2004 WILDLIFE STUDIES, JONAH FIELD NATURAL GAS DEVELOPMENT PROJECT

Prepared for

U.S. Bureau of Land Management
Pinedale Field Office
Pinedale, Wyoming

and

Jonah Field Operators

By

TRC Mariah Associates Inc.
Laramie, Wyoming
MAI Project 41869

February 2005

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF MAPS

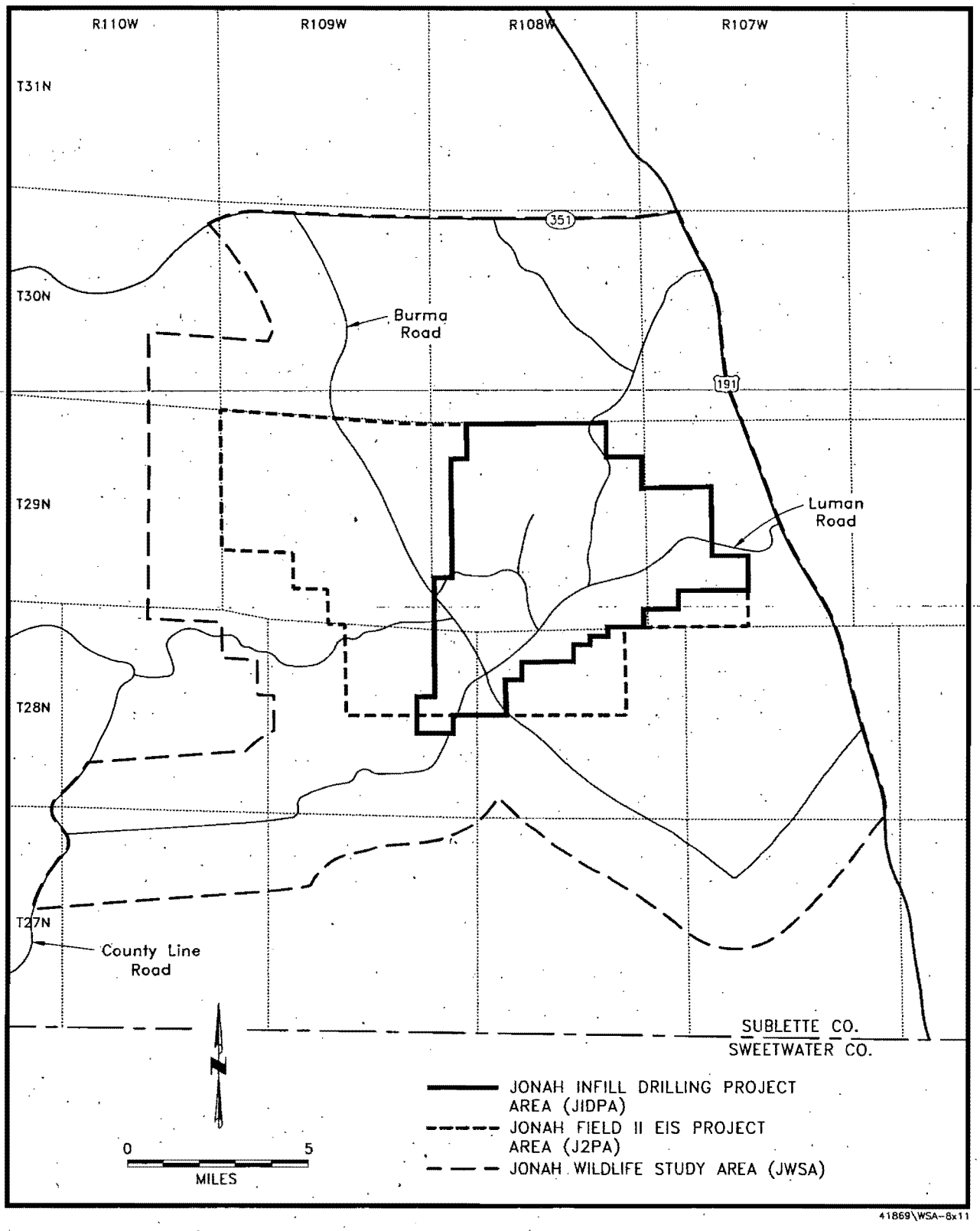
LIST OF TABLES

1.0 INTRODUCTION

This report was prepared by TRC Mariah Associates Inc. (TRC Mariah) for EnCana Oil & Gas Inc. (U.S.A.), BP America, and other natural gas operators (collectively referred to herein as the Operators), in compliance with the Bureau of Land Management (BLM) Record of Decision (ROD) for the Jonah Field II natural gas project (Appendix D in BLM [1998a]) and the Decision Record (DR) for the Modified Jonah Field II project (BLM 2000a). The goals of the ROD Wildlife Monitoring/Protection Plan (WMPP) and subsequent modifications made in the DR and as a result of annual recommendations are to monitor wildlife population trends on and adjacent to the Jonah Field II Project Area (J2PA), the Modified Jonah Field II Project Area (MJ2PA), and the Jonah Infill Drilling Project Area (JIDPA) during the course of project development and operations so that the adequacy of extant mitigation measures can be evaluated and modifications to existing measures can be made and/or new measures applied, as appropriate, by the BLM. Thus, adverse impacts to wildlife present in project-affected areas can be avoided or minimized. Implementation of the plan, as presented in this report, provides land managers and project personnel opportunities to achieve and maintain wildlife productivity and populations in affected areas by minimizing, avoiding, and/or mitigating potential adverse impacts associated with project development. In addition, an environmental impact statement (EIS) (BLM 2005) currently is being written to address impacts of additional drilling within the JIDPA (Map 1.1 and Appendix A). This report provides baseline data and outlines proposed 2005 monitoring and protection measures for the infill drilling project.

Wildlife monitoring was initiated in 1997 and continued through 2004. Wildlife data collected from 1997 through 2003 are presented in TRC Mariah (1999, 2001a, 2001b, 2002a, 2004).

This report presents the methods and results of the 2004 wildlife studies, as well as selected summary data from past monitoring studies conducted within the Jonah Field wildlife study area (JWSA), which includes the original J2PA, the MJ2PA, the JIDPA, and adjacent areas. Appendix A contains raptor nest; greater sage-grouse; threatened, endangered, proposed,



Map 1.1 Wildlife Study Area, Jonah Infill Drilling Project, 2004.

candidate, and BLM Wyoming sensitive (TEPC&BWS) species/other wildlife; and project features maps of the area. Raptor/Common Raven and General Wildlife Observation Data Sheets are contained in Appendix B. Appendix C is comprised of Raptor Nesting Records for monitored nests within the WSA; Appendix D provides Greater Sage-Grouse Lek Records; and Appendix E provides Mountain Plover Survey Forms and results.

Observational data presented in this report were collected primarily by TRC Mariah, BLM, and Wyoming Game and Fish Department (WGFD) personnel and were supplemented by U.S. Fish and Wildlife Service (USFWS), University of Wyoming Cooperative Wildlife Unit (COOP), Operator, and Wyoming Wildlife Consultants, LLC (WWC) personnel. Trends across years are noted, where possible. Potential wildlife disturbance sources are identified, and monitoring and protection measures proposed for 2005 are presented. Monitoring and protection measures are consistent with those required in the original ROD (BLM 1998a) and the DR and environmental assessment (EA) for the Modified Jonah Field II project (BLM 2000a, 2000b). Additional BLM- and/or Operator-requested measures are also provided.

2.0 METHODS

The wildlife species/categories for which specific inventory and monitoring procedures were applied were developed based on concerns identified during the preparation of the EIS for the Jonah Field II project (BLM 1997, 1998b) and the EA for the Modified Jonah Field II Project (BLM 2000b). Specific inventory and monitoring techniques generally follow the methods presented in the WMPP for this project (Appendix B in BLM [1998a]) and additional methods identified by BLM (2000b).

Locational data presented in GIS maps and shapefiles are projected in NAD83 Universal Transverse Mercator (UTM) Zone 12 North in accordance with BLM requirements (personal communication, October 20, 2004, with Karen Rogers, GIS specialist, BLM Pinedale Field Office [PFO]). Details on raptor nest history, wildlife observation dates and observers, and other pertinent information are presented in the GIS metadata provided.

The locations of existing and proposed project facilities for the Project Features Map in Appendix A were refined and verified by compiling data downloaded from Wyoming Oil and Gas Conservation Commissions's website (accessed January 2005) and comparing it to Operator-provided data and aerial imagery.

2.1 RAPTORS

Raptor nest surveys of the JWSA have been conducted annually since 1997 to determine the location and activity status of raptor nests in the area (TRC Mariah 1999, 2001a, 2001b, 2002a, 2004). In 2004, raptor activity and productivity surveys were conducted primarily from the ground, with several areas surveyed by helicopter. Helicopter surveys generally were limited to new nest searches in the southeastern JWSA and overlapping portions of the JWSA and Anticline Wildlife Study areas. Raptor activity and productivity surveys were conducted using procedures that minimize potential adverse effects to nesting raptors as identified in the ROD

(Appendix D in BLM [1998a]). The following measures were used as applicable and within the confines of the survey requirements (Call 1978; Grier and Fyfe 1987).

- Nest visits were conducted as late in the season as possible to collect necessary data without undue disturbance to pairs establishing territories/nests.
- Nests were approached with caution, and the status (i.e., activity, number of nestlings/fledglings) was determined from a distance with binoculars and/or spotting scope.
- Nests were approached, if necessary, tangentially and in an obvious manner so as to avoid startling adults or fledglings.
- Nests were not approached during adverse weather conditions (i.e., extremely hot or cold weather, high winds, precipitation events).
- Visits were kept as brief as possible to avoid or minimize disturbance to nesting birds.
- Inventories were coordinated with and approved by biologists in the BLM PFO.
- The number of visits to each nest was kept to a minimum to avoid repeated disturbance to nesting birds.

All raptor nest locations are provided to the BLM PFO and other entities as identified in the distribution list at the front of this document. These data are of a sensitive nature and are to be kept confidential. The data are available to other interested parties only as deemed appropriate by the BLM.

Raptor nest activity status surveys were conducted on the ground using four-wheel-drive vehicles and pedestrian reconnaissance on April 1-3, 6, 28, and 30; and May 3, 6-8, 24-26, 29, and 30; and by helicopter on April 5, and May 20 and 26-28; by Diane Thomas, Randall Blake, and Jan Hart of TRC Mariah. Burrowing owl nest activity surveys were conducted in conjunction with mountain plover nesting surveys, as well as during raptor activity surveys. All known raptor nests within the WSA were visited at least once during these surveys to determine if each nest was still intact, whether it was being used and, if so, by what species. All nest sites

located within 1.0 mi of existing or proposed Jonah Field development areas (see Appendix A, Raptor Nest Map) and determined occupied in 2004, as well as other occupied nests for which productivity data were easily obtained in the course of other scheduled monitoring, were revisited to determine productivity. Additional monthly monitoring of some nests within the overlap of the JWSA and the Pinedale Anticline Wildlife Study Area (PAWSA) was conducted by Diane Thomas and Randall Blake, and those data are included herein. In the case of nest failure or abandonment, an attempt was made to identify the causative factor(s). Raptor nest productivity surveys were conducted on June 8-9 and 20-25, and July 24-25. Productivity surveys were conducted via four-wheel-drive vehicle or on foot, with the exception of several nests checked from the air on June 23 and 25 in conjunction with helicopter nest surveys of the PAWSA and searches for new nests in the southeastern portion of the JWSA.

An additional effort was made during 2004 raptor surveys to locate and record ferruginous hawk nests in areas that appeared most likely to have previously unrecorded nests, particularly in the southeastern and south-central portions of the JWSA. Photos were taken of all newly recorded nests, as well as any other nest(s) for which photos were not available. In addition, some nests for which photos were available were rephotographed to provide better documentation of the nest and its location. A Trimble GeoExplorer3 handheld correctable Global Positioning System (GPS) unit was used to obtain locations for newly located nests, as well as nests within the JWSA for which GPS locations were previously unavailable or unreliable. All data collected during raptor activity and productivity surveys were recorded on maps, Raptor Observation Data Sheets, and/or Raptor Nesting Records (see Appendix A [Raptor Nest Map], Appendix B, and Appendix C).

Documentation of known raven nests was initiated in 2001 because common ravens often use nests previously used by raptors and vice versa. Raven nests were recorded on the same data forms as raptor nests (see Appendices B and C); however, only previously recorded raven nests or nests newly observed during the course of scheduled surveys were monitored. No effort was made to document all raven nests in the JWSA.

Nesting territory boundaries are difficult to determine, particularly if nesting activity in an area is inconsistent or if the number of years of available nesting data is limited. In past years, the boundary of each ferruginous hawk nesting territory in the JWSA was approximated based on the location of known nests in the area and topographic and geographic characteristics of the area. Several ferruginous hawk territory boundaries were amended in 2004 based on the location of newly recorded nests and associated topographic characteristics, and 11 new territories (i.e., Territories 17-27) were defined (see Appendix A, Raptor Nest Map). These territory boundaries, while helpful from a management point of view (i.e., to determine current and historical occupancy of an area and to assist in locating potential sites for artificial nest structures [ANSs]), may not reflect the actual ferruginous hawk nesting territories within the JWSA because nesting territories may change from year to year depending on population fluctuations, prey availability, and other ecological factors. No attempts were made to determine the foraging territories of nesting pairs; however, prairie dog towns, as well as areas used by ground squirrels and rabbits adjacent to ferruginous hawk nesting territories, likely provide the most heavily utilized foraging habitat during the nesting season.

2.2 GREATER SAGE-GROUSE

Monitoring of greater sage-grouse leks was conducted in 2004 to determine the extent of grouse breeding activities within the JWSA and to record any newly discovered leks. Data on lek attendance and location, survey dates, weather conditions, and other notes are provided on Greater Sage-Grouse Lek Records (see Appendix D). In early spring, WGFD compiled a schedule identifying the agencies and specific individuals who would be responsible for monitoring identified leks. A review of the schedule by TRC Mariah personnel in early April revealed that several previously identified leks within the JWSA were not slated for monitoring. At the request of Operators, TRC Mariah personnel initiated monitoring of the leks not slated for monitoring so that gaps in coverage would not occur (see Appendix D). However, Lek 5 ultimately did not get monitored, and Leks 8 and 11 were only visited once during the strutting season. All three leks were subsequently removed from consideration as leks during a

November 2004 meeting of the WGFD, BLM PFO, and TRC Mariah. Lek 25 was first recorded in 1998, but has not been surveyed since, nor has it been included in previous Jonah wildlife monitoring studies. The lek is outside, but within 2.0 mi of the JWSA. The locations of known leks are provided on the Greater Sage-Grouse Map in Appendix A.

Greater sage-grouse winter use surveys of the development areas and/or the JWSA have been recommended in previous annual reports (TRC Mariah 1999, 2001a, 2001b, 2002a, 2004) to assist in identifying areas that provide important winter cover and foraging habitat, particularly during severe winters (i.e., substantial snow cover over a large percent of an area for a prolonged period of time). Conditions during the winter of 2003-2004 provided an excellent opportunity to gather winter sage-grouse locational data, as snow cover and depth were greater than in recent winters. Thus, the Operators, in cooperation with the Pinedale Anticline Operators and in coordination with WGFD and the BLM PFO, funded a winter greater sage-grouse aerial survey of the combined JWSA and PAWSA.

The winter survey was conducted by Diane Thomas and Randall Blake on February 9-12, 2004, using a Bell Long Ranger helicopter flying at speeds of 40-70 knots and at altitudes of approximately 70-100 ft (higher where livestock, residences, highways, or other sensitive resources were present). The surveyed area was systematically flown along north/south transects spaced at 0.5-mi intervals, with all greater sage-grouse observations within approximately 0.25 mi of either side of the transect recorded. A Trimble GeoExplorer3 GPS unit was used to maintain transect flight paths. GPS data were generally collected simultaneously by both observers on separate GPS units to minimize the chance of data loss due to hardware failure or other equipment malfunction. In the office, GPS data were differentially corrected, duplicates were deleted, and a shapefile was created in ArcGIS 8.0. The data and shapefiles were provided to WGFD and BLM PFO for their potential use in delineating important greater sage-grouse winter habitat within the combined wildlife study areas. Results of additional site-specific clearance of areas planned for winter disturbance are available for review at the BLM PFO.

2.3 THREATENED, ENDANGERED, PROPOSED, CANDIDATE, AND BLM WYOMING SENSITIVE SPECIES

Inventory and monitoring of TEPC&BWS species were conducted in conjunction with the abovementioned surveys for raptors and greater sage-grouse and during prairie dog town mapping and mountain plover nesting surveys. Federally listed or proposed species are described below, and the most current list of BWS species (BLM 2002) for the JWSA is provided in Table 2.1. Additional species-specific surveys were implemented by the BLM in conjunction with on-site investigations conducted as components of Application for Permit to Drill (APD), right-of-way (ROW) application, and/or Sundry Notice processes, as deemed necessary by the BLM and in compliance with the biological assessment for the project (Appendix E in BLM [1997]). Data collection methods and results/clearances for TEPC&BWS species associated with APD, ROW, and Sundry Notice application reviews are not included in this report but are available from the BLM PFO in Pinedale, Wyoming.

2.3.1 Black-footed Ferret

Randall Blake remapped and censused prairie dog town (PDT) 2C and mapped and censused a newly recorded PDT (PDT 27) in Section 9, T29N, R108W (see Appendix A, TEPC&BWS Species/Other Wildlife Map) during July 2004, to determine overall burrow density, to define areas of high burrow density within the towns, to more accurately define the current size and location of the towns, and to determine whether the towns meet the black-footed ferret habitat criteria of ≥ 8.0 burrows per acre established in the USFWS (1989) guidelines. Open burrows deep enough that the below-ground end was not visible and with a diameter ≥ 7 cm were censused and their location recorded with a GPS. Burrows were physically marked (i.e., with a footprint or scuff mark) to avoid duplicate counting. The edge of the town was determined in the field to be the point at which no burrows were observed within approximately 0.25 mi of an outlying burrow. Town boundaries were further refined in the office using GIS data such that burrows along the edge of a town were within at least 660 ft of other burrow(s). High-density areas (i.e., those areas of a town generally exhibiting densities of ≥ 8.0 burrows per acre or, in several of the towns with lower densities, the central, densest portion of the town, if easily

Table 2.1 BLM Wyoming Sensitive Animal Species Documented or Potentially Occurring on or in the Vicinity of the Jonah Field Wildlife Study Area, 2004.[1]

Species		Other Designation and Ranking[2]	Documented on or in Vicinity of the JIDPA?[3]	Habitat Type(s)[4]
Common Name	Scientific Name			
Long-eared myotis	*Myotis evotis*	G5/S1B, S1?N, NSS2	Yes	FT
Whitetail prairie dog	*Cynomys leucurus*	G4/S2S3, NSS3 (Petitioned 7/11/2002)	Yes[5, 6]	UB
Idaho pocket gopher	*Thomomys idahoensis*	G4/S2?, NSS3, IUCN-LR (nt)	Yes[5]	BS, P/R
Pygmy rabbit	*Brachylagus idahoensis*	G4/S2, NSS3, IUCN-LR (nt)	Yes[6, 7]	BS, P/R
White-faced ibis	*Plegadis chihi*	G5/S1B, SZN, FSR2, NSS3	Yes[5]	FT, P/R
Trumpeter swan	*Cygnus buccinator*	G4/S1B, S2N, FSR2, FSR4, NSS2	Yes	FT
Northern goshawk	*Accipiter gentilis*	G5/S23B, S4N, FSR2, FSR4, NSS4	Yes[5]	FT
Ferruginous hawk	*Buteo regalis*	G4/S3B, S3N, FSR2, NSS3	Yes[5, 6]	UB
Peregrine falcon	*Falco peregrinus*	G4/T3/S1B, S2N, FSR2, NSS3 (Removed from federal endangered list 8/25/1999)	Yes[5]	FT
Greater sage-grouse	*Centrocercus urophasianus*	G5/S3 (Petitioned 6/8/2002; removed from consideration for listing 1/07/2005)	Yes[5, 6]	UB
Mountain plover	*Charadrius montanus*	G2/S2B, SZN (Proposed listing withdrawn 9/2003)	Yes[5, 6]	CP
Long-billed curlew	*Numenius americanus*	G5/S3B, SZN, FSR2, NSS3	Yes[5]	P/R, FT
Yellow-billed cuckoo	*Coccyzus americanus*	G5/S2B, SZN, FSR2, NSS2, (Petitioned 7/25/2001)	No	FT
Burrowing owl	*Athene cunicularia*	G4/S3B, SZN, FSR2, NSS4	Yes[5, 6]	BS, SB, CP
Loggerhead shrike	*Lanius ludovicianus*	G5/S4B, SZN, FSR2	Yes[5, 6]	UB
Sage thrasher	*Oreoscoptes montanus*	G5/S3B, SZN, PIF Priority	Yes[5, 6]	UB
Brewer's sparrow	*Spizella breweri*	G5/S3B, SZN, PIF Priority	Yes[5, 6]	UB
Sage sparrow	*Amphispiza billineata*	G5/S3B, SZN, PIF Priority	Yes[5, 6]	UB
Northern leopard frog	*Rana pipiens*	G5/S3, FSR2, NSS4	Yes	P/R
Boreal toad (northern Rocky Mountain population)	*Bufo boreas boreas*	G4T4/S2, FSR2, FSR4, NSS2	Yes	P/R
Spotted frog	*Rana pretiosa*	G4/S2S3, FSR2, FSR4, NSS4	Yes	P/R

[1] From Wyoming BLM State Director's Sensitive Species List (Animals and Plants), September 20, 2002.

Table 2.1 (Continued)

[2] Rankings:

Wyoming Natural Heritage Program

Uses a standardized system developed by The Nature Conservancy's Natural Heritage Network to assess the global and state-wide conservation status of each plant and animal species, subspecies, and variety. Each taxon is ranked on a scale of 1-5, from highest conservation concern to lowest. Codes are as follows:

G = Global rank: rank refers to the range wide status of a species.
T = Trinomial rank: rank refers to the range wide status of a subspecies or variety.
S = State rank: rank refers to the status of the taxon (species or subspecies) in Wyoming. State ranks differ from state to state.
ZN = Taxa that are not of significant concern in Wyoming during non-breeding seasons.
1 = Critically imperiled because of extreme rarity (often known from five or fewer extant occurrences or very few remaining individuals) or because some factor of a species' life history makes it vulnerable to extinction.
2 = Imperiled because of rarity (often known from 6-20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.
3 = Rare, or local, throughout its range or found locally in a restricted range (usually from 21-100 occurrences).
4 = Apparently secure, although the species may be quite rare in parts of its range, especially at the periphery.
5 = Demonstrably secure, although the species may be rare in parts of its range, especially at the periphery.
B = Breeding rank: a state-rank modifier indicating the status of a migratory species during the breeding season (used mostly for migratory birds and bats).
N = Nonbreeding rank: a state-rank modifier indicating the status of a migratory species during the nonbreeding season (used mostly for migratory birds and bats) ZN or ZB. Taxa that are not of significant concern in Wyoming during breeding (ZB) or non-breeding (ZN) seasons. Such taxa often are not encountered in the same locations from year to year.
? = Questions exist regarding the assigned G, T, or S rank of a taxon.

U.S. Forest Service

FSR2 = Region 2, Rocky Mountain Region.
FSR4 = Region 4, Intermountain Region.

Wyoming Game and Fish Department

The Wyoming Game and Fish Department has developed a matrix of habitat and population variables to determine the conservation priority of all native, breeding bird and mammal species in the state. Six classes of native status species (NSS) are recognized, of which classes 1, 2, and 3 are considered to be high priorities for conservation attention.

These classes can be defined as follows:

NSS1 = Includes species with on-going significant loss of habitat and with populations that are greatly restricted or declining (extirpation appears possible).
NSS2 = Species in which (1) habitat is restricted or vulnerable (but no recent or significant loss has occurred) and populations are greatly restricted or declining; or (2) species with on-going significant loss of habitat and populations that are declining or restricted in numbers and distribution (but extirpation is not imminent).
NSS3 = Species in which (1) habitat is not restricted, but populations are greatly restricted or declining (extirpation appears possible); or (2) habitat is restricted or vulnerable (but no recent or significant loss has occurred) and populations are declining or restricted in numbers or distribution (but extirpation is not imminent); or (3) significant habitat loss is on-going but the species is widely distributed and population trends are thought to be stable.
NSS4 = ***EITHER*** Populations are either declining or restricted in number or distribution. Extirpation is not imminent. Habitat is not restricted but is vulnerable; however, no known significant loss has occurred. Species is not sensitive to human disturbance. ***OR*** Species is widely distributed. Population status and trends are unknown but suspected to be stable. Habitat is restricted or vulnerable, but no recent or ongoing significant loss has occurred. Species may be sensitive to human disturbance.

IUCN - International Union for Conservation of Nature Rodent Specialist Group, North American Red List

LR = Lower Risk. A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered, or Vulnerable. Taxa included in the Lower Risk category are separated into three subcategories.
nt = Near Threatened. Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

Partners in Flight (PIF)

A coalition of federal, state, and provincial agencies, private groups, corporations, and individuals dedicated to neotropical migratory bird conservation.

[3] Indicates documentation of amphibian, reptile, or bird species in Sublette County (Baxter and Stone 1980; Fertig 1997; WGFD 1999); documentation of bird species within latitude 42°, longitude 109° (Dorn and Dorn 1999; WGFD 1996, 1999); and/or documentation of mammal species within latitude 42°, longitude 109° (WGFD 1996, 1999) or within Sublette County (Fertig 1997).

[4] BS = big sagebrush, CP = cushion plant, FT = fly through, P/R = pond/riparian, SB = saltbush, UB = ubiquitous.

[5] Species has been documented breeding within latitude 42°, longitude 109° (Dorn and Dorn 1999; WGFD 1999).

[6] Species or its sign documented during wildlife monitoring of the JWSA (TRC Mariah [1999, 2001a, 2001b, 2002a, 2002b, 2003] and Appendix B of this document).

[7] Species occurred historically within latitude 42°, longitude 109° (WGFD 1999).

distinguished) were defined in the office by review of GIS locational data for individual burrows. Section 3.3.1 provides density data for PDTs and high-density portions of PDTs).

2.3.2 Bald Eagle, Ferruginous Hawk, and Golden Eagle

Inventory and monitoring protocols for bald eagle, ferruginous hawk, and golden eagle were implemented as described in Section 2.1.

2.3.3 Mountain Plover

All mountain plover breeding habitat (i.e., active prairie dog colonies and/or relatively flat areas with low-growing vegetation less than 4-6 inches in height indicative of cushion plant and Gardner's saltbush communities) within the JIDPA and a 0.5-mi buffer previously recorded as occupied (TRC Mariah 1999, 2001a, 2001b, 2002a, 2004) was surveyed. Surveys were conducted by Randall Blake on May 3 and 6, 2004, three times or until the presence of mountain plover was documented.

Surveys were conducted in accordance with 2002 USFWS guidelines (USFWS 2002), as follows.

- Surveys were conducted during early courtship and territory establishment.
- Surveys were conducted from sunrise to 10:00 a.m. and/or from 5:30 p.m. to sunset.
- Surveys were conducted from four-wheel-drive vehicles or, where access was problematic and/or no visual observations were made from vehicles, all-terrain vehicles were used.
- Surveyors remained in or close to vehicles when scanning with binoculars.
- Suitable habitat was surveyed three times during the survey window (May1 - June 15), with each survey separated by at least 14 days.
- Surveys were not conducted in inclement weather (e.g., poor visibility).

- Surveys focused on locating displaying or calling males.
- GPS locations of nests (post-nesting) and individuals, if present, were taken, and activity, number of individuals, and other pertinent data were recorded.

All data collected during surveys, including location, surveyor, weather conditions, habitat characteristics, and results, were recorded on Mountain Plover Survey Forms (see Appendix E).

Additional surveys on and proximal to proposed disturbance areas may have been conducted by the BLM prior to disturbance in association with APD, ROW application, and Sundry Notice field reviews. Data from those investigations, if conducted, are available for review at the BLM PFO in Pinedale, Wyoming.

2.3.4 Western Burrowing Owl

Prairie dog colonies and other suitable burrowing owl nesting habitat on the JIDPA were searched during late spring and summer 2004 by TRC Mariah personnel in association with mountain plover nesting surveys (see Section 2.3.3) and raptor nesting activity and productivity monitoring (see Section 2.1) to determine the extent of burrowing owl nesting. Additional monitoring of some burrowing owl nests within the overlap of the JWSA and PAWSA was conducted by Diane Thomas and Randall Blake. The number and location of occupied nests in the area were identified, and efforts were made to determine fledgling success for occupied nests. All data collected during burrowing owl nest activity and productivity surveys were recorded on maps, Raptor Observation Data Sheets, and/or Raptor Nesting Records (see Appendix A [Raptor Nest Map], Appendix B, and Appendix C).

2.3.5 Other TEPC&BWS Species

Formal surveys for TEPC&BWS species were not conducted during 2004. However, site-specific investigations were implemented by the BLM in areas of potential habitat on and

proximal to proposed disturbance areas during on-site reviews conducted in conjunction with APD, ROW application, and Sundry Notice review processes. This information is available for review at the BLM PFO.

A pedestrian investigation of the Sand Draw drainage within the JIDPA was conducted by Diane Thomas on the mornings of July 24, 25, and 26, 2004, to support annual wildlife studies and the Jonah Infill Drilling Project EIS (BLM 2005). The investigation focused on determining the potential presence of pygmy rabbits in the basin big sagebrush habitat and documenting the presence of all wildlife species encountered, including the presence of greater sage-grouse and other sensitive species. All wildlife observations were recorded on General Wildlife Observation Data Sheets (see Appendix B).

2.4 HABITAT MAP REFINEMENT

TRC Mariah biologists mapped habitat types within the MJ2PA (i.e., the JIDPA minus an approximately 320-acre parcel in the N½ of Section 23, T28N, R109W) in August 2000 to facilitate an analysis of greater sage-grouse habitat quality and quantity in the area. Four habitat types were identified based on relative sagebrush cover and density: 1) dense sagebrush, 2) moderately dense sagebrush, 3) basin big sagebrush, and 4) scattered/no sagebrush. Descriptions of these types are provided in TRC Mariah (2001a). The boundaries of the mapped units within the MJ2PA were confirmed and/or refined in September 2003 using a combination of GPS and hand-mapping of type boundaries. In addition, the mapping of the basin big sagebrush habitat along the entire length of Sand Draw across the JIDPA and the portion of Granite Wash in the vicinity of Wild Horse Reservoir was also refined and wetlands within the MJ2PA were identified and mapped (see Appendix A, Greater Sage-Grouse Map). In 2004, the dense sagebrush and moderately dense sagebrush habitat types were reclassified as moderate density sagebrush and low density sagebrush, respectively, to more accurately describe the prevalence of sagebrush in the two types; however, mapped boundaries did not change (see Appendix A, Greater Sage-Grouse Map).

2.5 GENERAL WILDLIFE

Observations of general wildlife were recorded during raptor activity and productivity surveys, species-specific investigations, the pedestrian reconnaissance of Sand Draw (see Section 2.3.5), and other activities associated with the Jonah and Anticline wildlife monitoring studies, site-specific investigations, and the Jonah Infill Drilling Project EIS. Results are presented in Appendix B (General Wildlife Observation Data Sheets). Additional observations were made by BLM personnel during on-site investigations conducted during APD, ROW application, and Sundry Notice review processes, and this information may be reviewed at the BLM PFO. No formal surveys for pronghorn antelope or other species/wildlife categories were conducted during 2004; however, big game observed during the winter aerial greater sage-grouse survey, as well as many incidental observations made during other monitoring activities, were recorded.

3.0 RESULTS

With the submission of the 2002 annual wildlife monitoring report, Operators completed 5 years of wildlife monitoring in compliance with the BLM ROD for the Jonah Field II natural gas project (Appendix D in BLM [1998a]) and the DR for the Modified Jonah Field II project (BLM 2000a). However, because operations continue in the JIDPA, Operators voluntarily committed to a continuation of annual wildlife monitoring in 2003 and again in 2004, with an annual report to be provided to the Pinedale BLM field office in early 2005. The Operators also agreed to continue wildlife monitoring in 2005, with an annual report provided to the BLM PFO in early 2006. This chapter presents the results of 2004 wildlife investigations on the JWSA and Chapter 4.0 identifies the proposed monitoring/protection measures that would be implemented by the BLM, WGFD, and/or an Operator-financed BLM-approved wildlife biologist in 2005.

3.1 RAPTORS

Table 3.1 provides information on the location, recent history, and activity status of known raptor/raven nests in the JWSA. For the purposes of development planning, an active nest is defined as one that has been used by raptors (not ravens) in at least 1 of the past 3 years. An "unknown" activity status is assigned to nests for which a complete history of use over the past 3 years is not available (i.e., the nest was not checked or not located in 1 or more of the past 3 years or the nest was newly recorded). Any nest newly recorded within the last 2 years has an unknown activity status because nest history for the past 3 years is incomplete.

Information on productivity, nearby project features, and proposed protection measures at active and unknown activity status nest sites within project-affected areas is presented in Table 3.2. Nest sites with unknown activity status are included in Table 3.2 because insufficient information is available for these sites to confirm an inactive status (i.e., no seasonal or surface occupancy stipulations required).

Table 3.1 Raptor Nest Locations and Activity Status, Jonah Field Wildlife Study Area, 2004.

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2]			Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
		2004	2003	2002			
AK16	A[7]	A	A	a[7]	2004		
AK17	A[7]	A	I	a[7]	2004		
AK18	A	A	A	a	2004		
AK30	A	I	a	I	2003		
AK39	A	I	I	a	2002		
AK50	A	I	A	I	2003		
AK52	A	A	I	a	2004		
AK80	I	I	I	I	Pre-1999		
AK88	A	A	A	a	2004		
AK92	A	I	a	I	2003		
AK97	A	I	A	I	2003		
AK142	A[7]	I	I	a[7]	2002		
AK143	A[7]	I	I	a[7]	2002		
AK146	A	A	I	NR	2004		
AK147	U	I	I	NR	Pre-2003		
AK181	A	A	NR	NR	2004		
AK273	A	A	NR	NR	2004		
AK276	A	A	NR	NR	2004		
BO19	I	I	I	I	1997[8]		
BO76	I	I	I	I	1998[8]		
BO77	I	I	I	I	2000		
BO86	A	I	I	A	2002		
BO117	I	I	I	I	2001		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
BO124	I	I	I	I	2001		
BO136	A	I	I	a	2002		
BO140	A	I	I	a	2002		
BO159	A	I	A	NR	2003		
BO166	A	I	a	NR	2003		
BO255	A	A	A	NR	2004		
CR108 (2 nests)	I	A-R	A-R	A-R	2004 (CR)		
CR125	I	A-R	I	A-R	2004 (CR)		
CR145	I	A-R	A-R	NR	2004 (CR)		
CR149	I	A-R	I	NR	2004 (CR)		
CR151	I	A-R	A-R	NR	2004 (CR)		
CR162	I	A-R	A-R	NR	2004 (CR)		
CR169	U	I	U[9]	NR	Pre-2004		
CR172	U	A-R	U[9]	NR	2004 (CR)		
CR173	U	I	U[9]	NR	Pre-2004		
CR179	I	A-R	NR	NR	2004 (CR)		
CR183	I	A-R	NR	NR	2004 (CR)		
CR214	I	A-R	NR	NR	2004 (CR)		
CR252	I	I	NR	NR	U		
CR253	I	I	NR	NR	U		
CR267	I	I	NR	NR	U		
FH1 (2 nests)	I	I	I	I	Pre-1998		
FH2 (2 nests)	I	I	I	I	Pre-1998		
FH4	I	I	I	I	2000		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH5	I	I	I	I	Pre-1996		
FH8	I	I	I	I	1996		
FH9	I	I	I	I	Pre-1998		
FH10	I	I	I	I	Pre-1998		
FH11	I	I	I	I	Pre-1996		
FH12 (2 nests)	I	I	I	I	Pre-1997		
FH14	A	a	A	A	2004		
FH21	I	I	I	I	Pre-1997		
FH25	I	I	I	I	Pre-1998		
FH26	I	I	I	I	2000		
FH28	U	I	I	U	U		
FH37 (2 nests)	A[7]	I	I	a[7]	2002		
FH38	A[7]	I	I	a[7]	2002		
FH42	I	I	I	I	Pre-1998		
FH43 (2 nests)	I	I	I	I	Pre-1998		
FH53	I	I	I	I	1998		
FH54 (2 nests)	I	I	I	I	Pre-1998		
FH55	I	I	I	I	Pre-1998		
FH56	I	I	I	I	Pre-1997		
FH57 (2 nests)	I	I	I	I	Pre-1997		
FH59 (3 nests)	A	A	I	I	2004		
FH60	I	I	I	I	Pre-1997		
FH62	I	I	I	I	Pre-1997		
FH67	I	I	I	I	Pre-1998		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH68	I	I	I	I	Pre-1997		
FH69	I	I	I	I	2000		
FH71	I	I	I	I	1997		
FH73	I	I	I	I	Pre-1996		
FH78	I	I	I	I	Pre-1999		
FH82	I	I	I	I	U		
FH85	I	I	I	I	Pre-1999		
FH87 (2 nests)	A	A (GE)	A (GE)	A (GE)	2004		
FH90	I	I	I	I	Pre-2000		
FH93	I	I	I	I	Pre-2000		
FH94	I	I	I	I	Pre-2000		
FH95	I	I	I	I	Pre-2000		
FH96	I	I	I	I	Pre-1999		
FH98	I	I	I	I	Pre-2001		
FH99	I	I	I	I	Pre-2001		
FH102	I	I	I	I	Pre-2001		
FH103 (2 nests)	A	I	A	I	2003		
FH104	I	I	I	I	Pre-1997		
FH109	I	I	I	I	Pre-2001		
FH112	I	I	I	I	Pre-2001		
FH115	I	I	I	I	Pre-2001		
FH118	I	I	I	I	Pre-2001		
FH126 (ANS)	I	I	I	I	n/a[10]		
FH128 (ANS)	I	I	I	I	n/a[10]		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH129	I	I	I	I	Pre-2002		
FH132	I	I	I	I	Pre-2002		
FH135	I	I	I	I	Pre-2002		
FH138	I	I	I	I	Pre-2002		
FH148	U	I	I	NR	Pre-2003		
FH152	A	I	A	NR	2003		
FH153	U	I	I	NR	Pre-2003		
FH154	U	I	I	NR	Pre-2003		
FH156	U	I	I	NR	Pre-2003		
FH157	U	I	I	NR	Pre-2003		
FH161	U	I	I	NR	Pre-2003		
FH164	A	A	I	NR	2004		
FH165	U	I	I	NR	Pre-2003		
FH167	U	I	U[9]	NR	Pre-2004		
FH168	U	I	U[9]	NR	Pre-2004		
FH170	U	I	U[9]	NR	Pre-2004		
FH171	U	I	U[9]	NR	Pre-2004		
FH174	U	I	U[9]	NR	Pre-2004		
FH176	U	I	U[9]	NR	Pre-2004		
FH177	U	I	U[9]	NR	Pre-2004		
FH178	A	I	NR (a?)	NR	2003?		
FH182	U	I	NR	NR	Pre-2004		
FH184	U	I	NR	NR	Pre-2004		
FH185	U	I	NR	NR	Pre-2004		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2]			Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
		2004	2003	2002			
FH186	U	I	NR	NR	Pre-2004		
FH187	U	I	NR	NR	Pre-2004		
FH188	U	I	NR	NR	Pre-2004		
FH189	U	I	NR	NR	Pre-2004		
FH190	U	I	NR	NR	Pre-2004		
FH191	A	A	NR	NR	2004		
FH192	U	I	NR	NR	Pre-2004		
FH193	U	I	NR	NR	Pre-2004		
FH194	A	a	NR	NR	2004		
FH195	U	I	NR	NR	Pre-2004		
FH196	U	I	NR	NR	Pre-2004		
FH197	U	I	NR	NR	Pre-2004		
FH198	U	I	NR	NR	Pre-2004		
FH199	U	I	NR	NR	Pre-2004		
FH200	U	I	NR	NR	Pre-2004		
FH202	U	I	NR	NR	Pre-2004		
FH203	U	I	NR	NR	Pre-2004		
FH204	U	I	NR	NR	Pre-2004		
FH205	U	I	NR	NR	Pre-2004		
FH206	U	I	NR	NR	Pre-2004		
FH207	U	I	NR	NR	Pre-2004		
FH208	A	a	NR	NR	2004		
FH209	U	I	NR	NR	Pre-2004		
FH210	U	I	NR	NR	Pre-2004		
FH211	A	a	NR	NR	Pre-2004		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH212	U	I	NR	NR	Pre-2004		
FH213	U	I	NR	NR	Pre-2004		
FH215	A	a	NR	NR	2004		
FH216	U	I	NR	NR	Pre-2004		
FH220	U	I	NR	NR	Pre-2004		
FH221	U	I	NR	NR	Pre-2004		
FH222	U	I	NR	NR	Pre-2004		
FH223	U	I	NR	NR	Pre-2004		
FH224	U	I	NR	NR	Pre-2004		
FH225	U	I	NR	NR	Pre-2004		
FH226	U	I	NR	NR	Pre-2004		
FH227	A	A	NR	NR	2004		
FH228	U	I	NR	NR	Pre-2004		
FH229	U	I	NR	NR	Pre-2004		
FH230	U	I	NR	NR	Pre-2004		
FH231	U	I	NR	NR	Pre-2004		
FH232	U	I	NR	NR	Pre-2004		
FH233	U	I	NR	NR	Pre-2004		
FH234	U	I	NR	NR	Pre-2004		
FH235	U	I	NR	NR	Pre-2004		
FH236	U	I	NR	NR	Pre-2004		
FH237	U	I	NR	NR	Pre-2004		
FH238	U	I	NR	NR	Pre-2004		
FH239	U	I	NR	NR	Pre-2004		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH240	A	A	NR	NR	2004		
FH241	U	I	NR	NR	Pre-2004		
FH242	U	I	NR	NR	Pre-2004		
FH243	U	I	NR	NR	Pre-2004		
FH244	U	I	NR	NR	Pre-2004		
FH245	U	I	NR	NR	Pre-2004		
FH246	U	I	NR	NR	Pre-2004		
FH247	U	I	NR	NR	Pre-2004		
FH248	U	I	NR	NR	Pre-2004		
FH249	U	I	NR	NR	Pre-2004		
FH250	U	I	NR	NR	Pre-2004		
FH251	U	I	NR	NR	Pre-2004		
FH257	U	I	NR	NR	Pre-2004		
FH258	U	I	NR	NR	Pre-2004		
FH259	U	I	NR	NR	Pre-2004		
FH260	U	I	NR	NR	Pre-2004		
FH261	U	I	NR	NR	Pre-2004		
FH263	U	I	NR	NR	Pre-2004		
FH264	U	I	NR	NR	Pre-2004		
FH265	U	I	NR	NR	Pre-2004		
FH269	U	I	NR	NR	Pre-2004		
FH270	U	I	NR	NR	Pre-2004		
FH271	U	I	NR	NR	Pre-2004		
FH272	U	I	NR	NR	Pre-2004		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
FH276[11]	U	I?	NR	NR	Unknown		
GE36	A	I	I	A	2002		
GE47	A	A	A	A	2004		
GE48	I	I	I	I	Pre-1996		
GE51	A	I	A	I	2003		
GE72	I	I	I	I	Pre-1998		
GE74[12]	A	I	I	A	2002		
GE218	U	I	NR	NR	Pre-2004		
ME100[13]	I	I	I	I	U[14]		
ME120[13]	I	I	I	I	U[14]		
ME121[13]	I	I	I	I	U[14]		
ME122[13]	I	I	I	I	U[14]		
ME134	A	I	I	A	2002		
OS158	A	A	A	NR	2004		
PF27	I	I	I	I	1997[8]		
PF41	I	I	I	I	1998[8]		
PF61	I	I	I	I	1997		
PF63	I	I	I	I	Pre-1998		
PF79	I	I	I	I	1999		
PF81	A	I	A	A	2003		
PF113	A	A	I	I	2004		
PF123	I	I	I	I	Pre-2001		
PF163	A	I	A	NR	2003		
PF219	A	A	NR	NR	2004		

Table 3.1 (Continued)

Nest No.[2,3]	Activity Status[4]	Activity by Year[1,2] 2004	2003	2002	Most Recent Activity[5]	Legal Location	UTM Coordinates[6]
PF268	A	A	NR	NR	2004		
RT160	A	A	A	NR	2004		
RT217	A	A	NR	NR	2004		
RT277	A	A	A	A	2004		
SE274	A	a	A	NR	2004		
UN133	I	I	I	I	Pre-2002		
UN275	U	I	NR	NR	Pre-2004		

1 A = active; A-R = used by ravens; a = likely active; (e.g., individual[s] may have been observed during only one visit and may not have exhibited defensive behavior, but the bird[s] appeared to be active in the territory; or individual[s] were observed late in the nesting season with no young, but with an apparent affinity for the immediate area. This designation is often used in association with cavity-nesting birds, where it may be difficult to determine the presence of a bird on the nest, particularly if the number of nest visits is limited or if the nest is abandoned or the nesting attempt fails early in the nesting sequence, as often is the case with ferruginous hawks.) I = inactive; NR = nest had not yet been recorded; U = unknown. Species codes in parentheses indicate the nest was used by a species other than that designated in the nest code.

2 AK = American kestrel; BO = burrowing owl; CR = common raven; FH = ferruginous hawk; GE = golden eagle; ME = merlin; OS = osprey; PF = prairie falcon; RT = red-tailed hawk; SE = short-eared owl; UN = unknown species.

3 Information for nests that have been removed from monitoring is provided in Table 3.3.

4 Overall activity status is based on the BLM definition of an active nest as one which has been used by raptors in at least 1 of the past 3 years. For overall activity status, nests for which activity was likely, but not confirmed, were considered active (A). Nests which were assigned an unknown activity status (U) lack a conclusive activity determination for at least 1 of the past 3 years and/or were newly recorded and have not been monitored for 3 consecutive years. Nests confirmed inactive in all of the past 3 years are deemed inactive (I). Nests designated A-R were used by ravens in at least one of the past 3 years but were not used by raptors and, thus, are not considered active for planning and development purposes.

5 Column denotes most recent activity by a raptor species unless otherwise indicated. (CR) following the date indicates that common ravens most recently used a nest for which no history of raptor use has been recorded.

6 1983 NAD (Zone 12); E = easting; N = northing.

7 One of the two nests (i.e., AK16 or AK17; AK142 or AK143; and FH37 or FH38) was likely active in 2002.

8 Date is of last confirmed activity, but activity status was unknown in at least one of the years since the last known activity; thus, more recent activity may have occurred.

9 Nest was newly recorded in the fall of 2003; thus, activity for that year is unknown.

10 Artificial nest structure erected in September 2001. No prior nest history exists.

11 Location obtained using Garmin Rino 110 GPS unit; will verify location with Trimble GeoExplorer 3 in 2005.

12 Redesignated from UN to GE in 2002.

13 Redesignated from SS (sharp-shinned hawk) to ME in 2002.

14 One of the four existing ME nests (ME100, ME120, ME121, ME122) was active in 2001, but the exact nest was undetermined.

Table 3.2 Summary of Active Raptor Nests and Nests with Unknown Activity Within 0.5 Mi (1.0 Mi for Ferruginous Hawks) of the Jonah Infill Drilling Project Area, 2004.

Species/ Nest No.[1,2]	Activity[3]	Legal Location	Nest Condition[4]	Seasonal Buffer Radius	Most Recent Nest Production[5]			Nearby Project Features[6]	Mitigation/ Actions[7]
					Eggs	Nestlings	Fledglings		
AK16	A[8]	[redacted]	U, 2004	0.5 mi	≥4-5, 2004	≥4-5, 2004	4-5, 2004	Four existing well locations and associated roads and pipelines within 0.5 mi	Continue activity status and productivity monitoring
AK17	A[8]	[redacted]	U, 2004	0.5 mi	≥4-5, 2004	≥4-5, 2004	4-5, 2004	One existing well location and associated roads within 0.5 mi	Continue activity status and productivity monitoring
AK18	A	[redacted]	U, 2004	0.5 mi	≥4, 2004	≥4, 2004	4, 2004	Existing road and pipeline within 0.5 mi	Continue activity status and productivity monitoring
AK142	A[8]	[redacted]	Excellent, 2004	0.5 mi	U, 2002	U, 2002	U, 2002	Two existing well locations and associated roads within 0.5 mi	Continue activity status and productivity monitoring
AK143	A[8]	[redacted]	Excellent, 2004	0.5 mi	U, 2002	U, 2002	U, 2002	Two existing well locations and associated roads within 0.5 mi	Continue activity status and productivity monitoring
AK146	A	[redacted]	Excellent, 2004	0.5 mi	≥4, 2004	≥4, 2004	4, 2004	One existing well location and associated roads within 0.5 mi	Continue activity status and productivity monitoring
AK147	U	[redacted]	Excellent, 2004	0.5 mi	U	U	U	Two existing well locations and associated roads within 0.5 mi	Continue activity status and productivity monitoring
AK273	A	[redacted]	Excellent, 2004	0.5 mi	≥4, 2004	≥4, 2004	4, 2004	One existing well location and associated roads within 0.5 mi	Continue activity status and productivity monitoring
BO166	U[9]	[redacted]	Good, 2004	0.5 mi	U	U	U	Existing resource roads within 825 ft; two existing well locations and associated resource and collector roads within 0.5 mi	Continue activity status and productivity monitoring
FH14[10]	A	[redacted]	Excellent, 2004	1.0 mi	U, 2004	0, 2004	0, 2004	Numerous existing project features within 1.0 mi; limited alternative nest sites available in Territory 5	Continue activity status and productivity monitoring; if Territory 5 is inactive in 2005, potential development of ANS(s)
FH165	U[9]	[redacted]	Very poor, 2004	1.0 mi	U	U	U	One existing well location within 1.0 mi	Continue activity status and productivity monitoring
FH215	A	[redacted]	Excellent and newly built, 2004	1.0 mi	U, 2004	0, 2004	0, 2004	One existing well and associated existing roads and pipelines within 1.0 mi	Continue activity status and productivity monitoring; *measure noise level at nest*

Table 3.2 (Continued)

Species/ Nest No.[1,2]	Activity[3]	Legal Location	Nest Condition[4]	Seasonal Buffer Radius	Most Recent Nest Production[5]			Nearby Project Features[6]	Mitigation/ Actions[7]
					Eggs	Nestlings	Fledglings		
FH246	U	[redacted]	Fair to poor, 2004	1.0 mi	U	U	U	Two existing well locations, several existing roads, a collector road, and pipelines within 1.0 mi	Continue activity status and productivity monitoring
FH247	U	[redacted]	Very poor, 2004	1.0 mi	U	U	U	Two existing well locations and associated roads and a collector road within 1.0 mi	Continue activity status and productivity monitoring
FH248	U	[redacted]	Poor, 2004	1.0 mi	U	U	U	Two existing well location(s) and associated roads, a collector road within 1.0 mi	Continue activity status and productivity monitoring
FH249	U	[redacted]	Fair to poor, 2004	1.0 mi	U	U	U	Two existing well location(s) and associated roads, a collector road within 1.0 mi	Continue activity status and productivity monitoring
FH250	U	[redacted]	Fair to poor, 2004	1.0 mi	U	U	U	Two existing well location(s) and associated roads, a collector road within 1.0 mi	Continue activity status and productivity monitoring
FH251	U	[redacted]	Poor, 2004	1.0 mi	U	U	U	One existing well location(s) and associated roads, a collector road within 1.0 mi	Continue activity status and productivity monitoring
FH276	U	[redacted]	Good, 2004	1.0 mi	U	U	U	Numerous existing well locations and associated roads within 1.0 mi	Continue activity status and productivity monitoring
SE274	A	[redacted]	U, 2004	0.5 mi	U, 2004	U, 2004	U, 2004	Existing road and pipeline within 0.5 mi	Continue activity status and productivity monitoring
UN275	U	[redacted]	Fair, but small, 2004	0.5 mi	U	U	U	Four existing well location(s) and associated roads and pipeline within 0.5 mi	Continue activity status and productivity monitoring

1 See Appendix A, Raptor Nest Map, for nest locations.
2 AK = American kestrel; BO = burrowing owl; FH = ferruginous hawk; SE = short-eared owl; UN = unknown raptor.
3 Active nests (A) are defined by activity or likely activity in at least one of the past three nesting seasons. Nests for which overall activity status cannot be determined because data are lacking in at least one of the past 3 years (e.g., nests which were newly recorded within the last 2 years) are assigned an unknown (U) activity status. See Appendix C, Raptor Nesting Records, for further detail.
4 Most recently recorded nest condition; year is indicated. U = unknown (i.e., either not recorded, or in the case of cavity and burrow nesters, not discernable).
5 Presents number of items and year for most recent activity in the past 3 years. U = unknown.
6 Based on GIS analysis of Appendix A, Project Features Map. Map was developed from best current data available from the Operators, Wyoming Oil and Gas Conservation Commission database (accessed January 2005), a May 2003 BLM digital orthophoto of the vicinity, and July 2004 Operator-provided aerial imagery.
7 Seasonal and standard avoidance measures are not included since they would be applied as necessary for all active nests.
8 Either AK16 or AK17 was occupied in 2002, but probably not both and either AK142 or AK143 was occupied in 2002, but probably not both.
9 Nest newly recorded in the fall of 2003; thus, activity for that year is unknown.
10 Used by golden eagles in 1999.

One hundred raptor/raven nests were newly recorded in 2004 (see Tables 3.1 and 3.2): three American kestrel nests (AK181, 273, and 276); one burrowing owl nest (BO255); six common raven nests (CR183, 214, 252-254,and 257); 83 ferruginous hawk nests (FH178, 180, 182, 184-213, 215-216, 220-251, 256-266, 269-272, and 276); one golden eagle nest (GE218); two prairie falcon nests (PF219 and 268); two red-tailed hawk nests (RT217 and 277); one short-eared owl nest site (SE274); and one unknown raptor/raven nest (UN275). Six of the newly recorded nests (i.e., CR254; FH180, 201, 256, 262, and 266) were immediately delisted. CR254 was newly built in 2004, but deteriorated and fell from the windmill before the end of the nesting season. The remaining five (all ferruginous hawk nests) were in very poor condition at the time of recordation but were recorded to assist in determining territory boundaries and to provide an indication of where nests might be rebuilt in future years.

An additional 49 previously recorded nests have been delisted as of the end of the season in 2004. Ten of the 49 are unknown raptor nests obtained from BLM overlays that have never been located; three are duplicate codes for currently monitored nests. The remaining 36 are nests that have deteriorated or no longer exist. The delisted nests are depicted with red labels on the Raptor Nest Map in Appendix A and are listed in Table 3.3. Once a nest is delisted, it is no longer automatically monitored; however, many of these nests/nest sites are easily observed in the course of ongoing surveys, and monitoring generally is continued in case the nest is rebuilt or a new nest is constructed nearby.

Two hundred twenty-three intact nests/nest sites were recorded in the JWSA in 2004 (see Table 3.1). Thirty (13.5%) of the 223 raptor/common raven nests on and adjacent to the JWSA were used by raptors in 2004, compared with 19 of 134 (14.2%) and 17 of 129 (13.2%) in 2002. Ten (4.5%) additional nests were used by common ravens--one more than was recorded in 2003 and six more than in 2002 (see Table 3.1 and Appendices B and C). Because ravens are neither raptors nor a species of special concern, their nests were not checked for productivity in 2004 unless the nests were easily observed during the course of scheduled surveys. A number of active raptor nests in the area occur at distances greater than the seasonal restriction buffer (i.e.,

Table 3.3 Raptor Nest Locations Removed from Inventory, Jonah Field Wildlife Study Area, 2004.

Nest Number[1]	Most Recent Activity	Legal Location	UTM Coordinates[2]	Comments
BO23	1997[3]			Area disturbed; burrow not located for several years; delisted in 2003
BO75	1998			Exact location never mapped; pipeline ROW constructed through the area; delisted in 2002
CR105	2003[4]			Well tanks and stairs removed; nest destroyed; delisted in 2004
CR106	2003[4]			Well tanks and stairs removed; nest destroyed; delisted in 2004
CR107	2001[3,4]			Well tanks and stairs removed; nest destroyed; delisted in 2004
CR111	2001[4]			Nest gone and delisted in 2002
CR114	2001[4]			Nest gone and delisted in 2002
CR116	2003[4]			Nest fallen to the ground; delisted in 2004
CR127	2001[4]			Nest gone and delisted in 2002
CR131	2002[4]			Nest fallen to the ground in 2003 and not rebuilt in 2004; delisted in 2004
CR139	2002[4]			Nest gone in late summer of 2002; delisted the same year
CR144	Pre-2003[4]			Nest gone and delisted in 2004
CR150	Pre-2003[4]			Nest removed in midsummer of 2003; delisted the same year
CR155	2003[4]			Conveyor belt removed; nest gone and delisted in 2004
CR254	2004[4]			Nesting attempt in 2004 fell before use; delisted in 2004
FH3	U			Not found 1999-2000; nest gone and delisted in 2001
FH6	Pre-1998			Nest in very poor condition and delisted in 2003
FH7	Pre-1998			Nest in very poor condition and delisted in 2003
FH13	Pre-1998			Nest gone and delisted in 2002
FH15	1999			Nest gone and delisted in 2002
FH20	Pre-1997			Nest gone in 2001; delisted in 2002

Table 3.3 (Continued)

Nest Number[1]	Most Recent Activity	Legal Location	UTM Coordinates[2]	Comments
FH22	Pre-1998	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH24	2000	[redacted]	[redacted]	Nest gone in 2001; delisted in 2003
FH29	U	[redacted]	[redacted]	Nest gone and delisted in 2001
FH58	Pre-1997	[redacted]	[redacted]	Nest is the same as FH56;only the FH58 nest code has been delisted
FH64	Pre-1997	[redacted]	[redacted]	Nest gone and delisted in 2003
FH65	Pre-1997	[redacted]	[redacted]	Nest gone and delisted in 2002
FH66 (2 nests)	Pre-1997	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH70	Pre-1998	[redacted]	[redacted]	Nest gone and delisted in 2003
FH83	Pre-1999	[redacted]	[redacted]	Nest gone and delisted in 2002
FH84	Pre-1999	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH89	Pre-2000	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH91	2002	[redacted]	[redacted]	Nest is the same as GE74; only the FH91 nest code has been delisted
FH101	Pre-2001	[redacted]	[redacted]	Only a few sticks left in 2003; delisted the same year
FH110	Pre-1998	[redacted]	[redacted]	Nest in very poor condition in 2002; delisted in 2003
FH119	Pre-1999	[redacted]	[redacted]	Nest is the same as FH96; only the FH119 nest code has been delisted
FH130	Pre-2002	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH137	Pre-2002	[redacted]	[redacted]	Nest in very poor condition and delisted in 2003
FH141	Pre-2002	[redacted]	[redacted]	Nest gone and delisted in 2004
FH175	Pre-2003	[redacted]	[redacted]	Nest on ground and delisted in 2003
FH180	Pre-2004	[redacted]	[redacted]	Nest in very poor condition and delisted in 2004
FH201	Pre-2004	[redacted]	[redacted]	Nest in poor condition and run over by seismic line; sticks scattered; delisted in 2004
FH256	Pre-2004	[redacted]	[redacted]	Nest in very poor condition; delisted in 2004

Table 3.3 (Continued)

Nest Number[1]	Most Recent Activity	Legal Location	UTM Coordinates[2]	Comments
FH262	Pre-2004	[redacted]	[redacted]	Nest in very poor condition; delisted in 2004
FH266	Pre-2004	[redacted]	[redacted]	Nest in very poor condition; delisted in 2004
UN31	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN32	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN33	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN34	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN35	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN40	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN44	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN45	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN46	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located
UN49	U	n/a[5]	n/a	Nest obtained from BLM overlays, never located

[1] BO = burrowing owl; CR = common raven; FH = ferruginous hawk; UN = unknown species.
[2] 1983 NAD (Zone 12); E = easting; N = northing; n/a = not available.
[3] Date is of last confirmed activity, but activity status was unknown in at least one of the years since the last known activity; thus, more recent activity may have occurred.
[4] Denotes date of last raven activity; raptor use has not been recorded.
[5] Original location data from BLM overlays could not be field-verified and may have been incorrect.

Table 3.4 2002-2004 Activity Status of Ferruginous Hawk Nesting Territories, Jonah Field Wildlife Study Area. [1]

Territory	Nests Included in Territory [2]	Activity Status [3]		
		2004	2003	2002
1	68-69, **70**, 71, 99, 118, 129, 216	I	I	I
2	62, **64-66**, 67, **84**-85, 90, 96, **101**, 102, **130**, **137**	I	I	I
3	56-57, 60, **83**, **180**	I	I	I
4	26, 93-95, 112	I	I	I
5	**13**, 14, **15**, **141**	a (FH14) (failed)	A (FH14) (failed)	A (FH14) (failed)
6	8-12	I	I	I
7	**20**, 21, **22**, 73, 98	I	I	I
8	53-55, 82, 109, **110**	I	I	I
9	42-43, 148, 161	I	I	U (no record for FH148 and FH161)
10	37-38, 132	I	I	a (territory active, but exact nest unknown) (apparently failed)
11	59, 103-104	A (FH59) (failed early)	A (FH103) (fledged 2)	I
12	1, 138	I	I	I
13	28, **29**, 152, 164	A (FH164) (fledged 1; one dead egg also on nest)	A (FH152) (fledged 1)	U (no record for FH152 and FH164)
14	153, 154, 157	I	I	U (no record for FH153, FH154, and FH157)
15	135, 156, 182	I	U (no record for FH182)	U (no record for FH156)
16	25, 170, 171, 174, **175**, 176, 177	I	U (no record for any of the nests but FH25)	U (no record for any of the nests but FH25)
17	244-245	I	U (no record for either of the nests)	U (no record for either of the nests)
18	178, 184-186, 211-213	a (FH211) (appears to have been active and failed early)	a? (FH178) (appears to have been active in 2003 based on nest condition and eggshell in 2004)	U (no record for any of the nests)
19	233-235, 258-261, **262**, 263-265	I	U (no record for any of the nests)	U (no record for any of the nests)
20	236-243, **266**	A (FH240) (failed early)	U (no record for any of the nests)	U (no record for any of the nests)

Table 3.4 (Continued)

Territory	Nests Included in Territory[2]	Activity Status[3] 2004	2003	2002
21	220-225, 269-272	I	U (no record for any of the nests)	U (no record for any of the nests)
22	226-231	A (FH227) (failed early)	U (no record for any of the nests)	U (no record for any of the nests)
23	187-193, 210	A (FH191) (abandoned before nest completed)	U (no record for any of the nests)	U (no record for any of the nests)
24	195-200, **201**, 202-209, **256**	a (FH208) (nest likely active but abandoned before egglaying)	U (no record for any of the nests)	U (no record for any of the nests)
25	232, 257	I	U (no record for either nest)	U (no record for either nest)
26	7, 78, 246-251	I	U (no record for FH246-251)	U (no record for FH246-251)
27	2, **3**, 4-5, **6**, 115, 126, 128, 215	A (FH215) (nest newly built, but abandoned or failed early)	I	I

[1] See Appendix A, Raptor Map, for locations.
[2] Nests in bold type have been delisted and are no longer regularly monitored (see Table 3.3). No nesting territory is established for nests FH**24**, 87, **89**, 165, 167, 168, 194, and 276. Nest FH**58** is the same structure as FH56, **FH91** is the same structure as GE74, and **FH119** is the same structure as FH90.
[3] Further detail is provided in Appendix C, Raptor Nesting Records; I = inactive; a = likely active; A = active; U = unknown (not all nests in the territory were checked for activity in the year indicated). Nests number in parentheses indicates which nest in the territory was active.

1.0 mi for ferruginous hawks and 0.5 mi for all other raptor species) from project activities (i.e., where raptor productivity monitoring is not required); thus, productivity data for those nests may not be available (see Appendix C).

The addition of 83 newly recorded ferruginous hawk nests in 2004 resulted in the addition of 11 new ferruginous hawk nesting territories, bringing to 27 the number of nesting territories defined within the JWSA (see Appendix A, Raptor Nest Map). At least 10 (37%) of the 27 territories have been occupied by ferruginous hawks at least once during the last 3 years (2002-2004) (Table 3.4). Overall activity status for nine additional territories (33%) is unknown because complete data for the past 3 years are not available for at least some of the nests in each of those territories (i.e., either the nests were not checked in at least 1 of the last 3 years or the nests were newly recorded and do not yet have 3 years of nest history). Territory 5 has been occupied and failed in each of the past 3 years; Territory 10 was likely occupied in 2002 and apparently failed early; and Territories 11 and 13 were both occupied in 2003 and 2004. Of the newly recorded territories, Territory 18 appears to have been occupied in 2003 and 2004, with no young produced in 2004; and Territories 20, 22, 23, 24, and 27 all appear to have been occupied in 2004, and all either were abandoned before egg-laying or failed before young hatched.

FH24, 87, 89, 165, 167, 168, 194, and 276 are apparently isolated nests and have not been assigned territories. FH24 was last used by ferruginous hawks in 2000 and was subsequently delisted in 2003. FH89 has not been used in the past 3 years and was delisted in 2003; FH165, 167, and 168 were newly recorded in the fall of 2003 and were unoccupied in 2004, and FH194 and 276 were newly recorded as unoccupied nests in 2004. FH87 was used by golden eagles in 2002, 2003, and 2004, failing during the incubating or nestling stage in each of the 3 years.

Overall, 149 intact ferruginous hawk nests occur within the JWSA and an additional 30 nests have been delisted (see Appendix C). Ten of the 149 intact nests (6.7%) were occupied by ferruginous hawks in 2004. FH215 was newly built and abandoned prior to egg-laying.

FH14, 191, 208, 211, and 240 also failed, probably prior to egg-laying. FH59, 194, and 227 failed, probably during incubation and prior to hatching. FH164 successfully fledged one young. Six additional sites (i.e., FH37, 38, 87, 103, 152, and 178) have been used during at least 1 of the past 3 years, whereas 3-year activity status for 85 of the remaining nests is unknown. Ten of the nests with an active or unknown 3-year status (i.e., FH14, 165, 215, 246-251, and 276) are within 1.0 mi of the JIDPA.

Existing project features proximal to active ferruginous hawk nests and nests with unknown activity status are identified in Table 3.2 and Appendix A. Project features/developments on the JIDPA exist and are further planned proximal to nest Territories 5, 6, 7, 26, and 27. Other activities (e.g., recreational activities/off-road vehicle use, livestock grazing, predator/prey interactions, climate) will continue to occur in these and other territories as well.

Two ANSs (i.e., FH126 and FH128) were erected in Territory 6 in the fall of 2001 (territory boundaries were subsequently revised and the area is now Territory 27). Additional nest material was attached to the platforms in summer of 2002 with the hopes of attracting a nesting pair to the area. To date, no use of these structures has been observed.

Ferruginous hawk nesting Territory 7 was not occupied during the past 3 years, and all known nest sites in the territory are at suboptimal locations (i.e., on the ground with easy access by predators); therefore, nesting in Territory 7 is unlikely to occur in all but the most active nesting years when all other nearby nesting territories are occupied. It is also possible that nest Territories 5, 6, 7, 26, and 27 and nest sites FH24 and FH89 will remain unused or will have limited success during the life of the Jonah Field. Mitigation measures as defined in Section 4.1 are recommended for ferruginous hawks 2005.

Nine (50%) of the 18 American kestrel nests (i.e., AK16, 17, 18, 52, 88, 146, 181, 273, and 276) in the JWSA were occupied in 2004, compared to seven in 2003. Productivity for four of the nests is unknown; the remaining five nests produced a total of 20+ fledglings. Sixteen (89%)

of the kestrel nests currently recorded within the JWSA are listed as active, one is listed as inactive, and one is listed as unknown. Eight of the kestrel nests with an active status are within 0.5 mi of the JIDPA (see Table 3.2 and Appendix A [Project Features Map]), as is one kestrel nest with unknown activity status.

Eleven burrowing owl nest sites are currently recorded in the JWSA, and two additional sites have been delisted. Of the 11 existing nest sites, one (9%) was occupied in 2004, compared to two of 10 (20%) in 2003 and three (33%) of nine known sites used in 2002. BO255 was confirmed occupied; however, productivity is unknown. Six of the burrowing owl nests have been used within the past 3 years, but only one of those (BO166) occurs within the JIDPA.

Seven golden eagle nests (four active, two inactive, and one with an unknown activity status) are recorded within the JWSA. One (14%) of the nests (GE47) was occupied by golden eagles in 2004, compared to two of six (33%) nests in 2003 and three of six (50%) in 2002. The nest was abandoned or failed early in the nesting season. In addition, FH87 was used by golden eagles in 2004, as it has been every year since 2002, but the nest failed early in the season for the third year in a row, with one downy chick last seen on the nest on May 6. No active golden eagle nest occurs within 0.5 mi of the JIDPA.

Eleven prairie falcon nest sites (five active and six inactive) occur within the JWSA. Three (27%) of the nests were occupied in 2004, compared to two of nine (22%) nests in 2003 and one of eight (13%) known prairie falcon nests in 2002. PF113 fledged at least three young and newly recorded PF219 and PF268 fledged an undetermined number of young and at least four young, respectively. None of the prairie falcon nests is within 0.5 mi of the JIDPA.

Five merlin nests (ME100, 120-122, and 134) representing the territory of one pair are recorded within the JWSA. One of the five (ME134) has been used in the past 3 years. In 2003 and 2004, the pair was not observed during any of the visits to the territory, and none of the known nests was occupied. Given the aggressive defense of occupied nests displayed in 2001 and 2002, the

pair apparently did not nest in the vicinity of the known nests in 2003 or 2004. None of the five nests are within 0.5 mi of the JIDPA.

Three red-tailed hawk nests (all active) are recorded within or just outside the JWSA. All three nests were occupied in 2004, although the nest attempts were probably the result of only two pairs. The original RT160 nest deteriorated over the 2003-2004 winter and was partially rebuilt early in the 2004 nesting season, but the rebuilt nest subsequently fell from the tree sometime in May. The same pair then built RT217 directly adjacent to the failed RT160 nest site, and an adult was observed incubating on May 30. However, that nest attempt also failed by June 23, when no birds or sign of activity was observed in the area. RT277 is on the New Fork River and, in the past, was monitored as part of the Pinedale Anticline wildlife studies under the designation of RT108. Since the nest is outside the PAWSA but within the JWSA, the nest was renamed under the Jonah nest numbering system in 2004. The nest was built in 2001, but has not been occupied in past years. Four juveniles fledged from the nest in 2004. All three of the red-tailed hawk nests are more than 0.5 mi from the JIDPA.

One osprey nest is just outside the western edge of the JWSA, but because of its close proximity to monitored nests and the ease with which it can be checked in the course of scheduled surveys, it was added to the list of monitored nests. The nest is an ANS erected in 2003 on private land adjacent to the New Fork River. It was occupied but abandoned early in 2003, and in 2004, it again was occupied, with an adult incubating on May 30. However, by June 21, the nest attempt had failed and no osprey were observed in the area. The nest is more than 0.5 mi from the JIDPA.

One short-eared owl nest site was recorded in 2004 along Sand Draw during a pedestrian reconnaissance of the drainage. The exact location of the nest is undetermined, but 2004 was the second consecutive year the owls were observed in the immediate vicinity. In 2003, three young were observed with an adult in the area. In 2004, at least one adult was observed. Thus, a pair almost certainly has used the area as a nest site in the last 2 years, and investigation in

future years is merited. Short-eared owls nest on the ground, and their nests consist of shallow hollows sparsely lined with vegetation (Baicich and Harrison 1997), making observation of the nest itself very difficult. Monitoring of the vicinity may provide information as to the activity and productivity of short-eared owls in the area. The site is within the JIDPA.

Two nests of an undetermined species (UN133 and UN275) are known to occur within the JWSA, and an additional 10 nests have been permanently delisted (see Appendix C). UN133 was recorded as unoccupied in 2002 and 2003 and is more than 1.0 mi from the JIDPA. UN275 was newly recorded in 2004 during a pedestrian reconnaissance of Sand Draw and is within the JIDPA. The nest is a somewhat smallish structure atop a basin big sagebrush along the drainage channel, and, in July, it showed no sign of recent use. It is most likely a common raven or American crow nest.

Fifteen intact common raven nests were recorded within the JWSA in 2004, and an additional 13 have been delisted (see Appendix C). Ten (67%) of the 15 have been used by ravens in the past 3 years. Ten (67%) of the nests--CR108, 125, 145, 149, 151, 162, 172, 179, 183, and 214--were occupied by ravens in 2004, compared with nine of 15 nests (60%) in 2003. The nests produced a total of at least 20 young, with one or more young each produced at CR145 and CR151; two at CR172; and four each at CR125, CR162, CR183, and CR214. CR108 failed when the branch holding the occupied nest broke in a wind storm and fell to the ground. Productivity at CR149 and CR179 is unknown.

3.2 GREATER SAGE-GROUSE

In the past several years, an effort has been made by TRC Mariah, Wyoming COOP, and BLM personnel to obtain GPS perimeter data for greater sage-grouse leks; however, the data were collected using several different GPS models with varying precision capabilities and, in some cases, several different projections were used. On November 22, 2004, personnel from WGFD, BLM PFO, and TRC Mariah met to address and correct locational discrepancies among sage-

grouse lek location databases. Duplicate, outdated, and incorrect lek locations were deleted from the database, and a final GIS master database was created with input from biologists with on-the-ground knowledge of the lek locations and those who had collected most of the GPS data. Because the correct location for Lek 24 could not be verified, buffers have been placed around each of the three alternate locations until the actual lek location is confirmed. The updated UTMs for each lek (approximate center point for leks with GPS polygons) are provided in the Greater Sage-Grouse Lek Records (Appendix D). Approximate legal locations for leks within the JWSA are provided in Table 3.5.

During the aforementioned meeting, WGFD, in consultation with BLM, also removed a number of previously monitored lek locations from consideration as leks because either 1) they never initially met WGFD lek criteria or 2) they appear to represent areas where birds had been observed after departure from an established lek. These delisted locations are identified on Table 3.6 and in Appendix D and comprise 12 of the 24 previously monitored lek locations within the JWSA. Eight of the 12 locations were recommended for discontinuation of monitoring as early as 2000 (TRC Mariah 2001a). It was also determined that, according to WGFD records, Lek 3 (Sand Draw Reservoir/Sand Draw #4) may consist of two separate leks, although previous lek history for the sites has been combined. For the purpose of this report, the site is treated as two components of a single lek until it can be confirmed that two separate leks exist. During the meeting, it was also determined that Lek 25 is within 2.0 mi of the JWSA; thus, data for that lek have been included in this report.

Table 3.5 presents a summary of greater sage-grouse lek activity on the JWSA over the past 3 years, as well as nearby project features and proposed monitoring and other actions (see Appendix D, Greater Sage-Grouse Lek Records, for further detail). Table 3.6 presents information on lek use from 1992 through 2004, including final data through 2004 for delisted leks. Leks 23, 24, and 25 are adjacent to but outside the JWSA--Lek 23 is shown on the Greater Sage-Grouse Map (Appendix A), but Leks 24 and 25 are outside the mapped area and only their 2.0-mi buffers show on the map. Available data for these leks are included in Table 3.6.

Table 3.5 Summary of Greater Sage-Grouse Lek Use and Potential Impacts for Occupied Leks within 2.0 Mi of the Jonah Field Wildlife Study Area and Proposed Monitoring for 2005.[1]

Lek Name[2]	Approximate Location	Status[3]	Use	Nearby Project Features[4]	Monitoring/ Other Actions[5]
Stud Horse Butte East		O	Consistent use; occupied all 10 years surveyed since 1992	Four existing well locations and associated roads and a BP injection/disposal well within 1.0 mi; numerous additional roads and well locations and the Haliburton yard 1.0-2.0 mi from lek	Monitor attendance three times in 2005
Sand Draw #3		O	Consistent use; occupied all 9 years surveyed since 1992; not surveyed in 2002; maximum male attendance of seven males in 2004	Numerous existing well locations, pipelines, and roads within 1.0 mi; additional existing well locations, pipelines, and roads 1.0-2.0 mi from lek	Monitor attendance three times and GPS lek perimeter in 2005
Sand Draw Reservoir/Sand Draw #4		O	Consistent use; occupied 8 of the 9 years surveyed since 1992; in the one year it was considered unoccupied, only one visit was made to the lek	One existing well location and road within 1.0 mi; several proposed and existing well locations, roads, and pipelines 1.0-2.0 mi from lek	Monitor attendance three times in 2005; determine if these are two separate leks; confirm GPS location of each if more than one lek is present
Clay Hill		O	Decreasing maximum male attendance since 1996; inactive in 2002 and 2004; one male observed in 2003	Numerous existing well locations, pipelines, and roads within 1.0 mi; additional existing well locations and roads 1.0-2.0 mi from lek	Monitor attendance three times and GPS lek perimeter in 2005
Yellowpoint Ridge		O	Consistent use; active 8 of the 9 years surveyed since 1992; not surveyed in 2002; maximum male attendance of two in 2004	Two existing well locations and one road within 1.0 mi; numerous existing well locations, pipelines, and roads and the Luman and Yellowpoint Compressor Stations 1.0-2.0 mi from lek	Monitor attendance three times in 2005
Alkali Draw		O	Consistent use; active all 8 years surveyed since 1992; maximum male attendance fell sharply to 13 in 2004	Ten existing and four proposed well locations, and associated existing roads within 2.0 mi	Monitor attendance three times and GPS lek perimeter in 2005
The Rocks		O	Consistent use; active all 8 years surveyed since 1992; maximum male attendance of 16 in 2004; attendance declining sharply in 2003 and 2004	Five existing and 12 proposed well locations and associated roads within 1.0 mi; additional existing and proposed well locations, roads, and the Falcon Compressor Station 1.0-2.0 mi from lek	Monitor attendance three times in 2005

Table 3.5 (Continued)

Lek Name[2]	Approximate Location	Status[3]	Use	Nearby Project Features[4]	Monitoring/ Other Actions[5]
Buckhorn Well #1	[redacted]	O	Consistent limited use from when first recorded in 1999 to 2001; inactive in 2002 and 2004; checked one time in 2003, with no birds observed	Numerous existing and proposed well locations and associated roads and pipelines within 1.0 mi; additional proposed and existing well locations, roads, and pipelines within 1.0-2.0 mi	Monitor attendance three times and GPS lek perimeter in 2005
Shelter Cabin Reservoir	[redacted]	O	Consistent heavy use since first located in 1999, but attendance declining since 2000; maximum male attendance of 30 in 2004	Two existing and one proposed well locations and existing collector road within 0.25 mi; seven proposed and numerous existing well locations, resource roads, and pipelines within 1.0-2.0 mi	Monitor attendance three times in 2005
Prairie Dog Town	[redacted]	O	First located in 2000; active 3 of the 4 years surveyed; not surveyed in 2003	One collector road within 0.5 mi; one proposed well location within 1.0 mi; an additional road and one proposed well location within 2.0 mi	Monitor attendance three times and GPS lek perimeter in 2005
Antelope State	[redacted]	O	Active once when first recorded in 2000; not used in 2001-2004	Existing roads and pipelines and Highway 191within 1.0 mi; additional existing well locations, pipelines, and roads within 2.0 mi of lek	Monitor attendance three times and GPS lek perimeter in 2005
Little Fred Satellite[6]	[redacted]	O	Active in 3 of the 4 years surveyed since 1992; not surveyed in 2002 or 2003; inactive in 2004	One existing and one proposed well locations within 1.0 mi; Highway 351 and several existing and proposed well locations within 2.0 mi	Monitor attendance three times in 2005
Big Fred Satellite		O	Active the first year recorded (1998); not surveyed 1999-2004	One existing and one proposed well locations within 1.0 mi; several proposed well locations within 1.0-2.0 mi	Monitor attendance three times in 2005 and GPS lek perimeter

1 See Appendix A, Greater Sage-Grouse Map, and Appendix D, Greater Sage-Grouse Lek Records, for additional information.
2 See Table 3.6 for alternate lek names.
3 O = occupied. Status is based on the criteria described in BLM (2004) (i.e., occupied leks are those which have been active during at least one strutting season in the last 10 years).
4 Based on GIS analysis of Appendix A, Project Features Map. Map was developed from best current data available from the Operators, Wyoming Oil and Gas Conservation Commission database, a May 2003 BLM digital orthophoto of the vicinity, and July 2004 Operator-provided aerial imagery.
5 Seasonal and standard avoidance measures are not included since they would be applied as necessary for all active leks and leks with an undetermined activity status.
6 Because the correct location for this lek could not be verified, all three alternate locations are treated as leks (e.g., afforded protective buffers) until the correct location can be confirmed or the lek is delisted.

Table 3.6 Greater Sage-Grouse Trends, Jonah Field Wildlife Study Area, 1992-2004. [1]

Lek No.	Lek Name(s) [2]	Most Recent Activity	History [3]										Trend [4]
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
1	Stud Horse Butte East/4-2	2004	NS	26	6	31	25	22	12	10	14	13	D
2	Sand Draw # 3/4-6	2004	NS	2	17	12	7	14	16	NS	6	7	D
3	Sand Draw Reservoir/ Sand Draw # 4 [5]	2004	NS	16	0?	36	26	22	27	17	23	15	D
4	Clay Hill Well/ Clay Hill	2003	NS	15	4	4	0	1	1	0	1	0	D
5	**Sand Draw # 2/4-8**	1996 [6]	NS	1	0?	0	0	NS	NS	NS	0	NS	--
6	**Sand Draw # 5/4-9**	1996 [6]	NS	3	0?	0	0	0	NS	NS	0	0	--
7	Yellowpoint Ridge/4-7	2004	NS	0	16	17	11	9	6	NS	3+	2	D
8	**Luman Well/4-10**	1996 [6]	NS	2	0?	0	0?	0	NS	0	0	0?	--
9	Alkali Draw	2004	NS	NS	~50	26	62	47	45	46	36	13	D
10	The Rocks	2004	NS	NS	60	53	79	64	62	47	25	16	D
11	**Bob/4-5**	UNK	NS	UNK	NS	0	0	0	NS	NS	0	0?	--
12	**The Rocks Road/ 3-8**	2003	0	1	4	1	0+	0	NL	NL	1-3?	0	--
13	**Wagon Wheel/3-6**	UNK	NS	0	0	0	0	0?	NS	0?	0	0	--
14	**Sand Springs Well # 1/3-7**	UNK	0	0	0	0	0	0	NL	NL	0	0	--
15	**Sand Draw #1/Sand Draw**	1996 [6]	NS	1	0?	0	0	0	NS	NS	0	0	--
16	**Long Draw**	UNK	NS	NS	NS	NS	NS	0?	0?	0	0	0	--
17	Buckhorn Well #1	2001 [6]	NS	NS	NS	NS	5	3	3	0	0?	0	D
18	Shelter Cabin Reservoir	2004	NS	NS	NS	NS	6	90	73	43	43	30	D
19	Prairie Dog Town 5/Prairie Dog	2002 [6]	NS	NS	NS	NS	NS	9	22	7	NS	0	N
20	**Upper Alkali Creek**	UNK	NS	0	NS	NS	NS	NS	NS	NS	0	0	--
21	**South Rocks**	2000 [6]	NS	NS	NS	NS	NS	10	NS	NS	NL	0	?
22	Antelope State	2000 [6]	NS	NS	NS	NS	NS	9	0	0	0	0	D
23	**Drill Pad**	UNK	NS	NS	NS	NS	NS	NS	NS	0?	0	0	--
24	Little Fred Satellite	2001 [6]	UNK	UNK	UNK	4	≥1	NS	5	NS	NS	0	--
25	Big Fred Satellite	1998	NR	NR	NR	4	NS	NS	NS	NS	NS	NS	?

1 Further detail is provided in Appendix D, Greater Sage-Grouse Lek Records.

2 Leks in **bold** were delisted as a result of a November 22, 2004, meeting with WGFD and BLM PFO. See Section 3.2 for additional detail.

3 Numbers refer to maximum male attendance observed; NS = not surveyed; NL = not located (survey was attempted but no birds were observed and exact location of lek could not be confirmed); UNK = unknown; + = unclassified birds observed but not included; ? = no males were observed on the lek, but the lek was visited less than three times during that breeding season, NR = lek not yet recorded.

4 General indication of 10-year trend: D = downward trend; -- = stable trend; ? = insufficient data to indicate trend; N = no trend implied.

5 Sand Draw Reservoir and Sand Draw #4 may be two separate leks (see Greater Sage-Grouse Map in Appendix A), but the lek history has been combined in past years so that data for individual leks are not available. The site will be treated as two components of a single lek until it can be confirmed that two separate leks exist.

6 The lek may have been active more recently than indicated because data are lacking for at least 1 year since the last known activity.

The Wyoming BLM has recently outlined new management guidance for greater sage-grouse (BLM 2004c), which establishes new definitions of and criteria for occupied, unoccupied, and undetermined lek status. An occupied lek is one that has been active during at least one strutting season within the last 10 years. Management protection is afforded to occupied leks. Leks that have not been active during a consecutive 10-year period are considered unoccupied and are not afforded management protection. Any lek that has not been documented as active within the past 10 years, but for which insufficient data are available to assign the lek an unoccupied status (i.e., the lek was not monitored or the monitoring was insufficient to assign an inactive annual status in at least one of the 10 years) is considered to have an undetermined occupancy status. Management protection will be afforded leks with an undetermined status until an unoccupied status is confirmed.

Based on the above criteria, all 12 of the remaining leks within the JWSA are occupied. Lek 25 was not surveyed in 2004. Five of the leks (Leks 4, 17, 19, 22, and 24) were inactive in 2004, with Leks 4, 17, and 22 exhibiting very little use during monitored years. Of the four leks within the JIDPA, Lek 4 was the only inactive lek in 2004, and maximum male attendance has steadily decreased in the past 10 years, down from 16 in 1994 to one in 2000 and 2001, 0 in 2002, 1 in 2003, and 0 in 2004. Due to the extent of nearby project development, this lek may continue to have low use or no use throughout the remainder of field development. This was the only year in the past 10 years that no use was observed on Leks 19 and 24.

Three (Leks 1, 2, and 3) of the seven leks active in 2004 occur within the JIDPA. Male attendance at active leks ranged from a high of 30 at Lek 18 to a low of two at Lek 7. In general, attendance at all of the active leks within the JWSA appears to be declining, with the most striking decreases at Leks 9, 10, and 18, all north of the JIDPA and within the Pinedale Anticline project area. Maximum male attendance in 2004 for these leks was 13, 16, and 30, down from 10-year highs of 62, 79, and 90, respectively (see Table 3.6).

No new greater sage-grouse leks were recorded within the JWSA in 2004.

Four greater sage-grouse nests were located during monitoring activities within the JWSA in 2004. Three of the nests were within the JIDPA, and all three were in the SW of Section 2, T29N, R108W, along the Sand Draw corridor in the vicinity of Sand Draw Reservoir No. 4. The fourth nest was in the Blue Rim area (NWSW, Section 11, T30N, R108W). Indication of a fifth nesting area was recorded approximately 0.75 mi south of the JIDPA in the SWNWNW, Section 16, T28N, R108W, along a branch of the Jonah Draw, where a hen and two very small chicks were observed on May 29 (see Appendix A, Greater Sage-Grouse Map).

A total of 3,850 greater sage-grouse were observed and recorded during the February 9-12 wintering grouse aerial surveys in the combined JWSA and PAWSA, 1,955 of which were within the JWSA (see Appendix A, Greater Sage-Grouse Map). Number of individuals per observation was highly variable, ranging from one to 250, with an average of 33. Grouse tracks and/or sign were recorded in an additional 26 areas within the JWSA. Generally, the highest number of observations within the JWSA occurred north of the JIDPA and west of the J2PA.

Grouse were most often observed in or associated with ephemeral drainages, where vegetation is generally taller and, therefore, more accessible in deep snow conditions. Mule deer also were observed frequenting ephemeral drainages for vegetation and for thermal cover, and in areas where mule deer were present, grouse often appeared to be more abundant, taking advantage of the trampled snow conditions and the exposed vegetation. Drainage systems within the JWSA where wintering sage-grouse were most often observed during the survey were North Alkali Draw, with approximately 604 individuals observed; Alkali Creek (437 individuals), the Sand Draw/Shelter Cabin Reservoir/North Alkali Draw area (294 individuals); ephemeral drainages south of Teakettle Butte (135 individuals); and Sand Springs Draw and tributaries (84 individuals). Grouse also were observed in the Jonah Gulch area, Buckhorn Well/Mud Hole Draw, Jonah Draw, Sand Draw, and several unnamed ephemeral drainages.

Only 14 grouse were observed within the JIDPA, all of which were in Sand Draw (CNW, Section 11, T29N, R108W). Tracks were also observed in Bull Draw (NENENENE, Section 20,

T29N, R107) and approximately 1.25 mi west of Sand Draw (NWNW, Section 9, T29N, R108W).

3.3 THREATENED, ENDANGERED, PROPOSED, CANDIDATE, AND OTHER BLM WYOMING SPECIES OF CONCERN

3.3.1 Black-footed Ferret

Whitetail PDTs within the J2PA were initially mapped by Anderson Environmental Consulting (Anderson 1996), and selected towns within the JWSA were remapped and censused between 2001 and 2003 to determine whether they meet the black-footed ferret habitat density criteria (i.e., ≥8 burrows per acre) established in the USFWS (1989) guidelines. The most current data on PDTs within the JWSA are presented in Table 3.7. Refined PDT boundaries and high-density areas within towns are presented in Appendix A (TEPC&BWS Species/Other Wildlife Map). PDT 27, a PDT identified in 2004, is newly included in Table 3.7, and PDT 2C, which was hand-mapped in 2003, has been mapped and censused using GPS.

Although several PDTs or portions of PDTs within the JWSA contain prairie dog burrow densities suitable for black-footed ferret (i.e., ≥8.0 burrows per acre), black-footed ferrets are not known to occur, nor are they likely to occur, within the JIDPA. Furthermore, the JIDPA has been block-cleared for ferrets by the USFWS (i.e., surveys for ferrets are not required in the area because USFWS has concluded that their presence in the area is unlikely) (USFWS 2004).

3.3.2 Bald Eagle, Ferruginous Hawk, and Golden Eagle

No bald eagles were observed within the JWSA during 2004 wildlife investigations, nor are any bald eagle nests known to occur within the JWSA. Information on ferruginous hawks and golden eagles is provided in Section 3.1.

Table 3.7 Whitetail Prairie Dog Towns, Jonah Field Wildlife Study Area, 2004.

Prairie Dog Town[1]	Location (Status)[2]	Most Recent Mapping Effort	Acreage[3]	Number of Open Burrows[3,4]	Burrow Density (burrows/acre)[3,5]
1	JIDPA (C)	2001	159 (42)	586 (370)	3.7 (8.8)
2A	JIDPA (C)	2001	174 (71)	646 (522)	3.7 (7.4)
2B	JIDPA (C)	2001	43 (25)	159 (137)	3.7 (5.5)
2C	JIDPA (C)	2004	(5)	(58)	(10.6)
3A	JIDPA (C)	2001	56	34	0.6
3B	JIDPA (C)	2001	47	24	>0.5
4	JIDPA (C)	Pre-2000	903	NS	UNK
5	JWSA (NC)	Pre-2000	106	NS	UNK
6	JIDPA (C)	2001	212	1,811	8.5
7	JWSA (C)	Pre-2000	800	NS	UNK
8	JWSA (C)	2000	1,131 (131)	5,090[6] (1,860)[7]	4.5 (14.2)[7]
9A	JIDPA (C)	2002	104 (13)	127 (66)	1.22 (5.08)
9B	JIDPA (C)	2002	166 (74)	1,011 (847)	6.09 (11.45)
10	JWSA (NC)	Pre-2000	39	NS	UNK
11	JWSA (C)	Pre-2000	203	NS	UNK
12	JWSA (C)	Pre-2000	79	NS	UNK
13	JWSA (C)	Pre-2000	86	NS	UNK
14	JWSA (C)	Pre-2000	105	NS	UNK
15	JWSA (C)	Pre-2000	189	NS	UNK
16	JWSA (C)	2000	214 (52)	1,477[5] (718)[7]	6.9[5] (13.8)[7]
17	JWSA (C)	2000	108 (30)	702[5] (468)[7]	6.5[5] (15.6)[7]
18	JWSA (C)	200	328 (55)	1,345[5] (913)[7]	4.1[5] (16.6)[7]
19	JWSA (C)	Pre-200	10	NS	UNK
20	JWSA (C)	Pre-2000	9	NS	UNK
21	JWSA (NC)	2001	73	137	1.9
22	JWSA (NC)	2003	474	1049	2.2
23A	JWSA (NC)	2003	758	6,599[8]	8.7[8]
23B	JWSA (NC)	2001	14	36	2.6
24	JWSA (NC)	2001	2	13	6.5
25A	JIDPA (C)	2001	38	372	9.78
25B	JIDPA (C)	2001	7	3	0.4
25C	JWSA (C)	2001	2	6	3.0
25D	JWSA (C)	2001	<1	4	5.7
25E	JWSA (C)	2001	1	5	5
26	JIDPA (C)	2002	38	35	0.9
27	JIDPA (C)	2004	(162)	(16)	(10.4)

1 See Appendix A, TEPC&BWS Species/Other Wildlife Map, for location. Not all PDTs within the JWSA have been mapped.
2 JIDPA = within 0.5 mi of the JIDPA; JWSA = greater than 0.5 mi from the JIDPA; C = USFWS block-cleared for black-footed ferrets; NC = not USFWS block-cleared for black-footed ferrets (i.e., ferret surveys may be required prior to surface disturbance).
3 Numbers in parentheses are for high-density areas; unless otherwise noted, number of open burrows and burrow density are based on a complete census of burrows in the town. Data for PDTs 1, 2A, 2B, 3A, 3B, 6, and 21-25E are from TRC Mariah field data (2001a); data for PDTs 9A and 9B are from TRC Mariah (2002a); data for PDTs 8, 16, 17, and 18 are from Schlumberger Geco-Prackla (2000); data for PDT 26 are from TRC Mariah (2002b); data for PDTs 22 and 23A are from TRC Mariah unpublished 2003 field data; data for PDTs 2C and 27 are from TRC Mariah unpublished 2004 field data.
4 NS = not surveyed.
5 UNK = unknown. Burrow density numbers, particularly for smaller towns, may not exactly match number of burrows ÷ acreage given on the table due to rounding error.
6 Estimates based on a sample of up to 5% of the entire PDT (Schlumberger Geco-Prackla 2000).
7 Estimates based on a sample of approximately 5% of the dense portion of the PDT (Schlumberger Geco-Prackla 2000).
8 Estimate based on a census of approximately 27% of the PDT (TRC Mariah 2003 unpublished field data).

3.3.3 Mountain Plover

Mountain plover have not been observed within the JIDPA since wildlife monitoring was implemented in 1997, but they have been observed within the J2PA in PDT 5 (one individual each in 2000 and 2002) and in the vicinity of PDTs 9A and 9B just south of the JIDPA (seven individuals in 2002, two in 2003, and four in 2004).

In addition, a large area of suitable nesting habitat occurs just south of the JIDPA in the vicinity of [redacted]. Portions of the habitat closest to the JIDPA and a 0.5-mi buffer were mapped by TRC Mariah personnel in 2004, but the full extent of the area has not been mapped. A total of 30 plover observations were recorded in this vicinity by TRC Mariah and WWC personnel during the 2004 nesting season, including 18 adults and 12 chicks (see Appendix A, TEPC&BWS Species/Other Wildlife Map). In conjunction with Yellow Point Seismic Passive surveys conducted by WWC and a follow-up banding effort by John Dahlke of WWC and Fritz Knopf, U.S. Geological Survey (USGS) lead mountain plover researcher, eight plover chicks were banded in the area in mid-July (WWC 2004a, 2004b).

Other locations where plover have been recorded within or adjacent to the JWSA include 1) the Alkali Creek area in the western portion of the JWSA (14 individuals in 1999 and one each in 2000, 2001, and 2003); 2) PDT 21 (nine individuals in 2001); 3) PDT 23A (one individual in 2001); 4) north of Highway 351 [redacted] (two in 2001 and seven in 2002); 5) north of Highway 351 by the New Fork River crossing (at least eight individuals in 2001) and 6) just west of Highway 191 [redacted] (one individual in 2004) (see Appendix A, TEPC&BWS Species/Other Wildlife Map). The individual recorded in the Long Draw area was likely passing through, as habitat is not conducive to mountain plover nesting and the bird was recorded by vocalization only and appeared to be in flight.

3.3.4 Western Burrowing Owl

Results of burrowing owl surveys are presented in Section 3.1.

3.3.5 Other TEPC&BWS Species

Of the TEPC&BWS species listed in Table 2.1 as potentially occurring in the JWSA, greater sage-grouse, whitetail prairie dog, western burrowing owl, ferruginous hawk, and mountain plover are discussed elsewhere in this report. Additional observations of TEPC&BWS species may have been recorded during APD, ROW application, and Sundry Notice reviews. Those data are available for review at the BLM PFO.

A pedestrian reconnaissance of Sand Draw and a small portion of Granite Wash by Wild Horse Reservoir was conducted in the fall of 2003, and Sand Draw was investigated again in 2004. Desert cottontails occur along much of Sand Draw, and likely pygmy rabbit sign also was observed in both years. Sign characteristics were generally as described in *Surveying for Pygmy Rabbits* (draft) (Ulmschneider 2003) (i.e., active burrows ranging from 4 to 10 inches in diameter with rabbit scat of 4 to 6 mm in diameter). During the 2003 and 2004 Sand Draw investigations, probable pygmy rabbit sign was recorded in five general locations within the JIDPA (see Appendix A, TEPC&BWS Species/Other Wildlife Map). In addition, WWC conducted formal pygmy rabbit surveys in conjunction with several site-specific investigations in the Pinedale Anticline area north of the JIDPA and in the JWSA just west of the JIDPA in 2004. Although no pygmy rabbits were observed within the JWSA, results from those investigations identify several foci of pygmy rabbit activity/presence as evidenced by burrows, pellets, and other sign. These areas generally occurred along Sand Draw and its tributaries (including just west of the JIDPA) and in the Blue Rim area (see Appendix A, TEPC&BWS Species/Other Wildlife Map).

Thirty-five wildlife species and/or their sign were observed in the basin big sagebrush-dominated areas along Sand Draw in 2004, including short-eared owl, lark bunting, savannah sparrow, American pipit, Say's phoebe, chipping sparrow, American robin, northern flicker, and green-tailed towee, all of which either have not been recorded in the JIDPA or have been recorded only uncommonly within the JWSA. Species observed in 2003 uniquely recorded in the Sand Draw basin sagebrush habitat included dark-eyed junco, Townsend's solitaire, solitary vireo, fox sparrow, and song sparrow. In addition, loggerhead shrike (43 individuals recorded), sage thrasher (110 individuals), sage sparrow (143 individuals), and Brewer's sparrow (55 individuals) were observed at various locations throughout the JWSA in 2004, particularly in the basin big sagebrush habitat along Sand Draw (see Appendix B, General Wildlife Observation Data Forms). Based on observations of nest-building, nestlings, and newly fledged young, these species breed in the JIDPA and surrounding JWSA. The basin big sagebrush habitat provides more cover and higher stature vegetation (shrub heights are 15 ft at some locations) than adjacent habitats; therefore, it provides unique habitat characteristics (e.g., nesting sites, hiding cover, thermal cover) within the JIDPA. The habitat also likely serves as a corridor for wildlife movement across the JIDPA, since development is precluded within 30 ft either side of the Sand Draw channel.

Forty-six greater sage-grouse individuals and sign were observed during the 2004 Sand Draw investigations, including one adult male, eight unclassified age/sex individuals, and 37 adult females and juveniles (see Appendix A, Greater Sage-Grouse Map). Winter roost scat piles were found beneath basin big sagebrush plants at several locations along the corridor, primarily beneath plants occurring at the edge of the basin big sagebrush habitat. The tall vegetation along the draw likely remains exposed even during the most severe winters, thereby affording both winter forage and suitable roost sites/thermal cover for greater sage-grouse during those times. All of the 14 greater sage-grouse observed within the JIDPA during winter aerial surveys were in Sand Draw.

3.4 HABITAT MAP REFINEMENT

Results of habitat mapping within the JIDPA are presented in Appendix A, Greater Sage-Grouse Map. Vegetation types in the 320-acre parcel in the north half of Section 23, T28N, R109W, presently remain unmapped.

3.5 GENERAL WILDLIFE

Locations of big game (i.e., pronghorn, mule deer) observed during the winter greater sage-grouse aerial survey of the combined JWSA and PAWSA were recorded and mapped. These data provide a snapshot of big game winter locations in the region during a period with relatively heavy snowcover. Only one of the nine observations of pronghorn recorded within the surveyed area was within the JWSA--80 individuals were observed just northwest of Blue Rim [redacted]. An additional 35 individuals were located just outside of the JWSA, north of Highway 351 and approximately 0.75 mi east of the New Fork River near Boulder South Road.

Twelve observations of mule deer totaling 166 individuals were observed within the JWSA during the aerial survey. Eighty-five individuals were observed within the J2PA, all but three of which were in the dissected terrain south of Granite Wash in the western portion of the area. The other three, [redacted], were the only deer recorded in the JIDPA during the survey. Of the remaining observations, 12 individuals were observed just northeast of Ross Ridge, nine were observed in North Alkali Draw, 53 were in the vicinity of Mud Hole Draw and its tributaries, and seven were in the far southwestern corner of the JWSA. Because of the timing of previous wildlife monitoring studies (i.e., excluding the fall and winter seasons) these are the only recorded observations of mule deer (live individuals) within the JWSA during the 8 years of wildlife monitoring conducted since 1997.

Limited additional data on other wildlife species observed on the JWSA during 2004 surveys are provided in Appendix B and in APD, ROW, and Sundry Notice application field review data available at the BLM PFO. Table 3.8 provides a comprehensive list of species recorded within the JWSA by TRC Mariah personnel during wildlife monitoring from 1997 through 2004.

Table 3.8 List of Species Observed Within the Jonah Field Wildlife Study Area During Wildlife Monitoring, 1997-2004.

Common Name	Scientific Name
Birds	
Eared grebe	*Podiceps nigricollis*
Great blue heron	*Ardea herodias*
Canada goose	*Branta canadensis*
Gadwall	*Anas strepera*
American wigeon	*Anas americana*
Mallard	*Anas platyrhynchos*
Blue-winged teal	*Anas discors*
Cinnamon teal	*Anas cyanoptera*
Northern pintail	*Anas acuta*
Lesser scaup	*Aythya affinis*
Ruddy duck	*Oxyura jamaicensis*
Osprey	*Pandion haliaetus*
Northern harrier	*Circus cyaneus*
Swainson's hawk	*Buteo swainsonii*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk [1]	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
American kestrel	*Falco sparverius*
Merlin [2]	*Falco columbarius*
Prairie falcon	*Falco mexicanus*
Greater sage-grouse [1]	*Centrocercus urophasianus*
Sandhill crane	*Grus canadensis*
Killdeer	*Charadrius vociferus*
Mountain plover [1]	*Charadrius montanus*
American avocet	*Recurvirostra americana*
Willet	*Catoptrophorus semipalmatus*
Spotted sandpiper	*Actitis macularia*
Wilson's phalarope	*Phalaropus tricolor*
Mourning dove	*Zenaida macroura*
Burrowing owl [1]	*Athene cunicularia*
Short-eared owl	*Asio flammeus*
Common nighthawk	*Chordeiles minor*
Northern flicker	*Colaptes auratus*
Say's phoebe	*Sayornis saya*
Loggerhead shrike [1]	*Lanius ludovicianus*
Blue-headed (formerly Solitary) vireo	*Vireo solitarius*
Clark's nutcracker [2]	*Nucifraga columbiana*
Black-billed magpie	*Pica pica*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Horned lark	*Eremophila alpestris*
Tree swallow	*Tachycineta bicolor*
Violet-green swallow	*Tachycineta thalassina*
Cliff swallow	*Petrochelidon pyrrhonota*
Rock wren	*Salpinctes obsoletus*

Table 3.8 (Continued)

Common Name	Scientific Name
Ruby-crowned kinglet[2]	*Regulus calendula*
Mountain bluebird	*Sialia currucoides*
Townsend's solitaire	*Myadestes townsendi*
American robin	*Turdus migratorius*
Sage thrasher[1]	*Oreoscoptes montanus*
American pipit	*Anthus rubescens*
Wilson's warbler	*Wilsonia pusilla*
Green-tailed towhee	*Pipilo chlorurus*
Chipping sparrow	*Spizella passerina*
Brewer's sparrow[1]	*Spizella breweri*
Vesper sparrow	*Pooecetes gramineus*
Lark sparrow	*Chondestes grammacus*
Sage sparrow[1]	*Amphispiza belli*
Lark bunting	*Calamospiza melanocorys*
Savannah sparrow	*Passerculus sandwichensis*
Fox sparrow	*Passerella iliaca*
Song sparrow	*Melospiza melodia*
Dark-eyed junco[2]	*Junco hyemalis*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Brown-headed cowbird	*Molothrus ater*
Gray-crowned rosy-finch	*Leucosticte tephrocotis*
American goldfinch	*Carduelis tristis*
Mammals	
Badger	*Taxidea taxus*
Coyote	*Canis latrans*
Red fox[3]	*Vulpes vulpes*
Bobcat[3]	*Lynx rufus*
Whitetail prairie dog[1]	*Cynomys leucurus*
Wyoming ground squirrel	*Spermophilus elegans elegans*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
Least chipmunk	*Tamias minimus*
Northern pocket gopher[3]	*Thomomys talpoides*
Deer mouse	*Peromyscus maniculatus*
Whitetail jackrabbit	*Lepus townsendii*
Desert cottontail	*Sylvilagus auduboni*
Pygmy rabbit[1]	*Brachylagus idahoensis*
Wild horse	*Equus caballus*
Mule deer	*Odocoileus hemionus*
Pronghorn	*Antilocapra americana*
Reptiles/Amphibians	
Eastern short-horned lizard	*Phrynosoma douglassi brevirostre*

[1] BLM Wyoming sensitive animal species, September 20, 2002 list (BLM 2002).
[2] Species was observed only on the forested northern side of Ross Ridge outside the JIDPA. This habitat type is found only in this area of the JWSA.
[3] Actual individuals not observed; only sign (e.g., tracks, diggings, scat).

4.0 MONITORING AND PROTECTION MEASURES

The proposed wildlife protection measures were developed specifically for potentially impacted wildlife resources on and adjacent to the JIDPA and J2PA. The principal protection measure proposed for most wildlife species is avoidance of sensitive/crucial habitats (e.g., raptor nests, greater sage-grouse leks), where practical. Additional efforts/mitigative actions may be identified in association with the new EIS for the Jonah Infill Drilling Project (BLM 2005).

4.1 RAPTORS

The primary mitigation measure for raptor species in the JWSA is avoidance of active nest locations during the breeding season. Unless excepted by the BLM during APD and ROW application reviews, all surface-disturbing activities will be restricted from February 1 through July 31 within a 0.5-mi radius of active raptor nests, except ferruginous hawk and bald eagle nests, for which the seasonal buffer is 1.0 mi (see Table 3.2). The seasonal buffer distance and exclusion dates may vary depending on factors such as nest activity status, raptor species, prey availability, natural topographic barriers, and line-of-sight distances. In addition, well locations, roads, ancillary facilities, and other surface structures requiring repeated human presence will not be constructed within 825 ft of active raptor nests (1,000 ft for ferruginous hawks and 2,640 ft for bald eagles) (BLM 1998a, 2000b, 2005). Bald eagles are also afforded additional seasonal protection within 1.0 mi of winter roosts from November 1 through April 1, and within 2.5 mi of winter foraging areas from November 15 through April 1. Facility construction in these areas will require specific approval from the BLM.

The Operators have committed to continue monitoring nest activity status and productivity in 2005 within the JWSA as identified in past BLM approvals and the Jonah Infill Drilling Project Drilling Project EIS (BLM 1998a [Appendix E], 2000b, 2005). Nest activity status will be monitored primarily from the ground, and new nests will be photographed and locations recorded with a handheld correctable Trimble GeoExplorer3 GPS unit. As time allows, efforts to locate new nests will be increased in areas of the JWSA that have received less focus during

past ground surveys and have the greatest potential for containing suitable nesting habitat, particularly for ferruginous hawks. Identification of new nests in the JWSA provides valuable information on raptor nesting trends and spatial use of areas within and adjacent to the JIDPA.

Raptor nest activity and productivity for all known raptor nests and ferruginous hawk nesting territories located on or within 1.0 mi of the JIDPA will be monitored monthly from late March/early April through August 2005, or until occupied nests have failed or young have fledged. Operators will notify the BLM immediately if raptors or ravens are found nesting on project facilities. If nest manipulation or a situation requiring a "taking" of a nest becomes necessary, a special permit will be obtained from the Denver USFWS Office, Permit Section. Permit acquisition will be coordinated with the Wyoming State USFWS Office in Cheyenne and will be initiated with sufficient lead time to allow for development of mitigation measures. Required corresponding permits will be obtained from the WGFD in Cheyenne. Consultation and coordination with the USFWS and WGFD will be conducted for all mitigation activities relating to raptors.

Because project development is projected to continue on and adjacent to ferruginous hawk Territories 5, 6, 7, 26, and 27, two ANSs were established in the area in 2001. The erection of two additional ANSs was previously recommended in the vicinity of ferruginous hawk Territory 5 (see Appendix A, Raptor Nest Map); however, given the amount of current development and the potential for future development in the area of Territory 5, the placement of ANSs in the territory is no longer recommended at this time. Instead, it is recommended that two ANSs be constructed in one of the territories south or southeast of the JIDPA in coordination with the BLM and the leaseholder(s). Many of the natural nests in these territories are built on the ground along low ridges and, thus, are highly susceptible to predation. Placement of ANSs in one of these territories would provide a more secure nesting site alternative and, if utilized, may contribute to increased success and productivity of ferruginous hawks in the JWSA. The BLM and Operators will be consulted to determine appropriate ANS locations or other mitigation measures for affected territories. Operators will be responsible for

the construction and annual maintenance of ANSs throughout the life-of-project, and all ANSs on public lands will become the property of the BLM upon completion of the project. ANS construction and maintenance activities will be completed between August 1 and September 15 of each year (Appendix D in BLM [1997]). Additional mitigation for nesting raptors may be required on a site-specific basis, as necessary, in consultation with the BLM, USFWS, and WGFD.

In future years, additional ANSs may be constructed (up to two ANSs for each impacted nest) or existing degraded raptor nests may be upgraded/reinforced to mitigate potential impacts (BLM 1997, 2000a, 2000b). The location of ANSs or nests proposed for upgrading will be identified in annual reports. ANSs will be located within or proximal to potentially affected nesting territories, outside of the line-of-sight or nest buffer of actively nesting raptor pairs, and at sites sufficiently removed from proposed development activities to minimize or avoid potential adverse effects.

In places where existing project features (e.g., well locations) are located within the buffer areas for active raptor nests, no extensive maintenance activities (e.g., workovers) will be allowed between February 1 and July 31 without prior BLM notification and approval (BLM 2000a, 2000b). The seasonal buffer distance and applicable exclusion dates will be determined by the BLM and specified in Conditions of Approval for APD, ROW applications, and/or Sundry Notices and may vary among nests and from year to year depending upon the potentially affected raptor species and variations in weather, nesting chronology, and other factors.

4.2 GREATER SAGE-GROUSE

Thirteen leks are currently present within the JWSA (Leks 1-4, 7, 9-10, 17-19, 22, 24, and 25), and all 13 are currently designated occupied, although there is some question as to whether Lek 3 is two separate leks. Monitoring and identification of greater sage-grouse leks on the JWSA will continue in 2005, as specified by the BLM (1998a, 2000b, 2005).

Monitoring (ground surveys) of leks in 2005 will be conducted by WGFD, BLM, and/or COOP personnel, with limited assistance from TRC Mariah personnel, as needed, to ensure that all leks in the JWSA are monitored. In the absence of agency support, all leks within 2.0 mi of the JIDPA (i.e., Leks 1-4, 7, 10, 17, and 22) would be monitored by TRC Mariah. In addition, an effort will be made to determine if Lek 3 is a single lek or two separate (Sand Draw Reservoir and Sand Draw #4) leks. Gaps in monitoring data are the single biggest problem in determining lek occupancy status and trends, so it is of the utmost importance that all known leks be scheduled for monitoring and visited at least three times during the strutting/mating season.

Another problem that may contribute to determining lek activity and occupancy status is inaccurate mapping of leks. It is imperative to obtain accurate GPS perimeter data for leks currently lacking reliable GPS locational data because development plans are affected by seasonal and no surface occupancy stipulations associated with occupied leks. In November 2004, WGFD, BLM, and TRC Mariah personnel addressed redundancy and inadequacy in the existing sage grouse lek locational data and compiled an updated GIS shapefile for leks in the JWSA. Five greater sage-grouse leks (Leks 9, 17, 19, 24, and 25) within the JWSA and a 2.0-mi buffer lack GPS perimeter data, and data for three additional leks (Leks 2, 4, and 22) were obtained using noncorrectable GPS units, which lack accuracy. In 2005, GPS perimeter data will be obtained for these leks, if possible (i.e., if any of the leks are not active in 2005, personnel familiar with where strutting activity has occurred in the past must be available to accurately define the lek boundaries). TRC Mariah personnel, in coordination with BLM, WGFD, and/or COOP personnel, will use correctable GPS equipment in 2005 in tandem with the knowledge of the people who are most familiar with the leks and their boundaries to obtain reliable boundaries for these leks.

During winter of 2005, a second year of greater sage-grouse aerial surveys will be conducted when sufficient snow cover is present such that grouse are likely confined to the most important winter habitat areas. Methods will be similar to those described in Section 2.2 and as approved by BLM PFO, and data will be used to assist in identifying areas that likely provide the most

important winter cover and foraging habitat, particularly during severe winters (i.e., substantial snow cover over a large percent of an area for a prolonged period of time).

Principal protection for greater sage-grouse is avoidance of leks during the breeding season, the avoidance of probable nesting areas during the nesting season. In accordance with BLM (2000a, 2000b), the following protection measures will be adhered to unless exempted by the BLM on a case-by-case basis.

All surface-disturbing activities, including pipeline construction, will be avoided within 0.25 mi of occupied leks. Operators will maintain a 0.5-mi disturbance-free buffer around Lek 7 south of the JIDPA (BLM 2000b) (see Appendix A, Greater Sage-Grouse Map). In addition, no permanent high-profile structures such as buildings and storage tanks (e.g., suitable raptor perches) will be constructed within 0.25 mi of any occupied lek (BLM 2000b) and within up to 0.5 mi from areas within the line-of-sight of leks as deemed necessary by BLM on a case-by-case basis (BLM 2000a). A 600-ft no-disturbance buffer (i.e., 300 ft on either side of Sand Draw, Alkali Draw, and portions of Granite Wash within the J2PA) (see Appendix A, Greater Sage-Grouse Map) will be maintained (BLM 2000b) to protect nesting grouse. If natural gas reserves beneath the 600-ft no-disturbance buffer or the 0.25-mi occupied grouse lek buffer are deemed suitable for development, Operators may utilize directional drilling to access these resources.

All construction and drilling activity will be avoided during the strutting period (March 1-May 15) within 1.0 mi of occupied leks (BLM 2000a, 2000b). In addition, prior to the start of surface-disturbing activities during the nesting season (March 1-July 15) in potential greater sage-grouse nesting habitat within 2.0 mi of an occupied lek, on-site reviews will be required by the BLM and conducted by a qualified biologist to determine if the area is being used by nesting grouse (BLM 1998a, *2005*). If nesting grouse are not deemed present, the BLM may grant permission to proceed with surface-disturbing activities in the area. However, if

nesting grouse are located, surface-disturbing activities will be delayed until July 15 or until nesting is completed.

4.3 SAND DRAW AND BASIN BIG SAGEBRUSH HABITAT

The Sand Draw drainage provides unique wildlife habitat that shelters several sensitive wildlife species, as well as a number of species not observed elsewhere within the JIDPA. Alkali Draw and portions of Granite Wash provide similar habitat outside of the JIDPA but within the adjacent J2PA. It is recommended that the 600-ft wide protection buffer (300 ft either side of the channel) be maintained along Sand and Alkali Draws and portions of Granite Wash within the J2PA as indicated on the TEPC&BWS Species/Other Wildlife Map (Appendix A). This recommendation is based on 1) the unique nature of the basin big sagebrush habitat within the J2PA (i.e., denser and much taller vegetative structure than surrounding areas); 2) the known presence of numerous wildlife species that use the habitat, including a number of BLM-sensitive species (e.g., pygmy rabbit, greater sage-grouse, sage thrasher, sage sparrow, Brewer's sparrow); 3) the apparent use of this relatively unobstructed corridor of habitat for animal movements; and 4) the extent of existing and potential disturbance in the JIDPA.

It is further recommended that investigations of the Sand Draw drainage channel within the JIDPA (and portions of Granite Wash and Alkali Draw within the J2PA, as time allows) be implemented again in 2005 as a component of sensitive species investigations and to supplement general wildlife observations within the JIDPA and adjacent study area.

4.4 THREATENED, ENDANGERED, PROPOSED, CANDIDATE, AND BLM WYOMING SENSITIVE SPECIES AND OTHER WILDLIFE SPECIES

Investigations of Sand Draw in 2005 as described in Section 4.3 will provide information on the presence and distribution of some of the TEPC&BWS and other wildlife species within the JIDPA, and it is assumed that the protection measures specified in Section 4.4.5 and primarily

designed to minimize impacts to other area resources (e.g., vegetation and surface water resources including wetlands, steep slopes) will benefit TEPC&BWS species as well.

If, during implementation of surveys or during APD and ROW application field reviews, any TEPC&BWS species is observed on areas within 0.5 mi of proposed disturbance sites, nests or other crucial features for the observed species will be avoided, and consultation and coordination with the BLM, USFWS, and WGFD will be conducted, as necessary. Construction activities in these areas will be curtailed until there is concurrence among Operators, BLM, USFWS, and WGFD as to what activities can be authorized. Activities will, in most cases, be delayed until such time that no adverse effects would occur (e.g., after fledging). In addition, if TEPC&BWS species are observed, efforts will be made to determine the activities of the species on the JWSA (e.g., breeding, nesting, foraging, hunting). If any management agency (i.e., BLM, WGFD, USFWS) identifies a potential for impacts to any TEPC&BWS species, additional monitoring and/or protection measures may be implemented as directed by the BLM. USFWS and/or WGFD consultation and coordination will be conducted as deemed necessary by BLM for all mitigation activities relating to TEPC&BWS species and their habitats implemented during 2005.

Prairie dog colonies provide habitat and/or forage for a number of TEPC&BWS species (e.g., black-footed ferret, mountain plover, ferruginous hawk, western burrowing owl); thus, monitoring of active PDTs is an important component of sensitive species monitoring. Fourteen PDTs occur within the JIDPA and a 0.5-mi buffer, and boundaries of nine of those towns have not been updated since 2001 or earlier (PDTs 1, 2A-B, 3A-B, 4, 6, and 25A-B) (see Table 3.7). In the past two years, several new areas of PDTs have been mapped within the JIDPA (PDTs 2C and 27) and, given the amount of surface disturbance in the vicinity, it is anticipated that the boundaries of previously mapped towns have changed. In 2005, town boundaries of the nine abovementioned PDTs will be verified/remapped.

4.4.1 Black-footed Ferret

If black-footed ferrets or their sign are found within the J2PA but outside the JIDPA, the USFWS will be notified immediately, and formal consultation will be initiated to develop strategies that ensure no adverse effects to the species (BLM 1997). If black-footed ferrets or their sign are found within the JIDPA, the USFWS will be notified immediately, and no further disturbance will occur to the prairie dog complex in which the black-footed ferret was observed. Before ground-disturbing activities are initiated in black-footed ferret habitat, authorizations to proceed will be required from the BLM in consultation with the USFWS.

Furthermore, any project-related disturbance in PDTs occurring outside the JIDPA but within [redacted] in the JWSA (i.e., areas not block-cleared for black-footed ferrets) will require black-footed ferret surveys if PDTs/portions of PDTs of sufficient size and burrow density for black-footed ferret habitat exist. Currently, mapped PDTs within those townships and ranges include PDTs 5, 10, 21, 22, 23A-B, and 24. Identification and investigation of areas to be disturbed would be required on a site-specific basis, as not all PDTs within the JWSA may be currently mapped, and mapped PDT boundaries may not accurately reflect current PDT town locations and extents (see Table 3.7). Consultation with USFWS would be conducted to determine the need for ferret surveys in prairie dog towns/colonies in these areas.

Black-footed ferret surveys, if required, will be conducted by a USFWS-qualified biologist in adherence to USFWS guidelines as established in USFWS (1989). Surveys will be conducted no more than 1 year prior to proposed disturbance, and reports identifying survey methods and results will be prepared and submitted to the USFWS and BLM in accordance with Section 7 of the *Endangered Species Act of 1973*, as amended, and Interagency Cooperation Regulations. Surveys will be financed by the Operators.

4.4.2 Bald Eagle, Ferruginous Hawk, and Golden Eagle

Monitoring and protection protocol for bald eagle, ferruginous hawk, and golden eagle in 2005 will be the same as described for raptors (see Section 4.1). Additional measures may be applied on a species- or site-specific basis, as deemed necessary by the USFWS and/or BLM, if potential impacts to these species are identified during 2005 APD, ROW application, and Sundry Notice reviews.

4.4.3 Mountain Plover

The mountain plover was proposed for listing as a federally threatened species in 1999. The USFWS withdrew the listing in September 2003 because new information indicated that the threats to mountain plover as identified in the listing were not as significant as initially believed. However, any federally proposed or candidate species withdrawn from USFWS consideration is initially included on BLM's Wyoming sensitive species list (BLM 2002).

Formal surveys for mountain plover will be conducted in 2005 in areas within 0.5 mi of the JIDPA where plover have been previously recorded (i.e., occupied mountain plover habitat) (personal communication, January 2004, with Keith Andrews, Wildlife Biologist, BLM PFO). Two areas within 0.5 mi of the JIDPA (i.e., the vicinities of PDT 9 and the northern half of [redacted]) are considered occupied mountain plover habitat based on this criterion.

The following protocol has been modified from that presented in BLM (1998a, Appendix E) to accommodate USFWS changes to mountain plover survey and avoidance protocol. The protocol remains consistent with that presented in BLM (2000b).

During the period of May 1-June 15, 2004, mountain plover surveys will be conducted by an Operator-financed, BLM-approved biologist in accordance with USFWS guidelines (USFWS

2002) on occupied nesting habitat within 0.5 mi of the JIDPA (personal communication, January 2004, with Keith Andrews, Wildlife Biologist, BLM PFO). Survey procedures will be as described in Section 2.3.3.

If breeding birds are observed within 0.25 mi of proposed surface disturbance, additional surveys will be implemented immediately prior to construction to search for active nest sites. If an active nest is located, a 0.25-mi buffer zone will be established around the nest to prevent direct and indirect nest disturbance and planned activities will be delayed 37 days, or 1 week post-hatching (USFWS 2002). If a brood of flightless chicks is observed, activities will be delayed at least 7 days. In areas where no plover are observed, surface-disturbing activities will occur post-survey completion and as near to completion of surveys as possible. Mountain plover surveys will not be conducted for construction activities planned for the period of July 11 through April 9.

Where access roads and/or well locations have been constructed prior to the mountain plover nesting season (April 10-July 10) and development activities have not been initiated prior to April 10, a BLM-approved biologist will conduct a site investigation of the disturbed area prior to proposed activities to determine whether mountain plover are present. If plover are nesting in the area, the Operators will delay development activities until nesting is complete.

The nest success and productivity of all mountain plover nests found within the JIDPA will be monitored and reported to the BLM and USFWS Wyoming Field Office annually. Survey results will be compared with annual development plans to determine if any proposed surface-disturbing activities will affect occupied mountain plover nesting habitat. Where feasible, development plans will be modified to avoid nesting habitat (e.g., through road re-alignment).

If removal of mountain plover nesting habitat is unavoidable, loss would be minimized by creation of additional nesting habitat; many of the existing and proposed pipeline reclamation

areas on the JIDPA likely provide suitable plover breeding habitat. If nesting habitat is disturbed, the area will be reclaimed to approximate original conditions (topography, vegetation, hydrology, etc.) after completion of activities, such that disturbed potential mountain plover breeding habitat is reclaimed to conditions suitable for mountain plover breeding. Operators will minimize road construction and maintenance activities (i.e., grading) in suitable plover habitat from April 10 to July 10.

4.4.4 Western Burrowing Owl

Monitoring and avoidance of prairie dog colonies (i.e., suitable burrowing owl nesting habitat) is discussed above, and Section 4.1 describes general raptor monitoring and mitigation measures, which would be applied to burrowing owls. Additional measures may be applied in future years if burrowing owl nesting and/or productivity in the JWSA appears to be declining. These potential measures will be identified by the BLM.

4.4.5 Other BWS and General Wildlife Species

Since loggerhead shrike, Brewer's sparrow, sage sparrow, and sage thrasher, as well as pygmy rabbit, have been observed in the area (see Appendix B, General Wildlife Observation Data Sheets), special attention to these species is recommended for APD, ROW application, and Sundry Notice field reviews. No additional protection measures have been identified at this time for other sensitive species potentially present on the JWSA; however, it is assumed that the protection protocol specified below for general wildlife will benefit TEPC&BWS species as well.

Additional protection measures primarily designed to minimize impacts to other area resources (e.g., vegetation and surface water resources including wetlands, steep slopes) have been identified by BLM (1998a, 2000b), and these measures provide additional impact mitigation for area wildlife. Well locations, access roads, pipelines, and ancillary facilities will be selected

and designed to minimize disturbances to areas of high wildlife habitat value, including wetlands and riparian areas. Areas with high erosion potential and/or rugged topography (i.e., steep slopes, dunes, floodplains, unstable soils) will be avoided, where practical.

Removal or disturbance of vegetation will be minimized through construction site management (e.g., by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping), and Operators will adhere to all reclamation guidelines presented in the Reclamation Plan for this project (see Appendix B in BLM 1997, 1998a, 1998b).

Operators will continue to advise project personnel regarding appropriate speed limits (i.e., 35 mph or less, as posted) in the project area to minimize wildlife mortality due to vehicle collisions. Roads will be reclaimed as soon as possible after they are no longer required. Some existing roads in the area may be closed and reclaimed by Operators as authorized by the BLM. No roads are currently proposed for reclamation.

Project-related travel will be restricted to established project roads to protect plant populations and wildlife habitat. No off-road travel will be allowed except in emergencies.

No road or pipeline ROW fencing is proposed; however, if ROW fencing is required, it will be kept to a minimum, and the fences will consist of four-strand barbed wire that meets BLM and WGFD approval for facilitating wildlife movement. Wildlife-proof fencing will be utilized only to enclose reclaimed areas where it is determined that wildlife species are impeding successful vegetation establishment. No improvements to existing fences on the area are currently proposed.

No new wildlife/livestock water sources are currently proposed for development.

Potential increases in poaching will be minimized through continued employee and contractor education regarding wildlife laws, and Operators will notify all employees (contract and company) that conviction of a major game violation may result in disciplinary action. If violations are discovered, Operators will immediately notify the BLM and WGFD, and if the violation involves an employee or contractor, said employee or contractor will be disciplined and may be dismissed by the Operator and/or prosecuted by the WGFD.

Additional nonspecies-specific wildlife mitigations include the following.

- Reserve, workover, evaporation, and flare pits potentially hazardous to wildlife will be adequately protected by netting and/or fencing as directed by the BLM to prevent access by migratory birds and other wildlife.
- Siphons will be constructed at each reserve pit to collect, as necessary, any undesirable materials that may enter the pits.
- Potential impacts to fisheries will be minimized by using proper erosion control techniques (e.g., water bars, jute netting, rip-rap, mulch). Construction within 500 ft of open water and 100 ft of intermittent or ephemeral channels will be avoided, where possible. Channel crossings for roads and pipelines will be constructed when flows are not expected (i.e., late summer or fall). All necessary crossings will be constructed perpendicular to flow. No surface water or shallow groundwater in connection with surface water will be utilized for the proposed project.
- Firearms and dogs will not be allowed on the J2PA during working hours by BLM or Operator employees or their contractors unless excepted by BLM (e.g., dogs may be allowed to facilitate/conduct greater sage-grouse nest location or winter concentration area surveys). Operators will enforce existing drug, alcohol, and firearms policies.
- If injured wildlife are observed within the J2PA, Operator personnel will contact the BLM PFO and/or the WGFD Pinedale Office. Under no circumstances will injured wildlife be approached or handled.

5.0 LITERATURE CITED

Anderson, R.M. 1996. 1996 Prairie Dog, Raptor, and Sage Grouse Inventory of McMurry Oil Company's Expanded Jonah Field Natural Gas Development Project, Sublette County, Wyoming. Prepared for McMurry Oil Company, Casper, Wyoming, by Anderson Environmental Consulting, Casper, Wyoming. 13 pp.

Baxter, G.T., and M.D. Stone. 1980. Amphibians and Reptiles of Wyoming. Wyoming Game and Fish Department, Bulletin No. 16. 137 pp.

Baicich, P.J., and C.J.O. Harrison. 1997. A Guide to the Nests, Eggs, and Nestlings of North American Birds. Second Edition. Natural World Academic Press, San Diego, California. 347 pp.

Bureau of Land Management. 1997. Draft Environmental Impact Statement, Jonah Field II Natural Gas Project. U.S. Department of the Interior, Bureau of Land Management, Rock Springs District Office, Pinedale and Green River Resource Areas. BLM/WY/PL-97/015+1310.

_____. 1998a. Record of Decision for Jonah Field II Natural Gas Development Project Environmental Impact Statement, Sublette County, Wyoming. U.S. Bureau of Land Management, Rock Springs District, Pinedale and Green River Resource Areas. 43 pp. + append.

_____. 1998b. Final Environmental Impact Statement, Jonah Field II Natural Gas Project. U.S. Department of the Interior, Bureau of Land Management, Pinedale and Green River Resource Areas. BLM/WY/PL-98/001+1310.

_____. 1999. Draft Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project, Sublette County, Wyoming. U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming. BLM/WY/PL-00/003+1310.

_____. 2000a. Decision Record and Finding of No Significant Impact for the Modified Jonah Field II Natural Gas Project, Sublette County, Wyoming. U.S. Bureau of Land Management Pinedale and Rock Springs Field Offices. BLM/WY/PL-001/ 019+1310.

_____. 2000b. Environmental Assessment and Finding of No Significant Impact for the Modified Jonah Field II Natural Gas Project, Sublette County, Wyoming. U.S. Department of the Interior, Bureau of Land Management, Pinedale and Rock Springs Field Offices. BLM/WY/PL-001/009+1310.

_____. 2002. Wyoming Bureau of Land Management State Director's Sensitive Species List (Animals and Plants), September 20, 2002.

_____. 2004. Statement of Policy Regarding Sage-Grouse Management Definitions, and Use of Protective Stipulations, and Conditions of Approval (COAs). Instruction Memorandum No. WY-2004-057. August 16, 2004. 6 pp.

_____. 2005. Draft Environmental Impact Statement, Jonah Infill Drilling Project, Sublette County, Wyoming. BLM/WY/PL-05/009+1310. Bureau of Land Management, Pinedale Field Office, Pinedale, Wyoming, February 2005.

Call, M.W. 1978. Nesting Habitats and Surveying Techniques for Common Western Raptors. U.S. Department of the Interior, Bureau of Land Management, Technical Note No. 316. 115 pp.

Dorn, J.L., and R.D. Dorn. 1999. Wyoming Birds. Second Edition. Mountain West Publishing, Cheyenne, Wyoming. 187 pp.

Fertig, W. 1997. Wyoming Plant and Animal Species of Special Concern. Prepared for the Wyoming Natural Diversity Database. 32 pp.

Grier, J.W., and R.W. Fyfe. 1987. Preventing Research and Management Disturbance. Pages 173-182 *In* B.A.G. Pendleton, B.A. Milsap, K.W. Kline, and D.M. Bird, editors. Raptor Management Techniques. Institute of Wildlife Research, National Wildlife Federation, Scientific and Technical Series No. 10. 420 pp.

Schlumberger Geco-Prakla. 2000. Final Black-footed Ferret and Burrowing Owl Surveys, South Jonah Seismic Exploration Project, Sublette County, Wyoming. Prepared for Schlumberger Geco-Prakla, Midland, Texas by TRC Mariah Associates Inc., Laramie, Wyoming. 7 pp. + append.

TRC Mariah Associates Inc. 1999. 1997 and 1998 Wildlife Studies, Jonah Field II Natural Gas Development Project. Prepared for U.S. Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming, and Rock Springs Field Office, Rock Springs, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming. 32 pp. + append.

_____. 2001a. 1999-2000 Wildlife Studies, Jonah Field II Natural Gas Development Project. Prepared for U.S. Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming, and Rock Springs Field Office, Rock Springs, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming. 47 pp. + append.

_____. 2001b. 2001 Wildlife Studies, Jonah Field II Natural Gas Development Project. Prepared for U.S. Bureau of Land Management, Pinedale Field Office and Rock Springs

Field Office and Jonah Field II Operators, by TRC Mariah Associates Inc., Laramie, Wyoming. 53 pp. + append.

_____. 2002a. 2002 Wildlife Studies, Jonah Field II Natural Gas Development Project. Prepared for U.S. Bureau of Land Management, Pinedale Field Office, Pindale, Wyoming, and Rock Springs Field Office, Rock Springs, Wyoming and Jonah Field II Operators, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming. 54 pp. + append.

_____. 2002b. 2001 Wildlife Studies Pinedale Anticline Project. Prepared for U.S. Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming, and Rock Springs Field Office, Rock Springs, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming.

_____. 2003. 2002 Wildlife Studies Pinedale Anticline Project. Prepared for U.S. Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming, and Rock Springs Field Office, Rock Springs, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming. 83 pp. + append.

_____. 2004. 2003 Wildlife Studies, Jonah Field II Natural Gas Development Project. Prepared for U.S. Bureau of Land Management, Pinedale Field Office Pinedale, Wyoming, and Jonah Field II Operators, Wyoming, by TRC Mariah Associates Inc., Laramie, Wyoming.. 62 pp. + append.

Ulmschneider, H. 2003. Surveying for Pygmy Rabbits (Draft). Owyhee Field Office, Bureau of Land Management. Prepared for review by the survey group of the Idaho pygmy rabbit committee. 15 pp.

U.S. Fish and Wildlife Service. 1989. Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act. U.S. Fish and Wildlife Service, Denver, Colorado and Albuquerque, New Mexico (April 1989). 10 p. + append.

_____. 2002. Mountain Plover Survey Guidelines. U.S. Fish and Wildlife Service. Photocopy. 6 pp.

_____. 2004. Letter to Interested Party dated February 2, 2004. ES-61411/BFF/WY7746.

Wyoming Game and Fish Department. 1996. Wyoming observation system records. Biological Services, Wyoming Game and Fish Department, Cheyenne, Wyoming.

_____. 1999. Atlas of Birds, Mammals, Reptiles, and Amphibians in Wyoming. Wildlife Division, Wyoming Game and Fish Department, Cheyenne, Wyoming. 190 pp. + append.

Wyoming Wildlife Consultants, LLC. 2004a. Yellow Point Passive Seismic Survey. Letter report provided to Lisa Solberg, Bureau of Land Management, Pinedale Field Office; Dean Clause, Wyoming Game and Fish Department; and Cally McKee, EnCana Oil & Gas. June 26, 2004.

_____. 2004b. Mountain Plover Banding. Letter report provided to Lisa Solberg, Bureau of Land Management, Pinedale Field Office; Dean Clause and Bob Oakleaf, Wyoming Game and Fish Department; and Pete Guernsey, TRC Mariah Associates Inc. July 19, 2004.