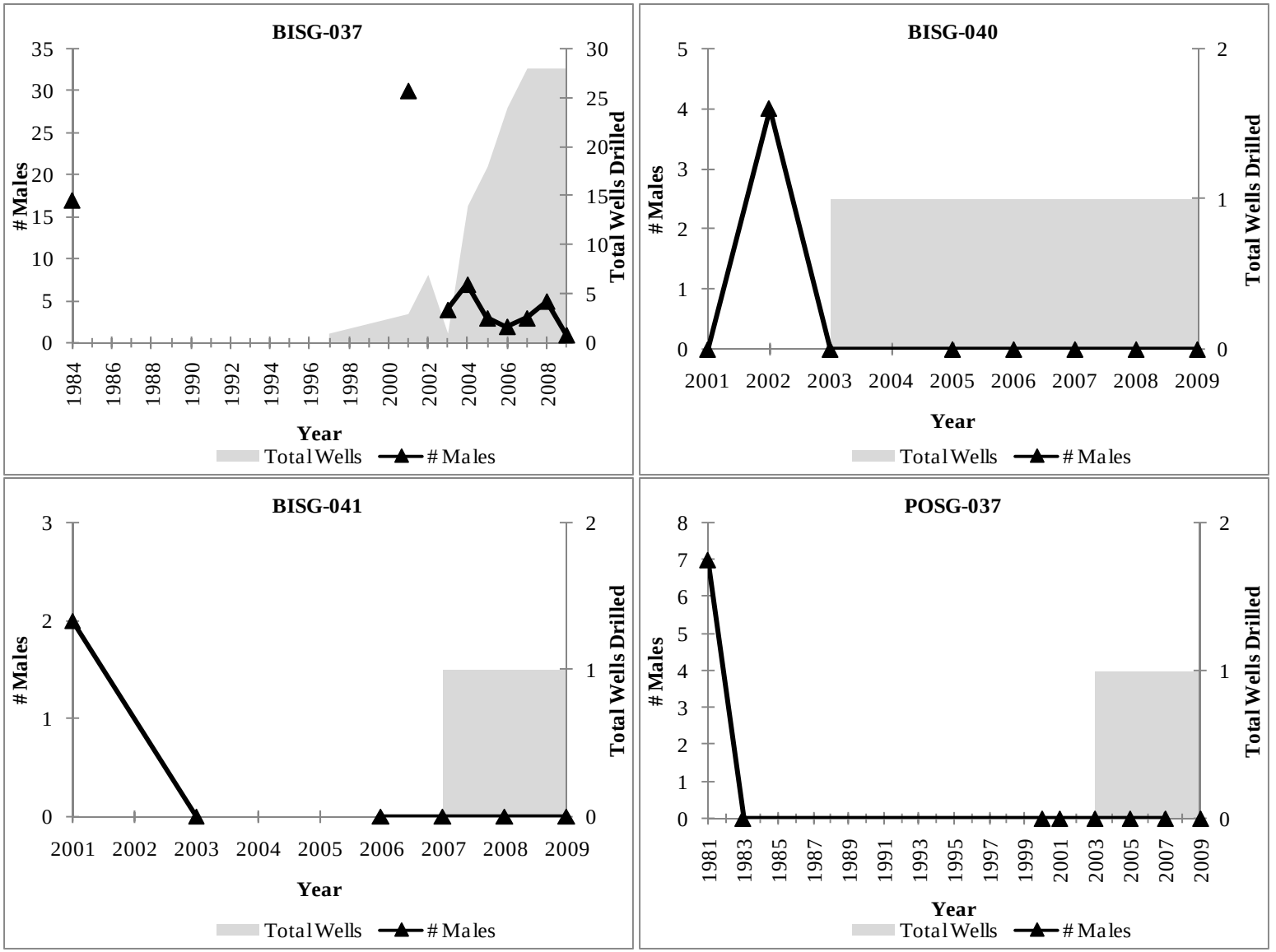

Figure 5D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

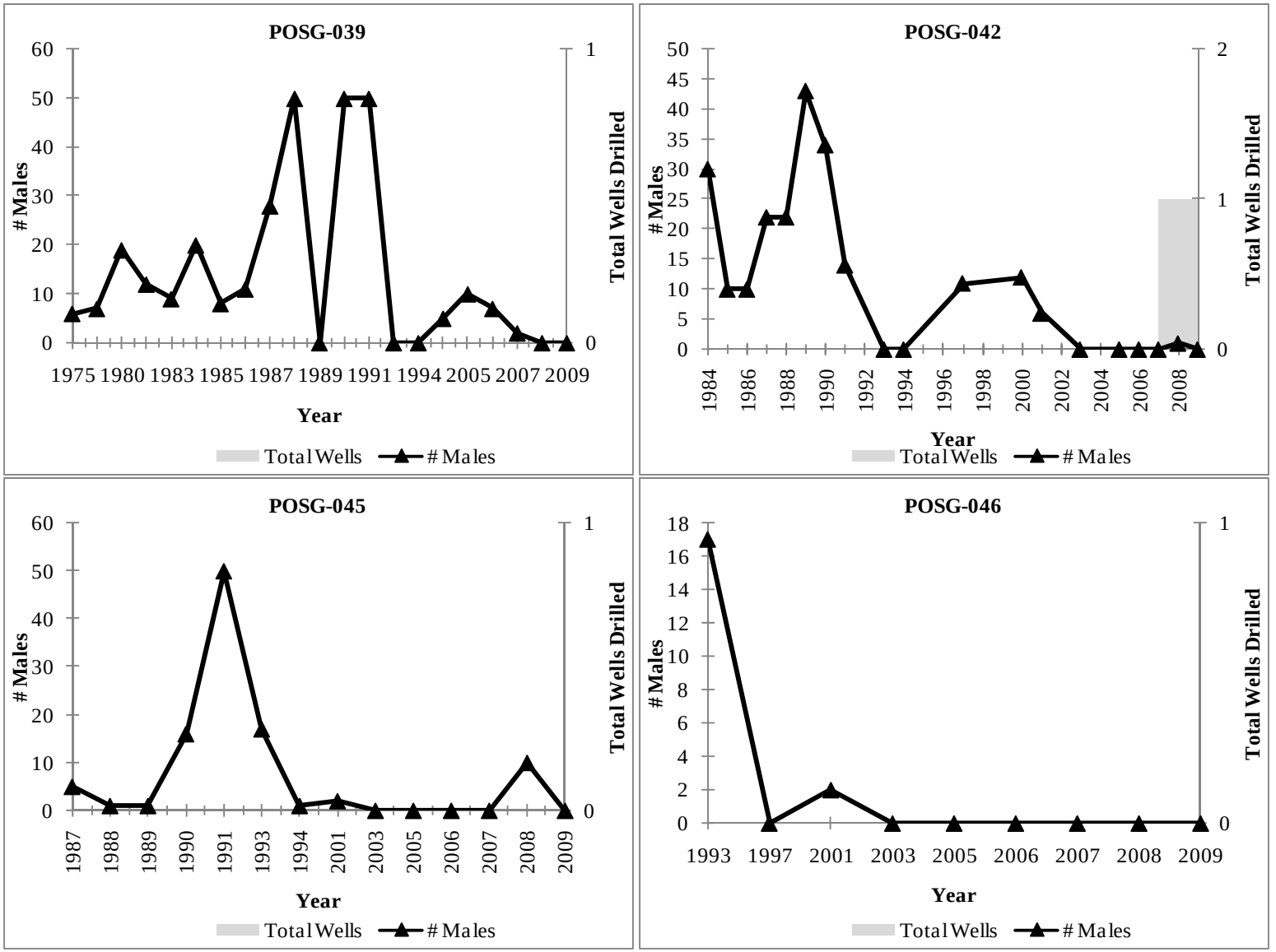

Figure 6D. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

APPENDIX E

Sage-grouse Lek Attendance Figures For Reference Leks

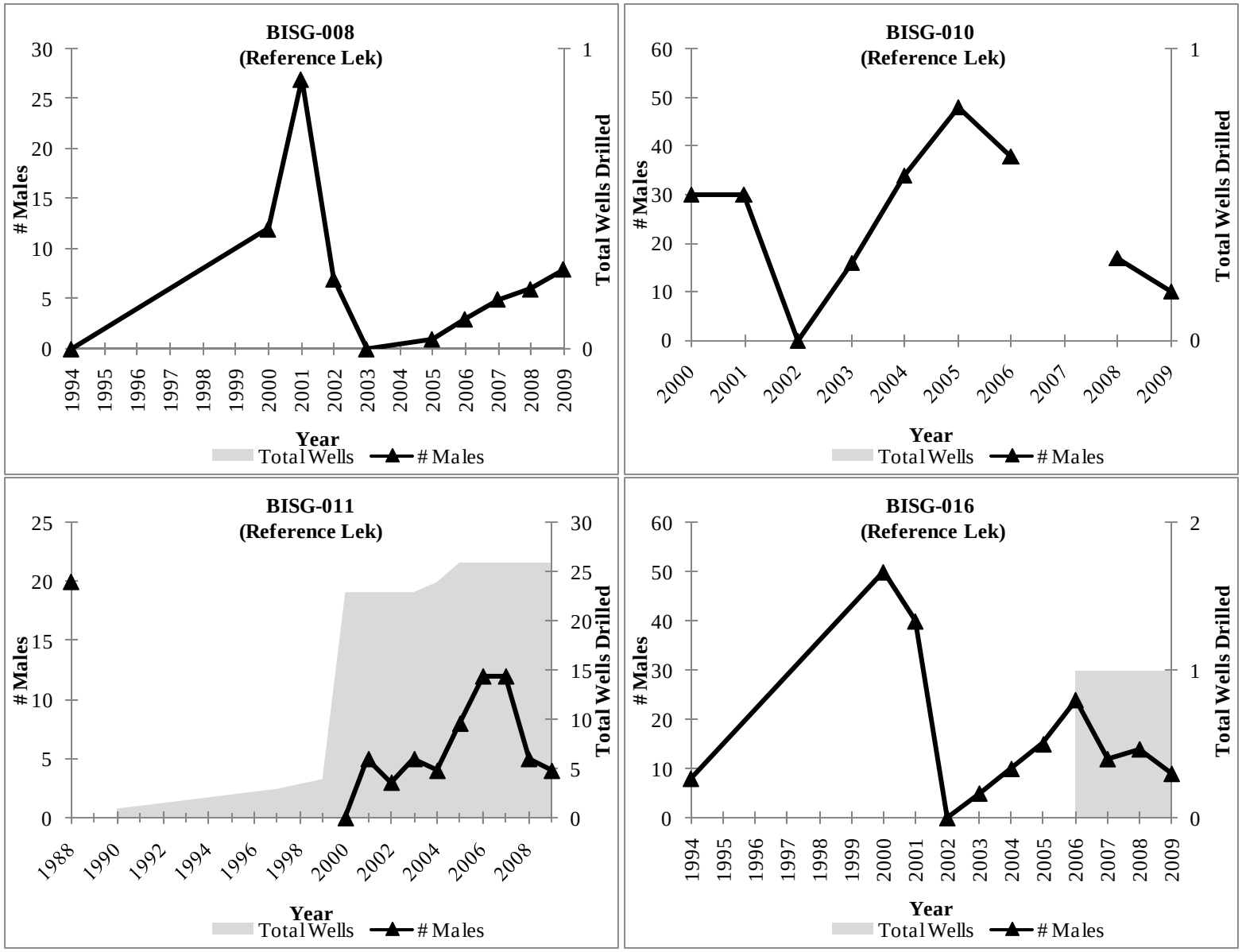

Figure 1E. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

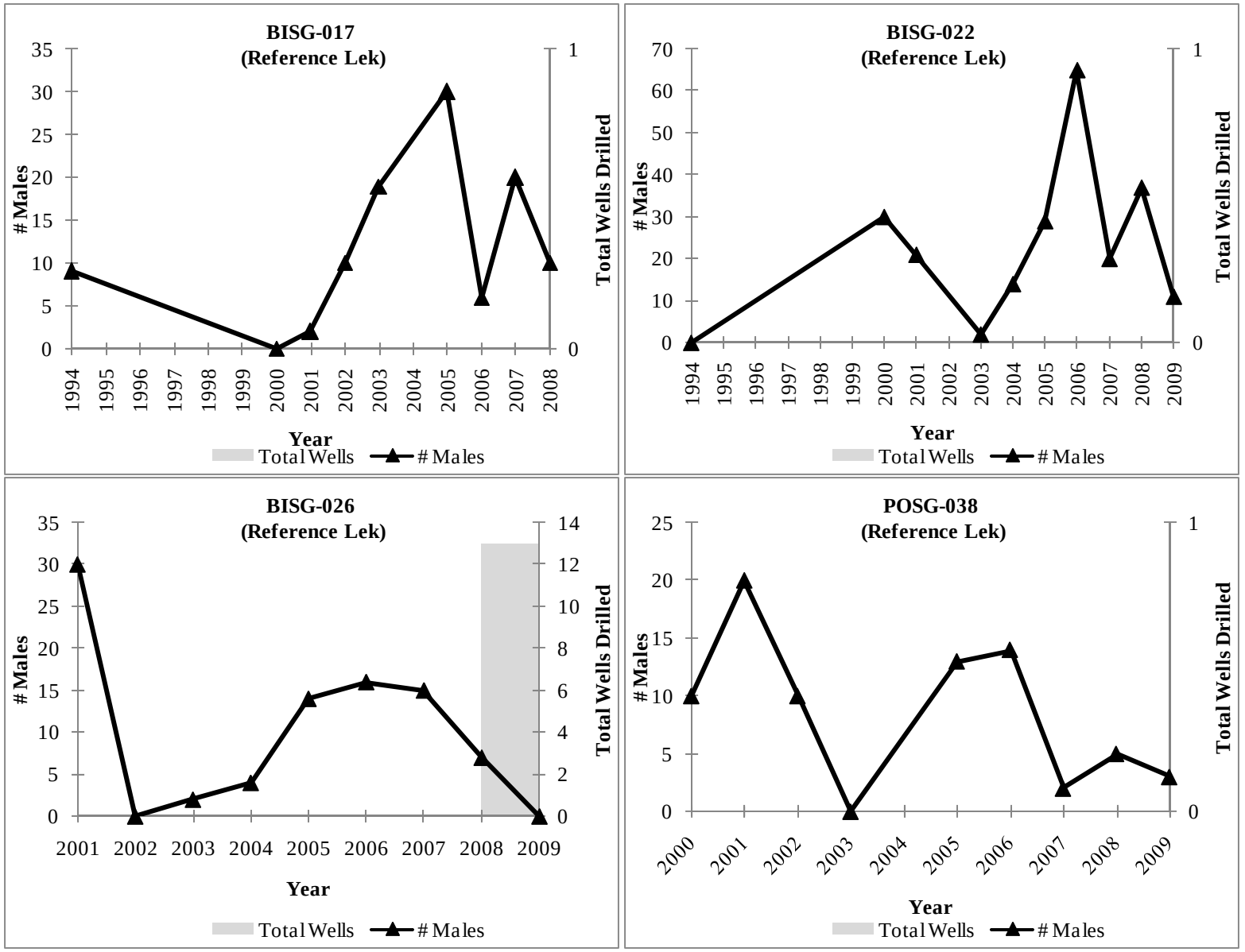

Figure 2E. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

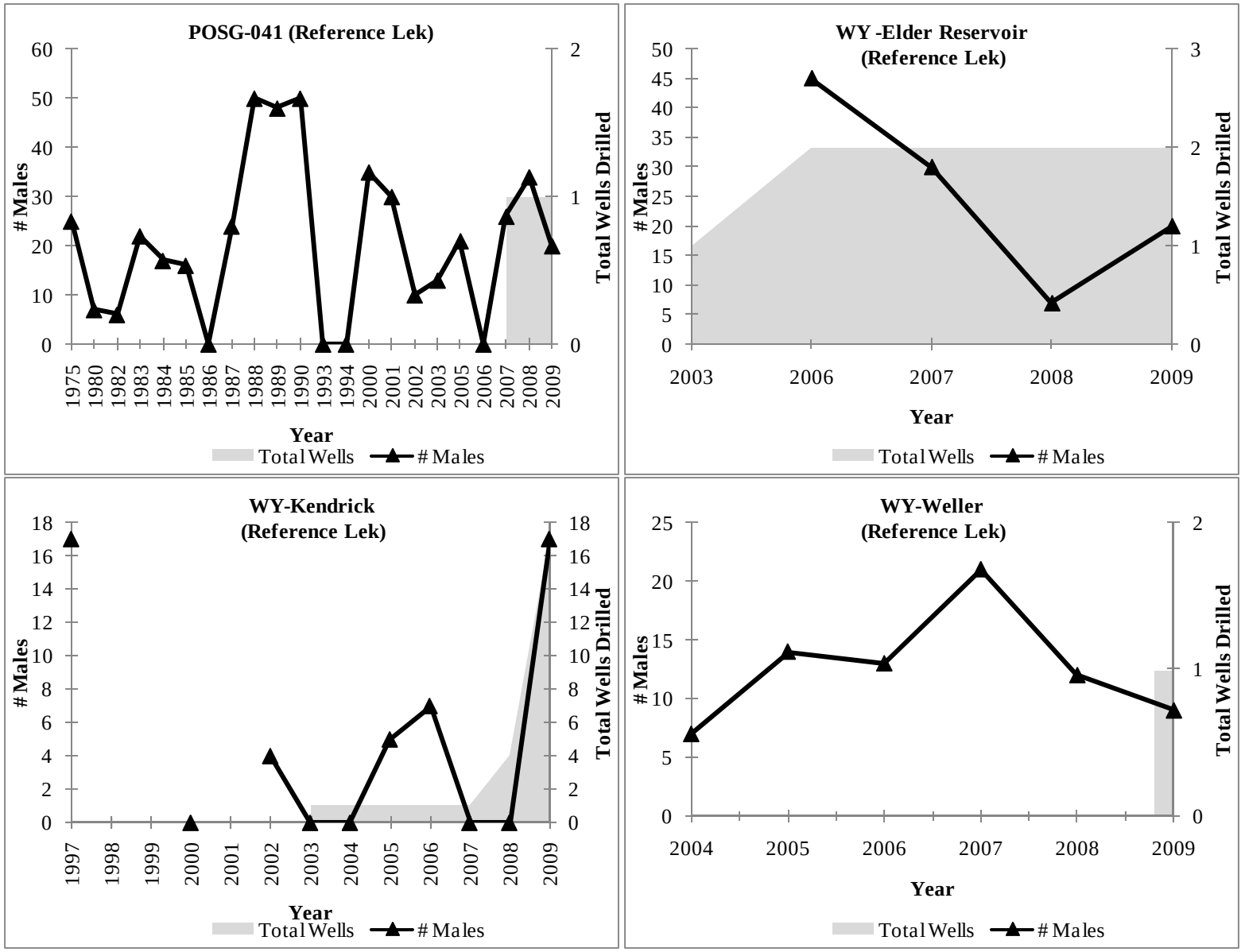

Figure 3E. Annual sage-grouse lek activity and cumulative number of CBNG wells within 2 miles of lek boundary.

APPENDIX F

Sharp-tailed Grouse Lek Attendance Monitoring Results

Table 1F. Results of Sharp-tailed Grouse Lek Attendance Surveys Conducted Within WMPP Focus Area.

Lek ID	Years Surveyed	# Males	# Females	# Unclassified	Total Birds
BIST-046	2004	9	1	0	10
	2005	4	0	3	7
	2006	0	0	0	0
	2007	0	0	0	0
BIST-062	2004	0	0	0	0
	2005	2	2	3	7
	2006	5	0	1	6
	2007	0	0	0	0
	2008	2	4	4	10
	2009	0	0	4	4
BIST-063	2004	0	0	0	0
	2005	0	0	0	0
	2006	0	0	0	0
	2007	0	0	2	2
BIST-064	2004	0	0	5	5
	2005	0	0	0	0
	2006	0	0	0	0
	2007	0	0	3	3
BIST-090	2004	15	3	0	18
	2005	13	3	0	16
	2006	13	0	0	13
	2007	0	0	0	0
	2008	10	0	4	14
BIST-092	2005	4	0	0	4
	2006	0	0	0	0
	2007	0	0	0	0
	2008	7	0	0	7
	2009	8	0	1	9
BIST-093	2004	3	0	0	3
	2005	0	0	0	0
	2006	0	0	0	0
	2007	0	0	0	0
	2008	0	0	0	0
	2009	0	0	0	0
BIST-094	2004	0	0	0	0
	2005	3	0	0	3
	2006	0	0	0	0
	2007	0	0	0	0
BIST-096	1981	0	0	9	9

Lek ID	Years Surveyed	# Males	# Females	# Unclassified	Total Birds
BIST-097	1975	12	0	0	12
	1976	15	0	0	15
	1977	24	0	0	24
	2004	0	0	0	0
	2005	6	0	10	16
	2006	0	0	9	9
	2007	0	0	0	0
	2008	0	0	7	7
	2009	5	0	9	14
BIST-098	1974	6	0	0	6
	1975	7	0	0	7
	1976	7	0	0	7
	1977	14	0	0	14
	2004	0	0	0	0
	2005	0	0	0	0
	2006	0	0	0	0
	2007	0	0	0	0
	2009	0	0	0	0
BIST-099	1974	20	0	0	20
	1975	9	0	0	9
	1976	14	0	0	14
	1977	20	0	0	20
	2007	0	0	0	0
	2008	4	9	0	13
	2009	0	0	6	6
BIST-100	2004	4	2	0	6
	2005	7	3	0	10
	2006	0	0	0	0
	2007	0	0	0	0
BIST-108	2004	13	4	0	17
	2005	16	2	3	21
	2006	0	0	0	0
	2007	0	0	0	0
BIST-111	2004	0	0	0	0
	2005	3	0	0	3
	2006	4	0	6	10
	2007	0	0	0	0
	2008	0	12	0	12
	2009	2	0	0	2
BIST-115	2004	0	0	0	0
	2005	0	0	0	0
	2006	0	0	4	4
	2007	0	0	0	0
ROST-107	2004	0	0	5	5

Table 2F. Summary of Survey Efforts and Status for Sharp-tailed Grouse Leks with No Observed Birds on Lek.

Lek ID	Years Surveyed	Last Reported Status
BIST-112	2006	Active
BIST-113	2006	Active
BIST-041	2004–2007	Historic
BIST-042	2004–2007	Historic
BIST-043	2004–2007	Historic
BIST-045	2004–2007	Historic
BIST-057	2004–2007	Historic
BIST-060	2004–2007	Historic
BIST-095	2004–2007	Historic
BIST-106	2004–2007	Historic
BIST-114	2004, 2006–2007	Historic
BIST-101	2004–2007	Inactive
BIST-102	2004–2009	Inactive
BIST-103	2004–2009	Inactive
BIST-105	2004–2007	Inactive
BIST-107	2004–2007	Inactive
BIST-109	2004–2007	Inactive
BIST-110	2004–2007	Inactive
BIST-118	2004–2008	Inactive
BIST-117	2004	N/A
BIST-049	2004–2007	Unknown
BIST-050	2004–2007	Unknown
BIST-067	2004–2007	Unknown
BIST-089	2004–2007	Unknown
BIST-104	2004–2007	Unknown