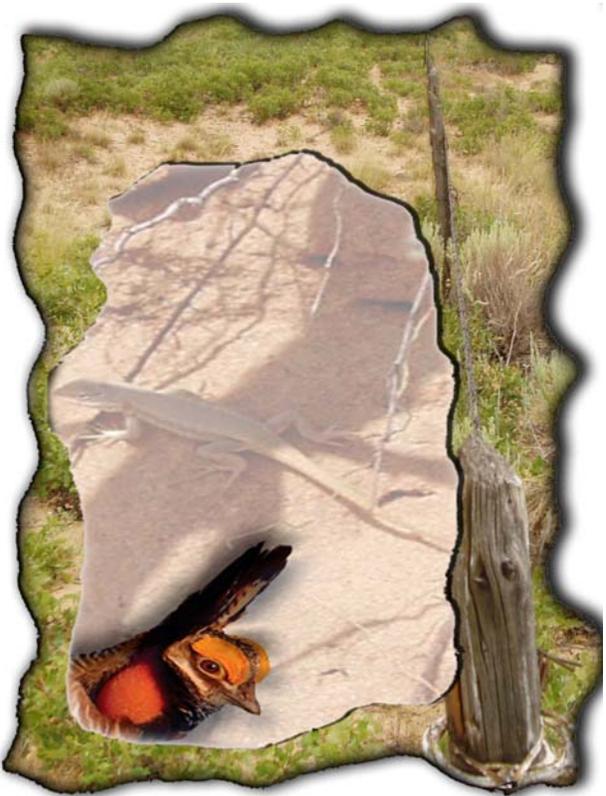


# 4 - Environmental Consequences



# CHAPTER 4

## ENVIRONMENTAL CONSEQUENCES

### INTRODUCTION

This chapter describes the predicted consequences, or potential effects, on the environment of implementing the alternatives described in Chapter 2. The chapter begins with a summary of the methods used for the impact assessment, describes the impacts that are common to all alternatives, and summarizes the potential impacts that could result from each alternative.

Using the information describing the existing condition of the environment (Chapter 3) and a description of the activities that may occur in the reasonably foreseeable future within the Planning Area, the types of impacts that could result from implementing the alternative plans were identified. The inherent difficulty of a broad environmental impact statement such as this is to describe potential impacts from a project action when exact locations of project sites are not known.

Impacts are defined as modifications to the environment, as it presently exists, that are brought about by an outside action. Impacts can be beneficial (positive) or adverse (negative), and result from the action directly or indirectly. Impacts can be permanent, long-lasting (long-term), or temporary (short-term). In the case of this analysis, long-term impacts are defined as those that would extend beyond 10 years. Short-term impacts are defined as those changes to the environment during ground-disturbing activities that generally would revert to pre-disturbance conditions at or within a few years of the end of ground disturbance. Short-term impacts are defined as those occurring within 10 years. Impacts can vary in significance from no change, or

only discernible change, to a full modification or elimination of the environmental condition.

Federal statutes charge BLM to manage public land and resources based on the principle of multiple-use. While the driving force for change is the need to change management prescriptions in the context of special status species habitat, other uses of public land and resources come into play. In addition to analyzing the impacts of changing the prescriptions for managing special species habitat, this EIS would also analyze the impacts of designating interstate utility corridors in the Planning Area, oil and gas leasing, the subsequent development of those oil and gas leases through the reclamation phase, livestock grazing, and off-highway vehicle (OHV) use designations

### ANALYTICAL ASSUMPTIONS

The following describes the assumptions used in the analysis of impacts.

#### Lands and Realty

Actions authorized under the lands and realty program would support other resource programs, respond to public demand for land use authorizations, and acquire administrative and public access where necessary.

#### Fluid Minerals

The basic assumption for mineral resources is that there would be demand for the resource regardless of the action taken and that some level of exploration and development of resources would be allowed.

BLM planning guidance for oil and gas leasing directs the agency to make land use plan decisions (such as this RMPA) at the following four levels:

- Lands open for leasing subject to existing laws, regulations, formal orders, and the conditions of the standard lease form;
- Lands open to leasing subject to moderate constraints such as seasonal and controlled surface use restrictions;
- Lands open to leasing subject to major constraints such as a no surface occupancy stipulations; and
- Lands closed to leasing. Lands closed to leasing are areas where it has been determined that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations and appropriate protection can be ensured only by closing the lands to leasing.

Plan-level decisions, such as this RMPA, to open lands to leasing represents BLM's determination, based on the information available at the time, that it is appropriate to allow development consistent with the terms of the lease, laws, regulations, and orders, and subject to reasonable conditions of approval. When applying leasing restrictions, BLM guidance states the least restrictive constraint meeting the resource protection objective should be used.

The assumptions for surface disturbance from access roads, drill pads, pipelines, power lines, and seismic activity were originally published in Appendix 18 of the Draft Roswell RMP/Carlsbad RMPA. Some of the values reflect values for exploration and development in new areas. Much of the Planning Area is within or near well-developed fields. Exploration and development of resources in well-developed areas reduces the distance required for roads, pipelines, and power lines. The

surface disturbance assumptions were modified to estimate impacts associated with oil and gas exploration and development drilling activities in developed areas.

- Stabilization of surface disturbance is expected to occur within 3 years.
- Access Roads: 14 foot-wide travel way, 1.5 acres disturbance per access road, .75 acre disturbance stabilized per access road per well.
- Drill Pads: 1.4 acres disturbance per average well pad (250' x 250'), 1.0 acre stabilized per abandoned well.
- Pipelines: 1.6 acres initial disturbance per producing well (30 foot right-of-way width), .75 acres stabilized per producing well, 0.5 acres stabilized per abandoned producing well.
- Power lines: .5 acre initial disturbance per producing well, 0.25 acres stabilized per well.
- Statistics on drilling activity and surface disturbance assumptions were used to project acres of disturbance, stabilization, and net long-term disturbance for the Planning Area. Disturbance estimates are based on the most probable future projection of drilling activity on Federal lands for the next 20 years.
- Approximately one acre is disturbed per mile of geophysical line. In the Roswell Field Office, approximately 150 miles of new geophysical lines are anticipated per year. In the Carlsbad Field Office, approximately 700 miles of new geophysical lines are anticipated per year. Reclamation of disturbance is expected to occur within 3 to 5 years.

- An average of 5 acres per well was used to determine surface disturbance in Chapter 4 discussions and are shown in Table AP7-5. This is a total acreage value and includes surface disturbance from roads, pipelines, power lines and other activities associated with exploration and development of oil and gas resources.

### Alternative Energy

There would be little or no opportunity for geothermal or biomass generation within the Planning Area. Therefore, these types of generating sites would not be considered. Only commercial solar and wind generator sites would be considered in this plan amendment. The impacts of wind energy development and operation would be similar to those analyzed in the 2005 Wind Energy Programmatic EIS. Solar collectors would be assumed to be 10 feet by 100 feet in size and collectors would be placed immediately adjacent to each other.

### Soils

Actions that make soils more susceptible to erosion, or which impair soil productivity include, but are not limited to:

- soil disturbing activities that result in soil loss due to accelerated wind or water erosion;
- activities that reduce vegetative cover, thus exposing the soil to erosion processes, and reducing the amount of soil organic matter and soil productivity;
- activities that tend to concentrate surface runoff or steepened hydraulic gradients, thus increasing soil erosion by flowing water;
- activities that result in sediment loading directly to streams;
- activities that damage soil structure by compaction or other means; and
- activities that degrade the physical, chemical, or biological properties of the soil, such as high-intensity burns,

contamination by toxic substances, or other means.

### Water Resources

Surface disturbance in the Planning Area may result in degradation of surface water and groundwater quality resulting from non-point source pollution, increased soil losses, increased erosion and reduced percolation of water into the ground.

### Floodplains

Surface disturbance in the Planning Area can result in impairment of the floodplain values from removal of vegetation, removal of wildlife habitat, impairment of water quality, decreased flood water retention, and decreased groundwater recharge.

### Air Quality

Surface disturbing activities and exhaust emissions, chemical odors, and dust from motorized equipment can affect air quality.

### Vegetation

Natural forces or land uses that cause surface disturbance can reduce the cover or change the composition of the vegetative resource. As more cover is lost and/or less desirable species increase in composition, the likelihood of negative effects is increased. Habitat restoration and brush control treatments would occur, with the size and type of treatments varying by alternatives.

### Livestock Management

The following assumptions were made:

- Monitoring at existing permanent rangeland study plots, Public Land Health Standards assessments, and Sensitive Species habitat studies would continue, regardless of alternative.

- Under current regulations, BLM has the authority to make adjustments necessary to meet the management objectives of the Resource Management Plan Amendment.
- Fluctuations in annual use are expected due to factors such as weather conditions and the price of livestock.
- Range improvements would continue to be implemented to enhance rangeland management practices and rangeland health conditions.

### Wildlife including Special Status Species

The following assumptions were made:

- Dependent upon the alternative being analyzed, oil and gas leasing and development would continue.
- Livestock grazing at permitted levels would remain, but the actual level of authorized use may vary on an annual basis and between alternatives.
- Through all alternatives wildlife habitat and range improvements would continue to be implemented to enhance rangeland management practices and rangeland health conditions.
- OHV use would continue, with varying levels of use and expansion between alternatives.
- Activities conducted by Wildlife Services would continue across the Planning Area as needed to protect livestock from predation.
- Wildlife research and monitoring studies would continue. This data would be important in evaluating the implementation of conditions of approval, reclamation procedures, habitat use, distribution, and management activities.
- BLM would participate in and support the efforts of the Implementation Team for the Conservation Strategy.

### Fire Management

Fires occurring in the Planning Area are wind-driven events, spreading rapidly with a relatively low intensity. Recovery from fire is highly dependent on available soil moisture and the amount of ensuing rainfall.

### Cultural Resources

Land uses requiring surface disturbance can impact cultural resources. The more disturbance that occurs, the greater likelihood there is for negative effects. BLM has received no indications of traditional cultural properties or sacred sites from the Native American tribes and pueblos. Therefore, the assumption is the Planning Area contains none of these properties.

### Paleontology

Land uses causing surface disturbance can impact paleontological resources. The more disturbance that occurs, the greater the likelihood there is for negative effects.

### Recreation

The demand for recreation opportunities on public land would continue.

#### Off-Highway Vehicle (OHV) Management

As OHV activity gains in popularity, outdoor recreation planners expect this activity to continue. BLM would provide opportunities for responsible OHV use within the Planning Area while protecting special status species habitat.

### Visual Resources

Visual Resource Management would be consistent throughout the Planning Area in both the Roswell Field Office and Carlsbad Field Office.

## Environmental Justice

There are no areas within the Planning Area that meet the definitions of low-income areas or the contain minority populations. Therefore, none of the alternatives analyzed in this document would place a disproportionate share of negative environmental consequences on low-income or minority populations in or around the Planning Area.

## Social and Economic Conditions

In this analysis, the following assumptions were made:

- For the No Action Alternative, and Alternatives A, B, C and D, development of existing oil and gas leases would continue in the Planning Area.
- Livestock grazing would continue in the Planning Area under the No Action Alternative and Alternatives A, B, C and D subject to existing regulations; and the measures detailed in the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing.
- Grazing permittees seldom use their full active preference for a variety of reasons which include previous agreements with the BLM, management prescriptions, economic factors, and the availability of water and forage.
- Any description of livestock grazing changes in this document discusses those changes in terms of full active preference.

## IMPACT TYPES

The analysis includes three types of effects (see 40 Code of Federal Regulations [CFR] 1508.7 and 1508.8) as described below:

- *Direct effects* are caused by the proposed action and occur at the same time and place.

- *Indirect effects* are caused by the proposed action and are later in time or farther in distance, but are still reasonably foreseeable.
- *Cumulative effects* result from incremental impacts of the proposed actions when added to other past, present, and reasonably foreseeable future actions regardless of what person(s) or agency (Federal or non-Federal) undertakes those actions.

Reasonably foreseeable future actions consist of projects, actions, or developments that can be projected, with a reasonable degree of confidence, to occur within a defined time frame and that would impact the same, or portions of the same, resource. This document reflects a broad, integrated land use planning analysis for a large geographic area that would result in prescription of general standards and controls, and procedures for subsequent implementation of future projects. Therefore, major past, present, and future actions and their relation to potential activities in the Planning Area are addressed generally.

The analysis of unavoidable adverse impacts, short-term versus long-term productivity, and irreversible and irretrievable impacts is incorporated into the discussions that follow. If they are not discussed specifically, there are none. In order to determine the vulnerability of resources to impacts, resources were evaluated in terms of the following general criteria:

- Resource significance—a measure of formal concern for a resource through legal protection or by designation of special status
- Resource sensitivity—the probable response of a particular resource to project-related activities
- Resource quality—a measure of rarity, intrinsic worth, or distinctiveness,

including the local value and importance of a resource

- Resource quantity—a measure of resource abundance and the amount of the resource potentially affected.

## CRITICAL ELEMENTS NOT PRESENT OR NOT AFFECTED

The following critical elements are not present in the Planning Area: Prime or Unique Farmlands, Wetlands or Riparian Zones, Wild and Scenic Rivers, and Wilderness or Wilderness Study Areas. There are no perennial playas, lakes, rivers, or streams in the Planning Area. No wetlands or riparian zones occur in the Planning Area

Analyses of impacts indicate that there are no changes from the No Action Alternative when compared to Alternatives A through E for the following critical elements: Invasive and Nonnative Species, Hazardous or Solid Wastes, and Native American Religious Concerns. Regardless of the alternative and their associated prescriptions, impacts to these elements would be the same as No Action. Therefore, impacts to these elements have already been analyzed and described in existing planning documents.

## IMPACTS COMMON TO ALL ALTERNATIVES

### Lands and Realty

The majority of realty actions require short-term use of lands, and long-term productivity is restored upon rehabilitation of disturbed areas. Unavoidable adverse economic impacts would result from constraints for resource protection that impact the routes selected, and from timing restrictions on construction activities. These impacts would be delays in construction and increases in distance from realignments resulting in increased construction costs.

The greatest impact would be in those areas which, in accordance with approved existing RMPs are currently managed as no surface occupancy areas and avoidance or exclusion areas for ROWs, permits and leases. Short term impacts on long-term productivity due to exclusion of ROWs, permit and lease development could include increased project costs due to an increase in length of the right-of-way to avoid restricted ROW areas, or NSO areas in the case of oil and gas leases.

The designation of interstate utility corridors would confine impacts (surface disturbance and habitat fragmentation) of these projects to localized areas. Positive long-term impacts would include the public knowledge of where these projects would be located, reducing planning time and costs of such projects. Designating corridors would also meet the requirements for ROW avoidance/exclusion areas.

Land tenure adjustments would occur only if the benefits outweigh any adverse impacts, and if there are no significant impacts that cannot be mitigated. The sale or exchange of isolated tracts would result in the disposal of land that is difficult and uneconomical to manage. Negative impacts would be associated with the creation of split ownership if the mineral and surface estates are not kept intact. Positive long-term impacts would be increased efficiency and lower costs in managing the public land.

BLM's effort to work with all parties involved for the removal unused power lines and poles within the Planning Area would reduce habitat fragmentation and restore habitat for the lesser prairie-chicken. This effort is already bearing fruit. Since BLM began developing this EIS one electric cooperative has voluntarily removed 157 poles and nearly 16 miles of wire within the Planning Area. This work has reduced habitat fragmentation directly affecting approximately 2,195 acres.

## Fluid Minerals

BLM has the authority to control the density and location of surface disturbing activities affecting public land and those activities associated with Federal mineral exploration and development. BLM has the authority to designate areas as closed or open to oil and gas leasing, attach a NSO stipulation to leases, and attach other conditions of approval (COA) that are included in approved applications for permit to drill (APDs). BLM can also attach other conditions of surface use (CSU) stipulations such as requirements for wildlife surveys or for plans of development (PODs). Use of these designations, stipulations or COAs provides effective tools for development of mineral resources and management of the accompanying surface disturbance.

No new leasing of Federal minerals and attaching a NSO stipulation may result in an increase and development of private and State minerals adjacent to leased and unleased Federal lands.

Reclamation Best Management Practices (BMPs) are common to all alternatives. BMPs are tools to be used in the effort to return areas that have had surface disturbance (such as drill pads and roads) to natural conditions. For a description of these BMPs, see Appendix 5. Combining the use of BMPs with the methods described above would reduce initial surface disturbance (direct impacts) and increase opportunities for reclamation success.

Drainage occurs when a deposit of either oil or natural gas is “drained” or removed either through existing pressure or pumping from adjacent lands (not in the same spacing or allocation unit). These deposits may extend beyond the surface ownership boundaries and a well drilled on one surface owner may drain the resource underneath an adjacent surface owner. When BLM designates an area closed to new oil and gas leasing, the Federal government can not collect royalties

even though oil or natural gas may be drained from adjacent properties. To avoid this situation BLM sometimes leases tracts Closed to leasing with an NSO stipulation.

Authority for the exploration and development of locatable, saleable, or solid leasable minerals is common to all alternatives except for the ACEC alternative (Alternative E) where no mineral entry is allowed.

## Soils

Direct impacts common to all alternatives resulting from oil and gas development and surface use activities, include removal of vegetation, exposure of the soil, mixing of soil horizons, soil compaction, loss of top soil productivity and susceptibility of the soil to wind and water erosion. Wind erosion would be expected to be a minor contributor to soil erosion with the possible exception of dust from vehicle traffic. These impacts could result in increased indirect impacts such as runoff, erosion and off-site sedimentation. Activities that could cause these types of indirect impacts include construction and operation of well sites, access roads, gas pipelines, and facilities.

Contamination of soils from drilling and production wastes mixed into soils or spilled on the soil surfaces could cause a long term reduction in site productivity. Some of these direct impacts can be reduced or avoided through proper design, construction and maintenance and implementation of BMPs. The impacts to soil resources are analyzed by comparing the total number of acres of new surface disturbance from oil and gas development for each alternative.

Direct impacts common to all alternatives resulting from OHV use include removal of vegetation, exposure of soil, mixing of soil horizons, soil compaction, loss of top soil productivity and susceptibility of the soil to wind and water erosion. Wind erosion would be expected to be a minor contributor to soil erosion with the possible exception of

dust from vehicular traffic. These impacts could result in increased indirect impacts such as runoff, erosion and off site sedimentation. Activities that could cause these types of indirect impacts include use of existing trails and roads.

### Water Resources

Potential direct impacts that would occur due to oil and gas development and surface use activities include increased surface water runoff and off-site sedimentation brought about by soil disturbance: increased salt loading and water quality impairment of surface waters; channel morphology changes due to road and pipeline crossings; and contamination of surface waters by produced water. The magnitude of these impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration and time within which construction activity would occur, and the timely implementation and success or failure of mitigation measures.

Direct impacts would likely be greatest shortly after the start of construction activities and would likely decrease in time due to natural stabilization, and reclamation efforts. Construction activities would occur over a relatively short period; therefore, the majority of the disturbance would be intense but short lived.

Petroleum products and other chemicals, accidentally spilled, could result in surface and groundwater contamination. Similarly, possible leaks from reserve and evaporation pits could degrade surface and ground water quality. Authorization of the proposed projects would require full compliance with BLM directives and stipulations that relate to surface and groundwater protection.

Potential direct impacts that would occur due to OHV use activities include increased surface water runoff and off-site sedimentation brought about by soil

disturbance: increased salt loading and water quality impairment of surface waters and channel morphology changes due to road and trail crossings.

### Floodplains

Direct impacts common to all alternatives resulting from oil and gas development and surface use activities that affect floodplain values, include removal of vegetation, removal of wildlife habitat, impairment of water quality, decreased flood water retention, and decreased groundwater recharge. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Air quality would temporarily be impacted from exhaust emissions, chemical odors, and dust from motorized equipment used to construct the access road, well pad, and by the drilling rig used to drill the well. Dust dissemination would decrease upon completion of the construction phase of the access road and well pad.

Air pollution from the motorized equipment would decrease at the completion of the drilling phase of the operations. Emissions from machinery and leaks or releases from wells or pipelines could result in airshed degradation. Blowouts and accidents during drilling and production could result in well fires and release of gases. The winds that frequent the southeastern part of New Mexico generally disperse odors and emissions. The impacts to air quality would be greatly reduced as the construction and drilling phases are completed.

In addition to direct impacts to air quality, indirect impacts from activities authorized by BLM would include contributions to climate change. These impacts may be regionally additive or synergistic. Currently, there are

no regulations applicable to climate change, although there is much discussion regarding potential carbon emissions.

Direct impacts common to all alternatives resulting from OHV use include exhaust emissions and dust.

### Vegetation

Vegetative BMPs are common to all alternatives. BMPs are tools to be used in the effort to return areas that no longer meet Rangeland Health Standards or have had surface disturbance (such as drill pads and roads) to natural conditions. For a description of these BMPs, see Appendix 5.

Positive impacts would generally be accomplished through brush control treatments or disturbed area restoration techniques that are designed to move plant communities towards a desired plant community. This would result in an improved water cycle, reduced erosion potential, and better habitat for wildlife and livestock use. Short term negative impacts to livestock use would include taking a portion of the allotment out of use while the vegetation is allowed to recover following treatments. Once the vegetation recovers, these actions would result in long term benefits in improved vegetation production and composition.

Direct negative impacts to vegetation include loss of plant cover due to energy exploration and development, loss to fire, and impacts of livestock grazing. These impacts can be minimized or negated by proper design of pads and roads, reclamation techniques, fire suppression tactics, and appropriate livestock management.

### Non-Native and Invasive Species

The detection of new invasive plant species populations, prevention of the spread of new invasive populations, management of

existing populations using tools of integrated weed management, and eradication of invasive populations is common to all alternatives. Regardless of alternative, existing management guidance in the Planning Area would continue and any pertinent Federal, State, or local law would be in effect for management of these species.

A negative impact following treatments would be a slight increase in erosion potential due to the temporary reduction of vegetative cover. Once more desirable plants establish, this impact would be mitigated.

Positive impacts would generally be accomplished through chemical or mechanical control treatments that are designed to reduce or eliminate invasive plant species populations and move plant communities towards a desired plant community. Reducing or eliminating non-native and invasive plant populations would result in an improved water cycle, reduced erosion potential, and better habitat for wildlife and livestock use.

### Livestock Management

Livestock use levels within the Planning Area are expected to reflect those in the New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management Draft Resource Management Plan Amendment/Environmental Impact Statement (Feb. 1999). Statewide, approximately 20 percent of the allotments were estimated to not meet the standards. In order to have these allotments meet the standards, a 20 percent reduction in AUMs could be necessary. Based on these Statewide numbers, an initial reduction of 7,660 AUMs could occur within the Planning Area. It was also assumed that of those allotments not meeting a standard, 22 percent would no longer use the Federal permit or lease, due to increased regulation and operating costs to the ranch. Within the

Planning Area, this would equal five allotments where the permittee or lessee would quit ranching.

Short term negative impacts would include fewer livestock being grazed, limited use in certain pastures to achieve desired cover for lesser prairie-chicken, increased costs in moving cattle to implement various grazing strategies, or not being able to graze certain pastures while vegetative treatments are allowed to recover. Smaller ranch operations having to implement grazing guidelines would be affected more than larger operations as they generally have fewer resources and less flexibility.

Long term positive impacts would include meeting habitat needs of special status species, improved ranching operations as a result of following grazing strategies, and a more diverse forage base due to vegetative treatments.

### Wildlife

Designating interstate utility corridors would reduce habitat fragmentation particularly those caused by electric transmission lines. This reduced fragmentation would occur due to limiting the ROWs to a smaller area, e.g. 3,500 feet wide corridor, rather than scattering major ROWs throughout the Planning Area. Burying interstate pipelines would produce short-term surface disturbance. Applying BMPs and reclamation prescriptions would reduce long-term effects within the Planning Area.

Concurrent with BMPs confining smaller ROWs developments to existing alignments would reduce surface disturbance and fragmentation of habitat across the Planning Area. Maximizing multiple occupancy of these ROWs would confine these impacts to central locations. Exclusion areas for rights-of-way for major projects as shown on Map 3-1 would also limit habitat loss and surface disturbance.

Allowing pipelines less than 5 inches in diameter to be laid on the surface and not buried would reduce direct impacts to vegetation and the indirect impacts to habitat by reducing subsequent habitat fragmentation.

Impacts from typical geophysical exploration operations would continue to displace wildlife from the area of disturbance during the operation. Mobile wildlife species would return once operations were complete. Creation of new roads from repeated vehicular travel during geophysical exploration, and possible continued use by the public, may reduce the area of undisturbed wildlife habitat, thereby potentially decreasing the quality for lesser prairie-chickens, sand dune lizards, raptors, mule deer and pronghorn antelope. Increased disturbance and human access would directly impact important habitat features such as booming grounds, nesting areas, and fawning areas. There would be cumulative negative impacts to wildlife habitat resulting from repeated geophysical activity conducted in the same area over time. In order to reduce impacts to wildlife, pathways created by repeated geophysical would not be open for general public use. Access to these pathways would be signed and/or physical barriers would be used to block access.

Under all alternatives, surface use and occupancy requirements would be implemented to mitigate the impact from oil and gas development in sand dune lizard and in lesser prairie-chicken habitat. Protective measures taken on public land and Federal mineral estate are typically not required on adjacent private and State trust lands that do not have Federal mineral estate. Therefore, relative to adjacent private and State trust lands, public land gains importance for lesser prairie-chicken and sand dune lizard habitat in the shinnery oak-dune community.

Implementation of New Mexico Standards for Public Land Health takes into account the uses of the land and evaluates their impact to the biotic community through the analysis of biotic indicators. When indicators are not meeting the biotic standard, and the causal factor is livestock grazing, the Guidelines for Livestock Grazing would be implemented to mitigate those impacts. This would result in improved rangeland conditions and promote wildlife habitat and future wildlife populations.

No long-term impacts are expected as a result of the livestock grazing program as proposed. Necessary adjustments to stocking rates or implementation of management prescriptions, utilizing rangeland and wildlife monitoring data, would have positive impacts to wildlife habitat.

The implementation of invasive brush control projects (e. g. mesquite, catclaw) necessary to achieve Standards for Public Land Health would have long-term positive impacts to wildlife habitat quality, quantity and would provide the basis for possible increases in wildlife populations. Future evaluations of the allotments within the watershed within the Planning Area would indicate the possible extent of these projects. Based on current funding and project implementation, it is anticipated that approximately 6,500 acres per year (130,000 acres over the life of the plan) would be treated for invasive brush species.

Implementation of the Standards for Public Land Health would result in improved vegetation structure for lesser prairie-chicken habitat over the long term. Identification of allotments and pastures not meeting the biotic standard would focus efforts on those areas needing improvement. Long term positive impacts to lesser prairie-chicken habitat would result.

Assessing and ensuring the vertical structure (Robel Pole method of monitoring)

of nesting cover across the range of the lesser prairie-chicken would increase nesting success by reducing nest predation. Impacts to lesser prairie-chicken occur when livestock use exceeds normal production rates. Drought conditions along with little change in livestock numbers can increase negative impacts to the quality and quantity of lesser prairie-chicken habitat.

Implementation of the BMPs (Appendix 5) would provide a flexible platform to minimize direct habitat loss and fragmentation. These BMPs would minimize habitat fragmentation, surface disturbance and expedite habitat restoration.

Long-term positive impacts to lesser prairie-chicken and sand dune lizard habitat would result from the coordinated efforts to reclaim and restore habitat. Restoration of developed sites is a key in re-establishing lesser prairie-chicken and sand dune lizard populations in areas that were once occupied. Creating partnerships and participation by individuals, other agencies and organization is vital to the restoration process. BLM's participation in the Conservation Strategy's Implementation Team would aid this effort.

### Special Status Species

Special status species include all State and Federally-listed threatened and endangered species and other species given special attention by agencies. The latter includes species designated as Sensitive by BLM in New Mexico, candidate and Species of Concern by the US Fish and Wildlife Service (USFWS), and Species of Concern by the New Mexico Department of Game and Fish (NMDGF).

In accordance with Section 7(a) 2 of the Endangered Species Act (ESA) of 1973, as amended, the BLM, Pecos District Office, requested informal consultation for the Special Status Species Plan Amendment and Environmental Impact Statement (EIS) for public land within New Mexico. A

Biological Assessment (BA) was prepared that provided detailed analysis of all Federally-listed (threatened and endangered), proposed and candidate species that may be affected by the Preferred Alternative (see Appendix 10). All anticipated environmental effects (direct and indirect) were included in the BA.

Based on the discussions and analyses described in the Biological Assessment, including the development of conservation measures, determinations were made that the Preferred Alternative would have a “No Effect” for 17 species: **Endangered Species:** black-footed ferret, Northern aplomado falcon, interior least tern, Kuenzler’s hedgehog cactus, Pecos gambusia, Sneed pincushion cactus, Koster’s springsnail, Pecos assiminea snail, Roswell pyrg, Noel’s amphipod; **Threatened Species:** bald eagle, Mexican spotted owl, Pecos bluntnose shiner, Pecos sunflower, gypsum wild-buckwheat, Lee pincushion cactus; and **Candidate Species:** Texas hornshell. With a determination of “No Effect,” further consultation between USFWS and BLM is not required.

The Biological Assessment also made a determination of “May Affect-Not Likely to Adversely Affect” for two species, the lesser prairie-chicken and sand dune lizard. With this determination USFWS and BLM entered into inter-agency coordination pursuant to Section 7(a)2 of the Endangered Species Act (ESA). Under this section of ESA, USFWS provides technical assistance to BLM to protect, improve, and enhance habitat for both species. See Appendix 6, Monitoring and Implementation.

### Fire Management

Although wildfires have a relatively low-occurrence frequency in the Planning Area, fires can and do occur. Such a fire would possibly threaten wildlife habitat, particularly the habitat used by the lesser prairie-chicken. Short-term (less than 10 years) impacts of wildfire would include the loss

nesting and brood rearing habitat as well as food sources.

Soils and topography would drive any decisions regarding suppression strategy in the Planning Area. Because of the sandy soils and dune topography, fire suppression strategies would be based on existing roads serving as control lines. Directing personnel and equipment to fight a fire using direct attack methods in these conditions raises the very real risk of loss of equipment, injury and loss of life due to the difficulty of traveling cross-country in loose sand. The BLM fire staff would actively and aggressively fight a fire in the Planning Area but safety and health considerations would remain paramount. (For more information about BLM fire policy, management, and fire occurrence frequency, see the 2004 Fire and Fuels Management Plan Amendment and Environmental Assessment for Public Land in New Mexico and Texas.)

Prescribed fire would continue to be a tool for vegetation manipulation in the mesquite grasslands found in the Planning Area. Use of prescribed fire would be limited to those situations in which rangeland health would be improved by its application under a specified prescription and threats to special status species would be negligible.

### Cultural Resources

Federal laws, statutes, regulations and policy would remain in effect for identifying and protecting cultural resources. The amount of potential impacts to cultural resources would be determined by the alternative chosen which drives the amount of development. The Pecos District has invited the five tribes who claim ancestral affiliation to the Planning Area (Chaves, Eddy, Lea and Roosevelt Counties) to participate in development of this DEIS. These tribes are the Apache Tribe of Oklahoma, Comanche Indian Tribe, Kiowa Tribe, Mescalero Apache and Ysleta del Sur Pueblo. The BLM would continue to include the five tribes in future consultation efforts.

To date only the Kiowa Tribe has provided BLM with information. The Kiowa Tribe is concerned about impacts to cedars (*Juniperus virginiana*), red rocks, and oral history of the tribe along what is now the Texas-New Mexico border. The Planning Area contains few if any of this juniper species and the surface geology trends toward limestone, white to yellowish rocks.

### Paleontological Resources

Federal law would continue to be in effect for protecting paleontological resources.

### Recreation

Recreation would continue within the Planning Area. Public land users would still engage in wildlife viewing, hunting, hiking, and off highway vehicle activity.

### Visual Resources

VRM classes remain unchanged throughout the Planning Area. Impacts to VRM would not differ across the alternatives and would remain the same. Low profile tanks and structures would apply in Classes I and II. Under some visual conditions low profile tanks and structures would be applied Class III. However if lesser prairie-chicken or sand dune lizard needs dictate otherwise, low profile recommendations may not apply in Class III visual areas. Painting stipulations from the Standard Environmental Color Chart and the Supplemental Environmental Color chart would apply.

### Cumulative Effects

The boundary of the Planning Area was selected to encompass sand dune lizard and lesser prairie-chicken habitat under BLM administration. The resulting area captures the largest area in which lesser prairie-chicken and sand dune lizard habitat intersects with public land and concentrated

Federal mineral estate. Areas outside the Planning Area support habitat for both species but lack either public land or Federal minerals.

The Planning Area is part of the Permian Basin which overlaps western Texas and eastern New Mexico. The first oil well drilled in the New Mexico portion of the basin dates from the 1920s and the area continues to produce oil and natural gas. That production includes public land and Federal minerals within the Planning Area

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year can be expected to be drilled within the Planning Area, 10 within Roswell Field Office and 51 within Carlsbad Field Office.

Using the same calculations in Appendix 7, approximately five wells per year would be plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells would be plugged in the Planning Area.

There are over 10,000 active oil and gas wells within the Pecos District and approximately 2,000 of these wells are in the Planning Area. There are active wells on adjacent State and private lands as well.

The 1997 Carlsbad RMPA and Roswell RMP analyzed surface disturbance as nine acres of initial surface disturbance for each well. This surface disturbance analysis included well pads, access roads and pipeline right-of-way. Also included in the analysis was reclamation in the amount of 5 acres per well within two years.

Using this analysis, the amount of surface disturbance from existing Federal wells ranges from 40,000 to 90,000 acres within the Pecos District. The amount of surface disturbance from existing Federal wells within the Planning area ranges from 8,000 to 18,000 acres.

Soils are directly impacted by this past surface disturbance. These direct impacts have been listed earlier in this chapter in the Soils section. Water resources and air quality are indirectly impacted by past surface disturbance. These indirect impacts have been listed earlier in this chapter in the Water and Air Quality sections.

The cumulative impacts of wind generators have been analyzed in the 2005 Wind Energy Programmatic EIS, Chapter 6, pages 6-1 through 6-5. The impacts analyzed include the short term positive impacts on the local economy during construction and the long term positive impacts of renewable energy generation. Of the 13.4 million acres of public land within New Mexico, the EIS determined 9,800 acres were economically developable. None of these 9,800 acres are located in the Planning Area.

Currently, there are no alternative energy generating sites within the Planning Area powered by either wind or solar. A wind energy site is located north of Kenna, New Mexico on State trust land. There is also a proposal for a wind energy farm in the western portion of the Carlsbad Field Office adjacent to National Forest land.

The history of livestock grazing in the Planning Area is similar to much of the southwestern United States prior to the mid-twentieth century. A small number of ranchers used intermixed private and public land to support livestock, including cattle and horses within the Planning Area. The Federal grazing program in the Planning Area was initiated with the implementation of the Taylor Grazing Act in 1934. The

program has since been administered by BLM (previously the Grazing Service and the Division of Grazing). Impacts of livestock grazing within the Pecos District and the Planning Area were previously analyzed in the 2001 New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management EIS.

Within the Planning Area, both Field Offices have over 20 years of vegetation monitoring data gathered at permanently established study plots. Overall, this data indicates that range condition, plant composition, and vegetative cover values have shown little change over this time period. Generally, range condition ratings have been in the mid-fair to mid-good classes and composition and cover values are in line with those described in the NRCS Range Site Descriptions. While the Roswell Field Office has just begun the Rangeland Health Standards assessment process within the Planning Area, the Carlsbad Field Office has completed assessments on about 15 percent of the allotments, mainly in conjunction with the grazing permit renewal process. Information specific to individual allotments can be found in monitoring files in both field offices or at the Vegetation Monitoring and Analysis Program web site ([http://nmso3web2/vmap/vmap\\_home.htm](http://nmso3web2/vmap/vmap_home.htm)).

Chapter 3 of this document outlines the recent natural history of the lesser prairie-chicken and the sand dune lizard. Declines in population can be attributed to habitat loss through a combination of factors, including drought, habitat fragmentation, surface disturbance, avoidance of human infrastructure and habitat conversion. Naturally occurring fluctuations in populations have been exacerbated by these factors.

Implementing the BMPs (see Appendix 5) would reduce initial surface disturbance and accelerate recovery of the vegetation. Current reclamation efforts, coupled with

BMPs would improve the recovery of vegetation in the Planning Area in the short-term.

Intermixed with public land and Federal minerals within the Planning Area are New Mexico State trust land (see Table 1-1 and Map 1-1). Activities occurring on public land and Federal minerals also occur on State trust land and the impacts of livestock grazing and energy development are present on the land. The New Mexico State Land Office shares many of the same concerns regarding special status species with BLM. To address those concerns, the State Land Office has taken the following steps within the Planning Area:

- Participated in the development of a Conservation Strategy designed to prevent the Federal listing of the lesser prairie-chicken and sand dune lizard.
- Agreed to be a cooperating agency in the development of this RMPA and EIS.
- Withdrew approximately 109,222 acres of chicken habitat from oil and gas leasing availability for a 3-year period. After this period, the status of both species would be reviewed to determine whether more, less, or different parcels of land should be withdrawn in the future.
- Cooperating with BLM and private landowners to mitigate impacts to lesser prairie-chicken nesting and brood-rearing habitat through livestock management and brush management practices.
- Working with sand dune lizard researchers at Texas A&M University to thoroughly evaluate the effects of oil/gas well pad density on lizard habitat.
- Identifying parcels of State land in sand dune lizard habitat areas for focused conservation and management efforts.
- Cooperating with other State, Federal (including BLM), and private stakeholders to develop a lesser prairie-chicken propagation program and

captive rearing facility to complement other conservation efforts.

- Prioritized and seeking voluntary compliance of oil and gas lessees in optimal lesser prairie habitat for installation of muffler covers at well pads.
- Prioritized and is currently seeking out ranchers for EQIP funding to implement reclamation of abandoned well pads in optimal lesser prairie-chicken habitat.
- Contributed over 100,000 toward the lesser prairie-chicken/sand dune lizard conservation process thus far, with additional contributions likely to follow.

## NO ACTION ALTERNATIVE

The following impact analyses would result from the implementation of the No Action Alternative.

### Lands and Realty

Direct and indirect impacts are described in the "Impacts Common to All Alternatives" section of this chapter.

### Fluid Minerals

Noise and timing restrictions are existing standard operating procedures and would have no additional impact.

No new drilling within 200 meters of leaks known at the time of permitting is standard operating procedures and would have no additional impact.

No surface occupancy would be allowed within 100 meters of "suitable habitat" for sand dune lizard is standard operating procedures and would have no additional impact.

The reasonable and foreseeable development (RFD) projections developed for this EIS are based on drilling statistics for the past 30 years (see Appendix 7 and

Appendix 18 of the 1994 Draft Roswell RMP and Draft Carlsbad RMPA). The RFD does not imply any drilling restrictions or limitations but is simply a forecast of anticipated activity. The actual number of wells drilled per year varies from year to year.

The RFD indicates that approximately 61 wells per year would be drilled and 11 wells per year would be plugged and abandoned in the Planning Area. Direct impacts include surface disturbances of approximately 305 acres of which approximately 140 acres would be reclaimed and stabilized by the end of three years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

### **Cumulative Effects**

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year can be expected to be drilled within the Planning Area, 10 within Roswell Field Office and 51 within Carlsbad Field Office.

Using the same calculations in Appendix 7, approximately five wells per year would be plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells would be plugged in the Planning Area.

Over the next 20 years, a total of 1,220 wells would be drilled in the Planning Area and approximately 220 wells would be plugged and abandoned. During that period approximately 6,100 acres of surface would be disturbed; 2,806 acres would reclaim and stabilize within three years of initial disturbance. Approximately 360 acres

would be reclaimed from plugged and abandoned wells.

### **Alternative Energy**

Neither the 1988 Carlsbad Resource Management Plan nor the 1997 Roswell Resource Management Plan considered the impacts of alternative energy generation sites. Thus, BLM would have to consider any application for such a generation site on a case by case basis. Considering the size of wind and solar projects, the intensity of development associated with these projects and the potential for controversy, an environmental impact statement may have to be developed before such a project would be approved or denied.

The impacts to vegetation and wildlife by the construction and operation of wind energy sites have been analyzed in the 2005 Wind Energy Programmatic Environmental Impact Statement. These impacts are described in Chapter 5 of this document on pages 5-37 through 5-75. The EIS is available on-line at [www.windeis.anl.gov](http://www.windeis.anl.gov).

Every solar collector (either concentrated or photo-voltaic) would produce an avoidance area for lesser prairie-chickens. The footprint of solar collectors is about 1,000 square feet or the equivalent of a small house. The Robel impact distances (see page 30 of Chapter 2, Table 2-3) indicate houses have an avoidance distance of 0.5 mile and an associated avoidance area approximately 500 acres in size.

### **Cumulative Effects**

The cumulative impacts of wind generators have been analyzed in the 2005 Wind Energy Programmatic EIS, Chapter 6, pages 6-1 through 6-5. The impacts analyzed include the short term positive impacts on the local economy during construction and the long term positive impacts of renewable energy generation. Of the 13.4 million acres of public land

within New Mexico, the EIS determined 9,800 acres were economically developable. None of these 9,800 acres are located in the Planning Area.

Commercial solar collectors are not sited as single units. The typical commercial solar generation site places the collectors in large groups, each individual collector immediately adjacent to the next. Little, if any, vegetation would grow underneath the collectors. Therefore, the impact to vegetation and habitat would equal the footprint of the group or groups of collectors (measured in square feet or acres) plus the .5 mile avoidance radius.

Placed in groups of 1,000, commercial solar collector sites would directly impact the vegetation and wildlife habitat on approximately 230 acres. Indirect impacts to lesser prairie-chicken habitat would total approximately 1,840 acres through avoidance radii. Construction and operation of solar sites include short term positive

impacts on the local economy during construction and long- term positive impacts of renewable energy generation.

Soils

This alternative follows the current Roswell Field Office and Carlsbad Field Office RMPs. Current soil resource management strategies, in both the Carlsbad and Roswell Field Offices, would continue unchanged in the Planning Area. The direct impacts of new surface disturbance are shown in Table 4-1.

The other major impact to soil resources is Off-Highway Vehicle use. Direct impacts to soils by OHV use would be confined to designated OHV recreation areas. It would be difficult to quantify direct impacts to soils in the portion of the Planning Area managed by the Carlsbad Field Office since it is designated as open to OHV use. Some impacts to soils by cross-country OHV occur but how much is not known at this time.

**TABLE 4-1, ACRES IMPACTED BY DRILLING**

<b>ALTERNATIVE</b>	<b>ESTIMATED NUMBER OF WELLS DRILLED PER YEAR</b>	<b>NUMBER OF ACRES DIRECTLY IMPACTED PER YEAR</b>	<b>ESTIMATED NUMBER OF WELLS DRILLED OVER 20 YEARS</b>	<b>NUMBER OF ACRES DIRECTLY IMPACTED OVER 20 YEARS</b>	<b>NUMBER OF ACRES RECLAIMED AND STABILIZED OVER 20 YEARS</b>
No Action	61	305	1,220	6,100	2,806
A	51	255	1,020	5,100	2,346
B	49	245	980	4,900	2,254
C	49	245	980	4,900	2,254
D	54	270	1,080	5,400	2,484
E (5 years)	32	160	160	800	368

## Water Resources

This alternative follows the current Roswell Field Office and Carlsbad Field Office Resource Management Plans. Current water resource management strategies, in both the Carlsbad and Roswell Field Offices, would continue unchanged in the Planning Area. The direct impacts of new surface disturbance are shown in Table 4-1.

Indirect impact to water resources would be higher in the portion of the Planning Area managed by the Carlsbad Field Office than the portion managed by the Roswell Field Office. This is due to the designation as open to OHV use and oil and gas field development (an average of 51 wells per year versus 10 wells per year).

## Floodplains

This alternative follows the current Roswell Field Office and Carlsbad Field Office Resource Management Plans. Current floodplain resource management strategies, in both the Carlsbad and Roswell Field Offices would continue unchanged in the Planning Area. Impacts to floodplain resources would be most affected by surface disturbance. However, surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

## Air Quality

This alternative follows the current Roswell Field Office and Carlsbad Field Office Resource Management Plans. Current air resource management strategies, in both the Carlsbad and Roswell Field Offices, would continue unchanged in the Planning Area. Impacts to air quality would be affected indirectly by surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

## Vegetation

Current vegetation management strategies, in both the Carlsbad and Roswell Field Offices, would continue unchanged in the Planning Area. Brush control to meet New Mexico Standards for Public Land Health would reduce competition for water, improve the water cycle, allow a better grass cover, and improve habitat for all species. An additional benefit of improved grass cover would be reduced soil erosion and improved air quality due to lowered airborne particulate matter. Under this alternative, projects in the Planning Area would have to compete for limited funding against treatments proposed throughout both field offices. Recent treatments have averaged about 6,500 acres per year within the Planning Area, which would equal about 130,000 acres over the 20 year life of the plan.

Under current management prescriptions, treatments completed in the Roswell Field Office would have to be in place 5 years before adjoining areas could be treated.

As described in the Minerals section above, over the 20-year life of the plan, 6,100 acres of vegetation would be disturbed due to construction. Of that amount, approximately 2,806 acres would be reclaimed and stabilized during initial rehabilitation, and 360 acres would be recovered as plugged and abandoned wells are reclaimed. This leaves 2,934 acres of vegetative disturbance.

## **Cumulative Effects**

Over the life of the plan, about 2,934 acres of vegetation would be lost to disturbances mentioned above. Changes in vegetation, not directly due to construction activities, would be most prone to amount and timing of precipitation. A prolonged drought could lead to a decrease in desirable grasses, shrubs, and forbs and an increase in less

desirable “invasive” type species. Conversely, several years of above normal precipitation could result in an increase in desirable grasses, shrubs, and forbs and a decrease in less desirable “invasive” type species. Localized areas could see improvement in cover/composition due to livestock management prescriptions and vegetation treatment (brush control) projects.

Impacts to vegetation by off-highway vehicle use would continue in the Carlsbad Field Office portion of the Planning Area because it is designated as open to OHV use. Impacts to vegetation in the Roswell Field Office portion of the Planning Area would be less because OHV use is designated as limited to existing roads and trails.

### Livestock Management

Under this alternative, there would be no change to current livestock grazing management practices. See discussions above in the Impacts Common to All Alternatives section. Modifications to grazing permits/leases would be made based on the results of monitoring data and standards assessments. Should monitoring indicate a reduction is needed, this could result in a negative economic impact to ranching operations, due to fewer calves produced for market. Livestock grazing in pastures treated for brush control would be allowed after two growing seasons of rest has occurred. A short-term negative economic impact would be costs associated with moving cattle to other pastures or finding additional pastures while treated pastures are rested. A long-term benefit would be better forage resulting in, for example, higher quality calves or more calves to market.

Those allotments not meeting Public Land Health Standards could result in a reduction of up to approximately 7,660 AUMs on public land and approximately five operators opting to no longer continue in the livestock business. These five allotments would be

considered as candidates for the voluntary relinquishment described in Chapter 2. Depending on the preference of these allotment operators, any number of these operators might select to voluntarily relinquish grazing on their allotment.

Prior to this plan amendment, and as part of the grazing permit renewal process, adjustments on eight allotments within the Planning Area have removed 836 Animal Units (AUs, which equals one cow yearlong) from public land use. This equates to 5,578 Animal Unit Months (AUMs or the amount of forage needed to support a cow/calf pair for one month). These adjustments were made based on rangeland monitoring study plot data and Robel Pole inventory data. The reductions were carried out using Rangeland Agreements to place these AUs in voluntary non-use. Seven of these eight allotments are in the Core Management Area (CMA) within the Roswell Field Office.

These reductions represent the majority of the adjustments that would need to be made within the CMA. Of these 836 AUs, 736 were in the RFO and equal 4,870 public land AUMs. This is about a 26 percent reduction within these allotments and a 6six percent reduction in AUMs currently authorized within the Roswell Field Office. Using these numbers for the Carlsbad Field Office, a 26 percent reduction in AUMs within those allotments that have the highest potential for lesser prairie-chicken habitat enhancement would result in 13,341 AUMs being placed in voluntary non-use via Rangeland Agreements. A 6 percent reduction in AUMs currently authorized within the Carlsbad Field Office would result in 7,011 AUMs being placed in voluntary non-use via Rangeland Agreements.

Overall, the amount of AUMs reduced could range from a low of 7,660 to a high of 18,919. The reductions would be based on rangeland monitoring study plot data, Robel Pole inventory data and Public Land Health Standards assessments. Factors such as successful brush control, favorable rainfall,

and suitable pasture rotation schemes could limit reductions to the low end of the scale. Conversely, limited brush control, drought conditions, and no pasture rotation schemes could push reductions towards the high end of the scale.

**Cumulative Effects**

See the Impacts Common to All Alternatives section. Reductions in livestock numbers or changes in season of use would negatively impact grazing operators. This would impact local businesses as grazing operators would have less disposable income to spend at businesses in and around the Planning Area. This is not expected to be significant, since many are already voluntarily reducing due to drought. This impact is expected to be localized to certain allotments or pastures, not Planning Area wide.

Wildlife including Special Status Species

The acquisition of lands identified in the current RMPs would have positive impacts to wildlife habitat. However; the positive impact would be less than those identified in Alternatives A and B. In the Planning Area, approximately 2,500 acres of private land and approximately 19,000 acres of State trust land have been previously identified for acquisition in Appendix 6 of the 1997 Roswell RMP.

Impacts on lesser prairie-chicken habitat by electric power lines, both existing and future construction, would continue. With a Robel impact radius of .25 miles, every 2 miles of power lines and poles yields 640 acres of avoidance by the species. No prescriptions within this alternative would mitigate this type of impact.

Based on the surface use and occupancy requirements (SUORs) of the 1997 Carlsbad RMPA and Roswell RMP no surface disturbance would be allowed in suitable sand dune lizard habitat located in occupied habitat or within 100 meters of

suitable habitat associated with the occupied habitat. This would result in the protection of microhabitats while allowing oil and gas development to occur.

Oil and gas development would initially result in the direct loss of wildlife habitat. Based on the 20-year projection, construction of well pads, roads, and pipeline operations would have direct effects on 6,100 acres of habitat (305 acres per year average) within the Planning Area (See Table 4-2).

TABLE 4-2 NO-ACTION ALTERNATIVE 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT			
TYPE OF ACTION	NUMBER OF ACTIONS ON FEDERAL LAND	APPROXIMATE TOTAL ACRES DISTURBED	
		SHORT TERM (3-YEARS)	LONG TERM
Oil and Gas development wells	1,220	2,806	3,294

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines. Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment.

These activities would cause direct disturbance and/or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion. Animal species composition and densities could change within and adjacent to any mineral development activity. Changes in the animal community and

habitat structure change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions. However, re-vegetation of disturbed sites is typically very slow.

The indirect disturbance (e.g., associated with human activities) to wildlife species for non-producing wells (approximately 126 acres) would be short-term, not extending beyond the 1 to 3 months required to complete the drilling pad/road and would largely disappear after abandonment and reclamation. However, if oil and gas reserves were discovered the indirect wildlife disturbance would continue long term around the drilling pads, along the roads, pipelines and power lines.

A further effect on wildlife populations would be increased access, not only by industry personnel, but also the general public at large. This access would increase the overall disturbance within the area and potentially create additional effects including: shooting, poaching and collisions with vehicles.

Intensity of edge effect disturbance would be greatest adjacent to the construction area and extend outward, dissipating with distance. The edge effect could extend large distances (as much as 1 mile) from the disturbance. Edge effect would be initially larger (in terms of spatial extent) and subsequently contract, but not disappear, following construction. Use of pipelines as roads would also perpetuate edge effect by maintaining surface disturbance. Any new disturbance effects would incrementally increase an already large habitat fragmentation effect within the Planning Area resulting from existing roads, grazing use, and past oil and gas activities.

Under an initial development scenario (single well pad with an access road), there would be a disturbance of approximately 5 acres of habitat (3 acres per well pad, 1 acre per road, and 1 acre per pipelines).

The noise would be constant for approximately 30 to 90 days of drilling, with indirect disturbance causing the lesser prairie-chicken and other wildlife species to avoid the area (.25 mile radius equal to 126 acres) during the drilling phase. If the well was a non-producer and the site was abandoned and reclaimed, the lesser prairie-chicken and other wildlife species would return to the area depending on the remaining infrastructure. However, as identified earlier re-vegetation of disturbed areas is typically very slow in recovery (BLM 2001).

This development scenario assumes that the well is a producer and has enough potential reserves to progress into a full field development. Full oil field development has a total complement of roads, pads, power lines, gravel sources and pipelines (640 acres 16 well pads-40 acre spacing). The direct disturbance from this full field development would increase to approximately 85 acres (48 acres-well pads, 16 acres-roads, 16 acres-pipelines, 5 acres-gravel pit). The combination of the density of roads, pipelines, power lines, pads, as well as ancillaries on the leasehold, would change the occasional disturbance of the one well scenario into an industrial complex.

Because of the infrastructure, this site would be continuously occupied and a large zone of avoidance (.75 mile radius – 1,183 acres) would develop with most if not all wildlife species avoiding the area.

Based on the RFD (see Appendix 7), an average of 61 wells would be developed on an annual basis, for a total indirect disturbance of 7,686 acres annually. Over the lifetime of this plan (20 years), there would be approximately 153,720 acres indirectly disturbed based on the RFD.

Oil and gas field development would have negative, long-term cumulative impacts to wildlife habitat due to the magnitude and concentration of surface disturbance, such as oil and gas pads, pipelines, access

**TABLE 4-3 INDIRECT IMPACTS AND FULL FIELD DEVELOPMENT**

ALTERNATIVE	NO. OF WELLS	ACRES INDIRECTLY IMPACTED PER WELL	ACRES OF INDIRECT IMPACT	ACRES INDIRECTLY IMPACTED OVER 20 YEARS	NUMBER OF FULL FIELDS DEVELOPED	ACRES DISTURBED BY FULL FIELD DEVELOPMENT	TOTAL ANNUAL ACRES OF DIRECT DISTURBANCE WITH FULL FIELD DEVELOPMENT	ACRES INDIRECTLY DISTURBED WITH FULL FIELD DEVELOPMENT
No Action	61	126	7,686	153,720	4	85	324	1,183
A	51	126	6,426	128,520	3	85	271	1,183
B	49	126	6,174	123,480	3	85	260	1,183
C	49	126	6,174	123,480	3	85	260	1,183
D	54	126	6,804	136,080	3	85	287	1,183
E	32	126	4,032	80,640	2	85	170	1,183

roads, power lines, and associated human activity in the area. A potential increase in illegal harvest of mule deer, and pronghorn antelope is possible when more human activity is occurring, over the road network, in the general area. Wildlife abundance and diversity would be expected to decrease. These disturbed areas would not be fully reclaimed and portions may remain unsuitable for wildlife for 20 years or more.

Developed oil and gas fields would continue to have long-term negative impacts to wildlife populations and habitat due to the operation and maintenance of producing wells, pipelines, and access roads. Noise associated with non-electric un-muffled pump jacks and compressors would affect mating and nesting activities throughout lesser prairie-chicken habitat. Roads and associated infrastructure that are needed for oil and gas development create fragmentation of habitats and avoidance areas.

Applying the timing stipulation (March 15 through June 15 between the hours of 3:00 am and 9:00 am) on appropriate areas of habitat on public land within the Planning Area would continue to protect lesser prairie-chickens during the spring mating period and brood rearing phase.

Concurrent with timing stipulations, no drilling would be allowed within 200 meters of known lesser prairie-chicken leks. This provides some protection to the booming

ground and adjacent nesting habitat. The pads combined with roads, and possible power lines have significant impacts to wildlife resulting in the creation of areas that lesser prairie-chicken avoid.

Reducing noise from pump jack motors to a maximum of 75 decibels (db) measured 30 feet from the source of the noise would potentially support reestablishment of booming grounds in closer proximity to pump jacks. Females may be able to hear the booming males and potentially increase reproductive success (i.e. more poult groups) as a result of reducing noise levels.

Mesquite control in shinnery oak vegetation community would result in positive impacts on lesser prairie-chicken habitat (approximately 1,000 acres per year for a total of 20,000 acres over the life of the plan). These prescriptions would have short term effects in the form of defoliating shinnery oak but allowing native grasses, forbs and shrubs to reestablish in areas that were once mesquite dominated. Focusing on mesquite control would have positive impacts to the species and its habitats.

**Cumulative Effects**

Under this alternative surface disturbance and habitat fragmentation would continue unchanged as would activities on public land authorized by BLM. Continuing the status quo would not likely set in place the management prescriptions and mechanism

necessary to avoid listing either the lesser prairie-chicken or the sand dune lizard as threatened or endangered under the Endangered Species Act.

### Cultural Resources

This alternative follows the current Roswell Field Office RMP and the Carlsbad RMPA. Impacts (direct, indirect and cumulative) to cultural resources would be the same as those analyzed the Roswell RMP and the Carlsbad Amendment. The chance of impacting cultural resources would increase as surface disturbance increases. The direct impacts of new surface disturbance are shown in Table 4-1.

### Paleontological Resources

This alternative follows the current Roswell Field Office RMP and Carlsbad RMP, as amended. Impacts (direct, indirect and cumulative) to paleontological resources would be the same as those analyzed the Roswell RMP and the Carlsbad Amendment. The chance of impacting paleontological resources would increase as surface disturbance increases. The direct impacts of new surface disturbance are shown in Table 4-1.

### Recreation

This alternative follows the current Roswell Field Office RMP and Carlsbad RMP, as amended. Impacts (direct, indirect and cumulative) by recreation activities on natural resources would be the same as those analyzed the Carlsbad and Roswell RMPs.

Since current management prescriptions would continue, the recreating public would continue to be visit lesser prairie-chicken habitat. There would be little or no management criteria in place to protect mating areas or to impose stipulations to shield the male boomers during mating rituals. This could bring about negative

impacts to the lesser prairie-chicken habitat and could result in species decline. Lesser prairie-chicken habitat would be left open to potential degradation by the recreating public through setting up blinds, camping, and photography sites in potential lekking areas.

### **Off-Highway Vehicle Management**

Current management plan prescriptions would continue, including:

- Mescalero Sands North Dune OHV Area would be expanded to 1,674 acres.
- Identification of lesser prairie-chicken habitat would not be conducted prior to expansion.
- This would likely pose species decline by the possible intrusion into habitat areas.
- Impacts to lesser prairie-chicken and sand dune lizard habitat might develop.
- The Hackberry Lake Intensive OHV Area would continue to be managed as open to OHV use.
- Designated routes for OHVs transversing to sand dunes would not be identified.

The Roswell Field Office would conduct inventories and conduct transportation planning to identify trails and roads suitable for OHV use. This would reduce surface disturbance and identify OHV routes. Impacts would be less to special species habitat because roads and trails would be managed as limited.

The Carlsbad Field Office would remain open to OHV use. Special Management Areas (SMAs) where archaeological districts are present would be designated as closed to OHV use. Emergency limitations may be imposed in problem areas. Impacts to lesser prairie-chicken and sand dune lizard habitat would continue.

### Special Management Areas

Under this alternative, all current designations for areas of critical

environmental concern (ACECs) and SMAs (and their associated management prescriptions) would continue. This includes:

- Mathers Research Natural Area (RNA) (242 acres). Management prescriptions include: closed to future oil and gas leasing; withdrawn from mineral entry; closed to solid mineral leasing; closed to the disposal of mineral materials; designated as a ROW exclusion area; and closed to OHV use.
- Mescalero Sands ACEC – (7,888 acres). Management prescription include: closed to future oil and gas leasing; withdrawn from mineral entry; closed to solid mineral leasing; closed to the disposal of mineral materials; designated as a right-of-way exclusion area. Out of the total area 2,478 acres closed to OHV use, 5,410 acres where OHV use would be limited to designated roads and trails. In addition livestock grazing preference on about 2,483 acres would not be allocated. The Natural National Landmark and Outstanding Natural Area designations would remain in place.
- Bear Grass Draw - 1,780 acres, of which 1,280 acres are within the Planning Area. OHV use is designated as limited to designated routes.
- Laguna Plata Archeological District – (3,360 acres) Management prescriptions include no surface occupancy for oil and gas leases; designated as a right-of-way avoidance area; closed to solid mineral leasing (except for potash); closed to the disposal of mineral materials; out of the total area 1,120 acres are closed to OHV use with 2,240 acres limited to designated routes.
- Maroon Cliffs Archeological District - originally contained 11,783 acres of

public land. The 1997 Carlsbad RMP Amendment increased the size of the district to 17,720 acres of which approximately 4,760 acres are within the Planning Area. Of the acreage in the Planning Area 2,280 acres are closed to future oil and gas leasing and 2,480 acres have the no surface occupancy requirement for oil and gas leases. The entire district is closed to solid mineral leasing and closed to the sale of mineral materials. The entire district is designated as limited to designated routes for OHV use.

- Poco Site – (51 acres and is entirely within the Planning Area). The only management prescription concerns OHV use which is limited to designated routes.

Impacts of establishing and maintaining this ACEC and these SMAs were previously analyzed in the 1988 Carlsbad RMP, the 1997 Carlsbad RMPA, and the 1997 Roswell RMP.

### Social and Economic Conditions

Social and economic trends identified in Chapter 3 would continue for the foreseeable future.

### Cumulative Effects Summary

The impacts of No Action were documented in the 1988 Carlsbad RMP and the 1997 Proposed Roswell Resource Management Plan/Final Environmental Impact Statement–Proposed Carlsbad Resource Management Plan Amendment/Final Environmental Impact Statement, pages 4-1 through 4-56.

The No Action Alternative does not meet the Purpose and Need for this amendment as described in Chapter 1. Continuing No Action raises the likelihood that either the lesser prairie-chicken or the sand dune lizard could be listed as threatened or endangered species. Such a listing would

probably disrupt some portion of employment and personal income derived from livestock grazing and oil and gas development. If the sand dune lizard is listed the effect would probably be confined to the Planning Area. If the lesser prairie-chicken is listed the effect would probably extend beyond the boundaries of the Planning Area since the species occurs in five states.

## ALTERNATIVE A

The following analyzes the impacts of implementing Alternative A, which is the portion of the Conservation Strategy that applies to public land and Federal minerals in the Planning Area.

### Lands and Realty

Direct and indirect impacts would be similar to those in the described in the “Impacts Common to All Alternatives” section of this chapter. However, a more active land tenure program would result from prioritizing exchanges with the New Mexico State Land Office. Consolidation of public land would significantly improve management efficiency and effectiveness, reduce management cost, and block up key areas to provide improved protection for resources.

### Fluid Minerals

#### **Areas Closed to New Oil and Gas Leasing**

The CMA, portions of the Primary Population Area (PPA), occupied habitat in the Sparse and Scattered Population Area (SSPA) and the Isolated Population Area (IPA) would be closed to new oil and gas leasing with certain exceptions (see Chapter 2).

The amount of unleased Federal minerals that would be closed to leasing amounts to

about 18 percent of the total Federal oil and gas mineral estate in the Planning Area (see Table 4-4) or about two percent of the total Federal oil and gas mineral estate in the Pecos District. Lands closed to leasing could be subject to drainage of oil and gas resources from adjacent wells. This could result in the loss of royalties due to the Federal government unless compensatory royalty agreements are arranged or protective wells are drilled.

In State Game Commission owned Prairie-chicken Areas, new leasing of Federal minerals would not be permitted. However, in certain limited situations (pooling, unitization, etc.), leasing with a NSO stipulation may be allowed. This is not a new requirement and would not have any additional impacts on exploration and development in the Planning Area.

#### **New Oil and Gas Leasing With a No Surface Occupancy Requirement**

Under certain conditions tracts within the CMA, PPA, and occupied habitat within the SSPA and IPA would be offered for lease with a NSO requirement (see Chapter 2).

Leasing with a NSO stipulation could dissuade bidders from purchasing lease parcels. When applied to permits for drilling, proponents may have to relocate drilling projects, thereby increasing construction costs the project. Some lands may have to be developed through directional well drilling. Of the proposed lands open to oil and gas leasing with the NSO stipulation, all are in areas of high or moderate hydrocarbon potential. Some leases on these lands with the NSO stipulation could also be subject to drainage of hydrocarbons by nonfederal wells. In this situation, the lessee would not be responsible for payment of lost royalties unless an economic directional well can be drilled.

TABLE 4-4 ALTERNATIVE A ACREAGE					
Management Category	Acres Leased for Oil and Gas	Unleased Acres	Total Acres of Federal Minerals	Comparison of Leased Acreage to Total Federal Acreage in the Planning Area	Comparison of Total Unleased Acres to Total Federal Acreage in the Planning Area
CMA	40,180	115,949	156,129	4%	10%
PPA	105,641	93,157	198,798	9%	8%
SSPA	81,572	64,130	145,702	7%	6%
IPA	597,953	46,741	644,694	52%	7%
Total	825,346	319,977	1,145,323	72%	28%

When the notice of a competitive sale of oil and gas leases clearly provides that a lease would be subject to a NSO stipulation, by making a bid for the indicated parcel the bidder is bound to accept the stipulation. Lessees would be advised that issuance of a lease in the Planning Area with the NSO stipulation does not guarantee that a suitable surface location would be available for drilling or that the lease would be developed. Prospective lessees should take this into consideration prior to obtaining a lease with the NSO stipulation. If a lessee acquires a lease with an NSO stipulation attached, then it would be the responsibility of the lessee to locate a suitable surface location that does not adversely impact lesser prairie-chicken habitat or sand dune lizard habitat. The lessee would be responsible for demonstrating, through the use and application of peer-reviewed science, that development of the lease would not adversely impact the habitat of either species.

The immediate and long-term effects of NSO restrictions could include lost production opportunities, increased drilling and production costs, and loss of royalties.

### **New Oil and Gas Leasing**

New leasing in suitable habitat within the PPA would be allowed if, by annual re-calculation, there is demonstrated a net increase in the sum of suitable and occupied habitat. New leasing in occupied habitat would be allowed if the criterion for suitable habitat is met, and there is a statistically significant lesser prairie-chicken

population increase Statewide over the previous five years. This provision would have minimal impact on the exploration and development of mineral resources in the Planning Area. The limitations on exploration and development of resources may result in a loss of revenue and royalties, but amount of acreage involved is only 8 percent of the Federal minerals in the Planning Area and 5 percent of the total lands available in the Planning Area (see Table 4-4).

Those areas in the PPA designated as unsuitable habitat are open for new leasing with no new or additional restrictions. Most, but not all areas in the PPA designated as potentially suitable habitat are open for new leasing. These areas may be closed to new leasing; or stipulated in certain instances, where development in unsuitable or potentially suitable habitat would extend an impact/avoidance zone into suitable habitat. These are standard operating procedures and have no additional impact.

### **Development of Existing Oil and Gas Leases**

There are existing oil and gas leases in areas that would be closed for new leasing within the CMA, PPA, SSPA and IPA. Development of resources covered by these leases would continue under the terms of the lease and appropriate conditions of approval in this area.

Plans of Development (PODs) and Conditions of Approval (COAs) would be used to guide orderly development on

existing Federal leases in potential, suitable, or occupied habitat in the CMA and PPA. PODs and COAs would be required only on a case by case basis in the SSPA and IPA.

PODs and COAs would ensure orderly development and minimize surface impact in lesser prairie-chicken habitat. Included in PODs and COAs would be specifications for various strategies for minimizing impacts associated with new development, and for reclaiming developed areas. Use of PODs for orderly development began with implementation of Interim Management and therefore would have minimal additional impact.

Abandoned well pads and the caliche roads that serve these wells would be cleaned of caliche, raked, contoured, and reclaimed.

All out-of-service roads in occupied and suitable sand dune lizard habitat would be reclaimed and closed to vehicle use, pending consultation with grazing permittees. Abandoned well pads and out-of-service roads would not be reseeded in dune areas. These actions may result in increased initial costs. The long-term benefits would bring cost-savings to operators in reclamation, and provide benefits to wildlife habitat.

Oil and gas wells and storage facilities would include safety measures to ensure operations that minimize the potential for habitat pollution in the form of oil leaks or spills. Such measures would include, but not be limited to, replacement of worn or out-of-date materials and equipment, construction of spill containment structures, removal of contaminated materials, and protection of well sites. These are standard operating procedures and have no additional impact.

### **Cumulative Effects**

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal

minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year were drilled within the Planning Area, (10 within Roswell Field Office and 51 within Carlsbad Field Office). On average five wells per year were plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells were plugged in the Planning Area.

The use of Controlled Surface Use (CSU) or No Surface Occupancy (NSO) stipulations in unleased areas would also have a greater impact under this alternative than under current management because pre-existing rights of development do not exist. However, the impacts of no new leasing and applying CSU or NSO stipulations would be minimal given the small acreage amount proposed. The amount of acreage proposed to be closed or stipulated is only 10 percent of the Federal lands in the Planning Area and 5 percent of the total lands in the Planning Area. In addition, a large portion of the lands in the CMA are not within known oil and gas fields or developed fields. Given these conditions, impacts of this portion of Alternative A would not be significant.

This alternative would reduce the number of new well pads and minimize the size of the pad in occupied or suitable sand dune lizard habitat. Opportunities to drill multiple wells from one pad would take precedence. While drilling multiple wells from one location may reduce facility costs, it may not offset the costs associated with directional drilling.

Based on the RFD and the management prescriptions of this alternative, approximately 51 wells would be drilled per year and 11 wells per year would be plugged and abandoned. Initial surface disturbance would be a total of

approximately 255 acres of which approximately 117 acres would reclaim and stabilize by the end of three years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

Over the next 20 years, a total of 1,020 wells would be drilled in the Planning Area and approximately 220 wells would be plugged and abandoned. During that period, approximately 5,100 acres of surface would be disturbed; 2,346 acres would reclaim and stabilize within 3 years of initial disturbance and approximately 360 acres would be reclaimed from plugged and abandoned wells.

The long-term effects of no new leasing could include lost production opportunities, lost royalties and lost job opportunities. Under this alternative, 10 fewer wells would be drilled per year than the No Action alternative. Given the history of production in this region, 8 of those 10 wells would likely be producing wells. Over 20 years, this alternative may result in the loss of 160 producing wells in the region.

### Alternative Energy

Under this alternative, applications for wind and solar generating sites would be considered on a case by case basis. Impacts would be similar to those described under the No Action Alternative.

### Soils

Impacts to soils would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to soils are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to soil resources is OHV use. Direct impacts to soils by OHV use would be confined to designated OHV

recreation areas and existing roads and trails within the Planning Area.

### Water Resources

Impacts to water resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to water resources are indirectly related to surface disturbance.

The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to water resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Floodplains

Impacts to floodplain resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to floodplain resources are indirectly related to surface disturbance. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Impacts to air quality would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to air quality are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to air quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area.

Impacts would be less those described under the No Action Alternative.

### Vegetation

The treatments prescribed under this alternative to reduce mesquite and shinnery oak to meet composition/canopy standards would reduce competition with more desirable vegetation for water. This would have positive impacts similar to those described in the No Action Alternative. The focus of these treatments would be within the Planning Area. This would allow more acres to be treated in the Planning Area, so the benefits could be realized sooner than under the No Action Alternative. Should funding levels hold consistent for the life of the plan, as many as 640,000 acres could be treated for brush control. Assuming that 3 years are funded at current levels, with the remaining years funded at normal levels, then approximately 140,000 acres could be treated for brush control.

In addition, the 5-year wait before adjoining pastures are treated in the Roswell Field Office would be dropped. This would allow greater management flexibility to treat adjoining pastures in one project, saving time in the implementation schedule while reducing overall costs.

As described in the Minerals section above, over the 20-year life of the plan, 5,100 acres of vegetation would be disturbed due to construction, 2,346 acres would be reclaimed and stabilized during initial rehabilitation, and 360 acres would be recovered as plugged and abandoned wells are reclaimed. This leaves 2,394 acres of vegetative disturbance.

### **Cumulative Effects**

Changes in vegetation would be most prone to amount and timing of precipitation, but localized areas could see improvement in cover/composition due to livestock management prescriptions and vegetation treatment (brush control) projects. Within

the Planning Area, the increased focus on limiting surface disturbance, more brush control, and changes in livestock management prescriptions would result in meeting Desired Plant Community (DPC) goals sooner than under the No Action Alternative.

Within the Planning Area, changing the designation of the Carlsbad Field Office portion from open to OHV use to limited to existing roads and trails would reduce the impacts to vegetation. The reduction would be difficult to quantify due to the lack of base-line data. Impacts in the Roswell Field Office portion would be the same as those analyzed in the 1997 Roswell RMP.

### Livestock Management

Livestock grazing would be maintained at a level consistent with the seasonal nesting and brood-rearing habitat requirements of the lesser prairie-chicken. Ranch operators voluntarily participating in a conservation program would agree to try to meet these standards through the adoption of a suitable grazing program for their land or lease allotment. Such a program may involve an overall reduction in AUMs or acreage grazed, modification of fences and water sources, brush control, implementation of a more conservative, deferred or rotational grazing system that rests breeding areas in key seasons to ensure adequate residual grass cover for nesting, and other related changes in management.

Under this alternative, the focus on livestock management to enhance special status species habitat would be on livestock management techniques first and reductions second. Techniques such as pasture rest to provide suitable nesting and brood-rearing habitat to be maintained, modification of fences and water sources, and brush control would be employed first. If these were not successful, then reductions in grazing use would occur to protect or enhance habitat. The potential

for AUM reductions is discussed in the No Action Alternative above.

Grazing would be deferred for at least two growing seasons after any vegetation treatment. Grazing after that time would be allowed only if progress towards meeting vegetative standards is being made. Longer periods of rest may be required in some cases, especially during drought conditions.

These measures would result in a negative economic impact to ranching operations, due to fewer calves produced for market, additional costs to move livestock from pasture to pasture, renting additional private pasture to support the herd while they could not graze on public land, and increased maintenance costs on range improvement projects necessary to meet habitat requirements. These short term negative impacts would be reduced or eliminated if programs such as EQIP are utilized to offset these losses.

### **Cumulative Effects**

See the discussion in the Impacts Common to All Alternatives section. Reductions in livestock numbers or changes in season of use would negatively impact grazing operators, which would impact local businesses as grazing operators would have less disposable income to spend at these businesses. This is not expected to be significant, since many are already voluntarily reducing due to drought. This impact is expected to be localized to certain allotments or pastures, not Planning Area wide. The impact may also be offset by incentive programs, brush control, or improved efficiency due to additional range improvement projects and grazing schemes.

### **Wildlife including Special Status Species**

Alternative A provides a greater opportunity to protect and improve wildlife habitat than

does the No Action Alternative. This alternative provides management strategies that were developed by a strong consensus building exercise and allows management flexibility for habitat and species recovery.

Land exchanges with the New Mexico State Land Office for lands identified within the CMA would provide a positive impact to these areas by blocking up Federal lands and minerals and avoiding fragmentation. Up to approximately 22,000 acres of State Trust lands within the CMA could possibly be acquired by BLM.

Impacts on lesser prairie-chicken habitat by electric power lines would be the same as the No Action Alternative.

Within this alternative there are four different classifications for habitats associated with lesser prairie-chicken. They are as follows:

Core Management Area (CMA), Primary Population Area (PPA), Sparse and Scattered Population Area (SSPA), and the Isolated Population Area (IPA). Table 4-4 summarizes Federal Mineral acres with in these four geographic areas.

Within the CMA and PPA Plans of Development (PODs) are required on existing leases. In the SSPA and the IPA, PODs would be utilized on a case-by-case basis where appropriate. Requiring PODs for existing leases, when requested, within these habitat areas would reduce surface disturbing impacts and habitat fragmentation by controlling when and where those impacts would occur.

The CMA contains 115,949 acres of Federal minerals not currently under lease. Where appropriate, new leasing with a NSO requirement within the perimeter of the CMA would be considered to reduce impacts to these habitats while allowing the orderly development of petroleum resources. Closing the remainder of the CMA to new oil

and gas leasing would protect currently occupied lesser prairie-chicken and sand dune lizard habitat.

The PPA contains 93,157 acres of Federal minerals not currently under lease. Closing occupied, suitable and portions of potentially suitable habitat (including the State Prairie-chicken Areas) within the PPA to new Federal oil and gas leasing would protect currently occupied lesser prairie-chicken and sand dune lizard habitat. In certain circumstances, an NSO requirement may be applied to new oil and gas leasing within these habitats. This approach would aid in minimizing surface impacts, avoid habitat fragmentation, and protect active leks. Activities in unsuitable habitat would be conducted in a manner to avoid impacts to adjoining occupied and suitable habitats. Using this approach for oil and gas leasing in unsuitable habitat would result in minimal impacts on lesser prairie-chicken and sand dune lizard habitat.

New oil and gas leasing in occupied and suitable habitat within the PPA, would be based on the annual recalculation formula. The status of the population should be maintained or increased; however, no gain in suitable habitat would likely occur within the PPA.

Within the SSPA, an NSO requirement may be applied to new oil and gas leasing when occupied habitats (within 1.5 miles of active leks) would be impacted. Closing the SSPA to new oil and gas leasing within currently occupied lesser prairie-chicken habitat would protect these areas where NSO is not a viable option. This approach would aid in minimizing surface impacts, avoid habitat fragmentation, and protect active leks.

Within the IPA, an NSO requirement may be applied to new oil and gas leasing when occupied habitats (within 1.5 miles of

active leks) would be impacted. Closing the IPA to new oil and gas leasing within currently occupied lesser prairie-chicken habitat would protect these areas where NSO is not a viable option. This approach would aid in minimizing surface impacts, avoid habitat fragmentation, and protect active leks.

Within the IPA, 17 Habitat Evaluation Areas were established. (See Map A-1 and Chapter 2) An assessment of these 17 areas for lesser prairie-chicken habitat suitability would be conducted. Depending upon the outcome of this analysis some areas may be closed to new leasing and used as building blocks for future populations. Habitat Evaluation Areas meeting the criteria outlined in Appendix 8 may also be used as relocation sites and for future research needs. Areas not meeting the criteria may be leased and developed at different levels based upon the proximity to other blocks, and the presence of occupied and suitable sand dune lizard habitat. Table 4-5 lists the 17 Habitat Evaluation Areas and acreage.

Based on a 20-year projection, construction of well pads, roads, and pipeline operations would have direct effects on 5,100 acres of habitat (255 acres per year avg.) within the Planning Area (See Table 4-6).

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment (ibid).

TABLE 4-5 HABITAT EVALUATION ACREAGE		
UNIT #	HEA NAME	ACRES
1	QP-A	7,,595
2	QP-B	598
3	QP-C	3,097
4	QP-D	1,972
5	QP-F	2,909
6	BILBREY	5,328
7	EUNICE	7,661
8	LAGUNA	3,289
9	LOCO HILLS	8,839
10	MESCALERO SANDS	9,347
11	MILLS	2,585
12	PADUCA	15,167
13	PEARL	3,234
14	SAN SIMON	10,702
15	SKEEN	2,939
16	SOUTHPAW	3,054
17	WIPP	24,738
	<b>Total Acres</b>	<b>113,053</b>

TABLE 4-6 ALTERNATIVE A 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT			
TYPE OF ACTION	NUMBER OF ACTIONS ON FEDERAL LAND	APPROXIMATE TOTAL ACRES DISTURBED	
		SHORT TERM (3-YEARS)	LONG TERM
Oil and Gas development wells	1,020	2,806	3,294

These activities would cause direct disturbance and/or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion (BLM 2001). Animal species composition and densities could change within and adjacent to any mineral development activity (ibid). Changes in the animal community and habitat structure change in plant species composition and density would persist until habitat within the

development areas is restored to near pre-disturbance conditions (ibid). However, re-vegetation of disturbed sites is typically very slow (ibid).

For a discussion of indirect impacts, refer to the No Action Alternative and Table 4-3.

Based on the RFD (see Appendix 7), it assumes that there would be 51 wells (approximately 3 full field developments) developed on an annual basis, for a total indirect disturbance of 6,426 acres annually. Over the lifetime of this plan (20-Year) there would be approximately 128,520 acres indirectly disturbed based on the RFD.

Based on the prescriptions in the geographic areas discussed above, the direct impacts to 5,100 acres (255 acres per year avg.) and the indirect impacts of 128,520 acres (6,426 acres per year) would occur exterior the CMA, occupied and suitable habitat within the PPA, occupied habitat within the SSPA, and the 17 Habitat Evaluation Areas within the IPA. Therefore, the impacts from the 51 wells would have minimal impacts to lesser prairie-chicken habitat.

Applying the timing stipulation (March 15 through June 15 between the hours of 3:00 am and 9:00 am) on appropriate areas of habitat on public land within the Planning Area would continue to protect lesser prairie-chickens during the spring mating period and brood rearing phase. In all four planning regions timing and noise stipulations, would be maintained as needed. Stipulations should be imposed only in areas where lesser prairie-chicken are present, as indicated by sightings or survey reports within a period of 2 years. In the case that lesser prairie-chicken reoccupy an area the timing and noise stipulation should be reinstated.

Concurrent with timing stipulations, no drilling would be allowed within 200 meters of known lesser prairie-chicken leks. This provides some protection to the booming

ground or adjacent nesting habitat. The pads combined with roads, and possible power lines have significant impacts to wildlife resulting in the creation of areas that lesser prairie-chicken avoid.

Reducing noise from pump jack motors to a maximum of 75 decibels (db) measured 30 feet from the source of the noise would potentially support reestablishment of booming grounds in closer proximity to pump jacks. Females may be able to hear the booming males and potentially increase reproductive success (i.e. more poult groups) as a result of reducing noise levels.

New oil/gas well pads would not be placed in dune areas within occupied or suitable habitat, or within 100 meters of such dune areas. Well sites proposed in these areas would be moved to adjacent shinnery oak flats. Where a dune complex that contains occupied or suitable habitat is large and well pads cannot be placed exterior to the complex, new well pads should be located at the periphery of the complex, avoiding the center of the complex.

Locating well pads exterior to the dune areas would provide protection to the sand dune lizard habitat. Maintaining well densities less than or equal to 13 well pads per square mile in the shinnery oak flats between dune complexes would reduce potential impacts to dispersal corridors.

Mesquite control in shinnery oak vegetation community would result in positive impacts on lesser prairie-chicken habitat (approximately 2,000 acres per year for a total of 40,000 acres over the life of the plan). This would be a 100 percent increase over the existing No Action Alternative. These prescriptions would have short-term effects in the form of defoliating shinnery oak but not killing it which would allow native grasses, forbs and shrubs to reestablish in areas that were once mesquite dominated. Focusing in the Planning Area for mesquite control would

have positive impacts to the species and its habitats.

Shinnery oak treatments would not focus on the elimination of shinnery oak, but would focus on defoliating the shinnery oak and releasing herbaceous species that are conducive for lesser prairie-chicken. The treatments would set back the growth of shinnery oak and defoliate the plant but would not kill it. While shinnery oak treatment is a last resort for vegetation management, a 500 meter buffer around occupied and suitable sand dune lizard habitat would be applied. This would protect sand dune lizard habitat while improving vegetative composition beneficial to lesser prairie-chicken habitat.

Impacts associated with OHV would be decreased under this alternative compared to the No Action Alternative since routes would be limited to existing roads and trails.

Monitoring and research is an important component of this alternative in determining habitat condition, distribution, impacts, and successful reclamation.

### **Cumulative Effects**

This alternative would provide more habitat protection for both lesser prairie-chicken and sand dune lizard habitat by closing areas to new oil and gas leasing than occurs in the No Action Alternative. It is important to note specific measures taken to protect chicken habitat would benefit lizard habitat where their habitats coincide.

Fragmentation is one of the issues that create habitat connectivity issues. Roads, power lines and infrastructure associated with the oil field are all fragmentary in nature; with the reclamation effort over the life of the plan connectivity of habitat can occur between habitat patches expanding the available habitat for sensitive species. By removing roads down to native soils, removing unused power lines, pads down to native soils and any other infrastructure,

coupled with proper seeding of native species in potential lesser prairie-chicken habitats, the avoidance areas would be decreased and the habitat expanded for potential occupancy.

Strategic planning of reclamation in lesser prairie-chicken and sand dune lizard habitats would have a beneficial impact to the habitat used by both species. Even though 2,346 acres per year of reclamation does not appear to be a lot, connectivity is the issue. If reclamation would take place in habitats that were once occupied by the lesser prairie-chicken and currently occupied by sand dune lizard, connectivity would increase on an average of 86,000 acres, respectively, over the life of this plan amendment.

### Cultural Resources

Impacts to cultural resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to cultural resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1

### Paleontological Resources

Impacts to paleontological resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to paleontological resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

### Recreation

Impacts would be the same as those described in the No Action Alternative.

### **Off-Highway Vehicle Management**

The management prescriptions of this alternative are based on the Conservation Strategy. See Appendix 2, page 79 for the discussion of OHV management. The strategy calls for the possible closure of roads to protect lesser-chicken habitat in order to avoid surface disturbance within 1.5 miles of leks and minimize noise during the mating season.

Pending the completion of route designation plans, OHV would be limited to existing roads and trails within the Planning Area. This management action would align the Carlsbad portion of the Planning Area with the current Roswell management prescription in the area. This management action would bring the Planning Area into compliance with current BLM planning guidance concerning OHV use.

Given the assumption that OHV recreation use would continue to increase over time, visitor use of established OHV areas (Mescalero Sands North Dune and Hackberry Lake) would eventually spill over onto public land adjacent to these areas. This could lead to unwanted impacts to lesser prairie-chicken and sand dune lizard habitats.

Seasonal noise restrictions (no OHV activity between 3:00 am and 9:00 am) in the established OHV areas would contribute to noise abatement during mating season. Interpretive signs and displays placed at Mescalero Sands North Dune and Hackberry Lake OHV Areas would serve as educational focal points for lesser prairie-chicken and sand dune lizard habitat protections.

### **Cumulative Effects**

OHV use of what is now the Mescalero Sands North Dune OHV Area dates from the late 1940s with the availability of four-

wheel drive vehicles. Use in the Area was boosted in the late 1960s with popularity of Volkswagen-base dune buggies. BLM established the Area for OHV use in 1989.

Currently, the public is using the Square Lake region for OHV recreation use.

Implementation of this alternative would contribute to reduced impacts on the habitat for special status species as compared to the No Action Alternative. The future designation of roads and trails, including the closure and reclamation of some, would result in less surface disturbance. With increased visitor use foreseen in the existing OHV areas, however, there is a possibility that OHV use outside these areas would occur and would lead to degradation of special status species habitat.

### Special Management Areas

Impacts would be the same as those described in the No Action Alternative.

### Social and Economic Conditions

Implementing the 2001 New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing in the Planning Area would produce the same social and economic impacts as described in its environmental impact statement. As described in this EIS the livestock industry in the four county area (Chaves, Eddy, Lea and Roosevelt) would notice little, if any impact under this alternative.

Since the development of existing oil and gas leases would continue, revenues, employment and income generated by this activity would continue at or close to current levels for the foreseeable future. Costs associated with the development requirements (plans of development, designing road networks, reclamation) would be born by the lease holder under these alternatives. More intensive development planning, however, could lead

to reduced developed costs and lower overall development costs. Larger factors such as market prices would have more impact on the economic viability leases and wells than the development prescriptions of this alternative.

Offering new oil and gas leases by the BLM within the Planning Area has no direct connection to employment or income levels in the local economy. Evidence of this disconnection can be seen in Table 3-9 and Table 3-12 of Chapter 3. In the mid-1980s, employment in the oil and gas industry as well as personal income from this industry plummeted. The decline was due to market prices, not the availability of Federal minerals for lease.

Increasing new oil and gas leasing by the BLM in the Planning Area would not produce much economic benefit. Tracts not under lease prior to 1997 were unleased due to the lack of interest, in some cases, and no evidence of payable petroleum zones. Additionally, some existing oil and gas leases remain undeveloped. (See Map 2-1 and Map 2-2.) The Core Management Area of this alternative contains a large number of dry holes completed to depths ranging from 3,000 feet deep to 10,000 feet deep. If there are economic quantities of oil and gas beneath the Core Management Area, current technology has been unable to locate and extract these resources.

While still an important component of the local economy employment in both the agriculture and petroleum fields has decreased in relation to total employment over the past 30 years. Personal income derived from agriculture has declined while personal income from jobs in the oil and gas industry has increased. The No Action Alternative and this alternative would be unlikely to affect this trend.

Changes in economic conditions such as employment and personal income are reflected in society as a whole. Large scale

changes in these conditions would be more easily documented than smaller changes. In this analysis, the four-county area possesses a somewhat diverse employment index, 737 versus a median of 961 for all counties in the U.S. (See Chapter 3) Therefore, the local economy is better able to absorb small changes such as are anticipated under this alternative.

The per capita income in the four counties trails both the New Mexico and national averages. The average earnings per job in the four counties is slightly less than the New Mexico average and substantially less than the national average. Since 71 percent of the new jobs created in the area were in the Services & Professional category (see Chapter 3), this difference cannot be tied to dependence on public land and resources.

It is more difficult to quantitatively measure social impacts. In the social context of the communities in the four counties, changes would likely be minor and relatively unnoticed under this alternative. However, individuals and families with interests in either livestock or oil and gas would be affected in particular localities. For these individuals and families, the most noticeable impact would likely be reduced personal income, reduced operational flexibility and an increase in personal stress through increased operational restrictions.

### Cumulative Effects Summary

The impacts to specific elements have been documented previously in this chapter. Taken as a whole, the cumulative effects of this alternative include:

- This alternative provides more habitat protection for both the lesser prairie-chicken and the sand dune lizard than the No Action Alternative by closing areas to new leasing. It is important to note specific measures taken to protect chicken habitat also benefits lizard habitat where their habitats coincide.
- Given the relative economic diversity of the four counties surrounding the Planning Area, economic effects would be readily absorbed by the local economy and would not be noticeable to the general population. Individuals and companies would be directly affected.
- Long-term impacts of implementing Standards for Rangeland Health would be a positive benefit to livestock operators. The short term impacts would be expected to be localized to certain allotments or pastures and would not occur throughout the Planning Area.
- The likelihood of listing the lesser prairie-chicken would be reduced from the No Action Alternative, however, the management prescriptions protecting sand dune lizard habitat are essentially the same as No Action. Therefore, Alternative A does not meet the Purpose and Need for this amendment as described in Chapter 1.

## ALTERNATIVE B (PREFERRED ALTERNATIVE)

The following analyzes the impacts of implementing Alternative B, which adopts the concepts of the Conservation Strategy in Alternative A and adds measures designed to provide greater protection of lesser prairie-chicken and sand dune lizard habitat.

### Lands and Realty

The Impacts would generally be the same as those described in Alternative A. The power line removal credit (PLRC) program would not entail additional costs to applicants and/or operators since the removal of idle lines and poles is part of maintenance programs. If, however, an applicant or operator chooses to bury power lines, there would be additional impacts to ROW development from increased initial

development costs. Additional development costs would ensue for applicants or operators who choose to construct new power lines and avoid occupied lesser prairie-chicken habitat.

### Fluid Minerals

Impacts to mineral resources would be the same as Alternative A, with the following differences:

#### **Areas Closed to New Oil and Gas Leasing**

This alternative calls for the expansion of the CMA. This would result in the closure of about 19 percent of the Federal mineral estate within the Planning Area (see Table 4-7) and about 2 percent of the Federal mineral estate within the Pecos District.

#### **New Oil and Gas Leasing With a No Surface Occupancy Requirement**

Applying the NSO requirement to dune complexes within sand dune lizard habitat would not total a significant amount of acres since most of the unleased Federal estate is in either the CMA or occupied lesser prairie-chicken habitat and, therefore, closed to new oil and gas leasing.

#### **New Oil and Gas Leasing**

Impacts to mineral resources would be the similar to those of Alternative A. BLM, however, would consider new leasing in occupied lesser prairie-chicken habitat within the PPA when the lesser prairie-chicken is no longer a candidate for listing as a threatened or endangered species. This would result in fewer tracts of Federal minerals available for new leasing.

BLM would consider new leasing in suitable habitat within the Primary Population Area when there is a calculated two to one ratio of restored acres to disturbed acres within the PPA and inter-agency coordination with the US Fish and Wildlife Service is

conducted. The calculation would be conducted using satellite imagery at five-year increments from the approval of this resource management plan amendment. In addition to meeting the two to one ratio, other considerations factoring into a decision for new leasing include, but are not limited to, the site characteristics of a tract nominated for leasing such as its proximity to occupied habitat, surface ownership, and the density of existing infrastructure. This would result in fewer tracts of Federal minerals available for leasing.

#### **Development of Existing Oil and Gas Leases**

The requirement for conducting surveys prior to developing existing leases in sand dune lizard habitat would add planning time and costs to development. On the other hand, prior planning and short-term expense may yield more efficient development with a reduction in costs over the long-term.

#### **Cumulative Effects**

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year were drilled within the Planning Area, (10 within Roswell Field Office and 51 within Carlsbad Field Office). On average five wells per year were plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells were plugged in the Planning Area.

Based on the RFD and the management prescriptions of this alternative, approximately 49 wells would be drilled per year and 11 wells per year would be

**TABLE 4-7 ALTERNATIVE B ACREAGE**

MANAGEMENT CATEGORY	ACRES LEASED FOR OIL AND GAS	UNLEASED ACRES	TOTAL ACRES OF FEDERAL MINERALS	COMPARISON OF LEASED ACREAGE TO TOTAL FEDERAL ACREAGE IN THE PLANNING AREA	COMPARISON OF TOTAL UNLEASED ACRES TO TOTAL FEDERAL ACREAGE IN THE PLANNING AREA
CMA	43,338	128,299	171,637	4%	11%
PPA	105,641	93,157	198,798	9%	8%
SSPA	78,414	51,780	130,194	7%	5%
IPA	597,953	46,741	644,694	52%	4%
Total	825,346	319,977	1,145,323	72%	28%

plugged and abandoned. Initial surface disturbance would be a total of approximately 245 acres of which approximately 113 acres would reclaim and stabilize by the end of 3 years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

Over the next 20 years, approximately 980 wells would be drilled in the Planning Area and approximately 220 wells would be plugged and abandoned. During that period approximately 4,900 acres of surface would be disturbed; 2,254 acres would reclaim and stabilize within one year of initial disturbance and approximately 360 acres would be reclaimed from plugged and abandoned wells.

Under this alternative, 12 fewer wells would be drilled per year than the No Action Alternative. Given the history of production in this region, 10 of those 12 wells would likely be producing wells. Over 20 years, this alternative may result in the loss of 200 producing wells in the region.

Alternative Energy

Under this alternative wind and solar generation sites would be confined to areas that would have no negative impacts to occupied or suitable lesser prairie-chicken and sand dune lizard habitat.

The impacts to vegetation and wildlife by the construction and operation of wind energy sites have been analyzed in the 2005 Wind Energy Programmatic

Environmental Impact Statement. These impacts are described in Chapter 5 of this document on pages 5-37 through 5-75. The EIS is available on-line at [www.windeis.anl.gov](http://www.windeis.anl.gov).

Soils

Impacts to soils would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to soils are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to soils is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

Water Resources

Impacts to water resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to water resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to water quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and

existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Floodplains

Impacts to floodplain resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to floodplain resources are indirectly related to surface disturbance. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Impacts to air quality would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter.

Specifically, impacts to air quality are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to air quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Vegetation

The impacts would be similar to Alternative A, but would allow more treatments to be completed in a shorter time frame.

As described in the Minerals section above, over the 20 year life of the plan, 4,900 acres of vegetation would be disturbed due to construction, 2,254 acres would be reclaimed and stabilized during initial rehabilitation, and 360 acres would be recovered as plugged and abandoned wells

are reclaimed. This leaves 2,286 acres of vegetative disturbance.

### **Cumulative Effects**

Impacts would be similar to Alternative A; but emphasis on habitat rehabilitation would be a positive impact, as previously disturbed areas are successfully recovered. Additional vegetative cover would improve watershed function, increase infiltration, reduce runoff, and allow more precipitation to be available for vegetative growth.

Within the Planning Area, changing the designation of the Carlsbad Field Office portion from open to OHV use to limited to existing roads and trails would reduce the impacts to vegetation. The reduction would be difficult to quantify due to the lack of base-line data. Impacts in the Roswell Field Office portion would be the same as those analyzed in the 1997 Roswell RMP.

Expanding the Mescalero Sands North Dune OHV Area and establishing the Square Lake OHV would have little or no impacts on vegetation. This because the areas that would be designated as open to OHV use are open dunes, with very few plants growing on them. Travel between the dunes in Square Lake would be limited to designated roads and trails, further limiting impacts to vegetation.

### Livestock Management

Impact to livestock grazing management would be similar to Alternative A. Any necessary adjustments, increases or decreases, would be made based on monitoring data and through consultation, as discussed in 43 CFR 4100.

### **Cumulative Effects**

Impacts would be the same as those described in Alternative A.

TABLE 4-8 ALTERNATIVE B 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT			
Type of Action	Number of Actions on Federal Land	Approximate Total Acres Disturbed	
		Short Term (3-Years)	Long Term
Oil & gas development wells	980	2,254	2,646

Wildlife including Special Status  
Species

Under alternative B, impacts to wildlife habitat would be the same as Alternative A, with the following differences:

The expansion of the CMA (by approximately 18,000 acres of Federal minerals) is a positive impact to protect habitat for both the lesser prairie-chicken and sand dune lizard since the CMA would be closed to new oil and gas leasing.

In the long term, the power line removal credit (PLRC) program would result in reduction in the amount of power lines in the Planning Area. This would be a positive impact on lesser prairie-chicken habitat by producing a net gain in habitat through reduction in the amount of avoidance area. The PLRC program also would prioritize habitat and participants would gain credit by removing idle lines in high priority areas. See Appendix 6 for details.

Burying power lines would result in greater habitat benefits than the PLRC program but the costs associated with burying power lines, the technical problems associated with burying higher voltage power lines, and lack of necessary construction equipment mitigate against wide-spread participation.

The use of muffled engines to power equipment at wells presents no new or additional impacts to lesser prairie-chicken

habitat. Constructing power lines to avoid occupied and suitable habitat may not result in a net reduction of impacts across the Planning Area and, instead, may increase the amount of power lines within the Planning Area.

Constructing new power lines parallel to existing lines would limit the amount of new power lines but would not promote the possibility of expansion of habitat or population. Confining all infrastructure (roads, power lines and pipelines) to the same corridor would reduce impacts associated with individual locations for these surface disturbances but would not provide opportunities for habitat or population expansion.

New oil and gas leasing in occupied habitat within the PPA would not be based on the annual recalculation formula. BLM, however, would consider new leasing in occupied lesser prairie-chicken habitat within the PPA when the lesser prairie-chicken is no longer a candidate for listing as a threatened or endangered species. This would result in fewer long-term impacts to habitat than that of Alternative A.

New leasing in suitable habitat within the Primary Population Area would be considered when:

- There is a calculated two to one ratio of restored acres to disturbed acres within the PPA, and
- Inter-agency coordination with the US Fish and Wildlife Service is conducted.
- The calculation would be conducted at five-year increments.
- Other considerations factoring into a decision for new leasing include, but are not limited to, the site characteristics of a tract nominated for leasing such as its proximity to occupied habitat, surface

ownership, and the density of existing infrastructure.

This would result in fewer impacts to habitat than Alternative A.

The timing stipulation would be increased by fifteen days at the beginning of March. The dates would be March 1<sup>st</sup> through June 15<sup>th</sup>. Exceptions would be considered in the SSPA and the IPA if there have not been lesser prairie-chicken located in the past two years for sightings and five years for lek locations. Exceptions would not be considered in the CMA, and the PPA, or the Habitat Evaluation Areas regardless of occupancy by lesser prairie-chicken, except in some emergency and non-emergency situations.

Based on the 20-year projection, construction of well pads, roads, and pipelines would have direct effects on 4,900 acres of habitat (245 acres per year avg.) within the Planning Area (Refer to Table 4-8).

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment.

These activities would cause direct disturbance and/or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion. Animal species composition and densities could change within and adjacent to any mineral development activity. Changes in the animal community and habitat structure

change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions). However, Re-vegetation of disturbed sites is typically very slow.

For a discussion of indirect impacts, refer to the No Action Alternative and Table 4-3.

Under this alternative, it is estimated that 49 wells would be drilled per year in the Planning Area (approximately 3 full oil field developments). The total indirect disturbance would be 6,174 acres annually. Over the lifetime of this plan (20-year) there would be approximately 123,480 acres indirectly disturbed based on the RFD.

Based on the prescriptions in the geographic areas discussed above, the direct impacts of 4,900 acres (245 acres per year avg.) and the indirect impacts of 123,480 acres (6,174 acres per year) would occur exterior to the unleased portions of the CMA, occupied and suitable habitat within the PPA, occupied habitat within the SSPA, and the 17 Habitat Evaluation Areas within the IPA (See Table 4-5 for acreage figures). Therefore the impacts from the 49 wells would have minimal impacts to lesser prairie-chicken habitat excluding the leased portions within the 17 Habitat Evaluation Areas.

The pre-lease sale review of nominated tracts and the application of NSO in sand dune lizard habitat would protect dune complexes by reducing or eliminating surface disturbance and habitat fragmentation. Waivers, exceptions and modifications of NSO stipulations in non-habitat would be based on surveys for occupied and/or suitable sand dune lizard habitat.

New oil and gas leases in suitable sand dune lizard habitat would have a lease notice attached that require occupancy surveys prior to authorizing surface disturbing activities. This requirement would

also be part of the lease stipulations. Sand dune lizard occupancy surveys would be conducted by qualified personnel using accepted protocol approved by BLM. The current occupancy protocol calls for surveys to be conducted from June 1<sup>st</sup> through September 30<sup>th</sup> and avoids the heat of mid-day.

New oil/gas well pads would not be placed in dune areas within occupied or suitable habitat, or within up to 200 meters of such dune areas. Studies indicate that impacts to sand dune lizards are greatly reduced when well pad locations are 200 meters away from occupied dune complexes (Painter et. al). This represents an additional 100 meter protection area from that described in Alternative A.

Under this alternative, reclamation of twice as much habitat as that being disturbed would expedite the recovery of this important ecosystem. It is understood that with reclamation efforts of two to one that eventually reclamation would change to a one to one ratio in the distant future. Reclamation priorities would be given to areas that once contained lesser prairie-chicken. By conducting reclamation in areas that once contained lesser prairie-chicken habitat connectivity would be obtained affording the species available habitat that was once fragmented and unsuitable.

Applying the timing stipulation (March 1<sup>st</sup> through June 15<sup>th</sup> between the hours of 3:00 am and 9:00 am) on appropriate areas of habitat on public land within the Planning Area would continue to protect lesser prairie-chickens during the spring mating period and brood rearing phase. It is anticipated that a grant of exception based on the criteria found in Chapter 2 (unsuitable habitat and/or areas of no lesser prairie-chicken activity) would result in minimal impacts to the lesser prairie-chicken.

Construction of locations and around-the-clock noise generated from drilling could

impact the lesser prairie-chicken by reducing the establishment of seasonal "booming grounds" or leks, thus possibly reducing reproductive success in the species. It is believed that the noise generated by drilling rigs and/or propane/diesel operated pumpjack motors (unmuffled) could mask the booming of the male prairie-chicken and thus, the females cannot hear the booming. In turn, female lesser prairie-chicken would not arrive at the booming ground, and subsequently, there would be decreased courtship interaction and possibly decreased reproduction.

Decreased reproduction and the loss of recruitment into the local population would result in an absence of younger male lesser prairie-chickens to replace mature male lesser prairie-chicken once they expire, eventually causing the lek to disband and become inactive. Additionally, habitat fragmentation caused by development, to include but is not limited to power lines, roads and other infrastructure, could possibly decrease the habitat available for nesting, brooding and feeding activities.

In light of these requirements and mitigation measures, minimal impacts to the lesser prairie-chicken are anticipated as a result of oil and gas activity.

Exceptions to these requirements would be considered in emergency situations such as mechanical failures as determined by BLM, however, these exceptions would not be granted if BLM determines, on the basis of biological data or other relevant facts or circumstances, that the grant of an exception would disrupt prairie-chicken booming activity during the breeding season. Requests for exceptions *on a non-emergency basis* may also be considered, but these exceptions would not be granted if BLM determines that there are prairie-chicken sightings, or active leks within 1.5 miles of a proposed location.

By not granting exceptions in the above mentioned areas lesser prairie-chicken are

afforded protection against noise associated with new energy related activities during the critical mating phase to possible increase recruitment rates in the local populations.

Exceptions to the timing stipulation/COA would not be needed in the following areas, however, analysis may be contained in subsequent environmental assessments for exceptions:

- SSPA and IPA if lesser prairie-chicken are not sighted by the start of the third year.
- Habitat Evaluation Areas that do not meet the criteria for being an Habitat Evaluation Area after the evaluation process.
- Areas that do not meet the above criteria i.e. non-habitat and areas that lesser prairie-chicken have not been sighted except the Habitat Evaluation Areas.

Exceptions to the timing stipulation/condition of approval (COA) would not be considered in the following areas that pertain to Federal actions:

- In the PPA and CMA.
- In the SSPA and IPA within 1.5 miles of leks.
- In the SSPA and the IPA 1.5 miles of sightings for two years. However in the event that new sightings occur in the same area after two years the stipulation would be reapplied and exceptions would not be granted. It would not matter at what time of the year sightings occur.
- The 17 Habitat Evaluations Areas before and during the habitat evaluation process.
- Any new areas identified as a Habitat Area (HA) that were not of the original 17 Habitat Evaluations Areas, but meet or exceed the criteria for being a HA as explained in Appendix 8.
- In the event that lesser prairie-chickens are sighted exterior the Planning Area the timing stipulation would be applied

for a period of two years within a radius of 1.5 miles of the sighting. It would not matter at what time of the year the sightings occur.

In light of the circumstances under which exceptions may be granted, minimal impacts to the lesser prairie-chicken are anticipated as a result of the grant of exceptions to this COA.

Concurrent with timing stipulations, no drilling would be allowed within 200 meters of known lesser prairie-chicken leks. This provides some protection to the booming ground or adjacent nesting habitat. The pads combined with roads, and possible power lines have significant impacts to wildlife resulting in the creation of areas that lesser prairie-chickens avoid. Reducing noise from pump jack motors to a maximum of 75 decibels (db) measured 30 feet from the source of the noise would potentially support reestablishment of booming grounds in closer proximity to pump jacks. Females may be able to hear the booming males and potentially increase reproductive success (i.e., more poult groups) as a result of reducing noise levels.

Mesquite control in shinnery oak vegetation community would result in positive impacts on lesser prairie-chicken habitat (approximately 4,000 acres per year for a total of 80,000 acres over the life of the plan). This would be a 100 percent increase of vegetative treatments over alternative A and a 400 percent increase over the No Action Alternative. These prescriptions would have short-term effects in the form of defoliating shinnery oak, but not killing it which would allow native grasses, forbs and shrubs to reestablish in areas that were once mesquite dominated. Focusing in the Planning Area for mesquite control would have positive impacts to the species and its habitats.

Possible impacts associated with OHV expansion within the Planning Area for

lesser prairie-chicken would be minimal at best. Impacts would be associated with the duration of use in an area and impacts would be directly tied to the area being used. Wildlife species that are highly mobile, such as the lesser prairie-chicken, would evacuate the area during times of OHV use, and potentially return to the area once activities have ceased. Potential impacts to sand dune lizards would be minimal as well. Sand dune lizards are a mobile species that utilize sand and shinnery oak for cover. Impacts would be associated with the duration of use in an area and impacts would be directly tied to the area being used. Due to the nature of the sand dune lizard and the habitat requirements of shinnery oak overhangs and the avoidance of open un-vegetated dunes impacts would be minimal.

### **Cumulative Effects**

This alternative would provide more habitat protection for both lesser prairie-chicken and sand dune lizard habitat than Alternative A.

By removing roads and pads down to native soils, removing idle electrical poles and lines, as well as any other infrastructure i.e. pump houses, heater treaters and the like, coupled with proper seeding of native grasses, avoidance areas would be decreased and the habitat expanded for potential occupancy. Fragmentation is one of the issues that create habitat connectivity concerns for wildlife habitat managers. Roads, power lines and infrastructure associated with the oil field are fragmentary in nature. With the reclamation effort, over the life of the plan, connectivity of habitat can occur between habitat patches expanding the available habitat for sensitive species and potential occupation. By increasing these areas and reestablishing habitat connectivity there is a good likelihood that lesser prairie-chicken could reoccupy areas that do have a degree of oil and gas development that were once occupied.

This alternative allows for the BLM to work with industry and other entities to improve practices in the oil field to allow habitat patches to remain and allow the future development of minerals in an orderly fashion. Applying the timing stipulation to the habitat for lesser prairie-chicken would afford the species the opportunity to mate and expand populations in reclaimed areas that were one avoidance areas due to loss of habitat connectivity.

Strategic planning of reclamation in lesser prairie-chicken and sand dune lizard habitats would have a beneficial impact to the habitat used by both species. Even though 2,254 acres per year of reclamation does not appear to be a lot, connectivity is the issue. If reclamation would take place in habitats that were once occupied by the lesser prairie-chicken and currently occupied by sand dune lizard, connectivity would increase on an average of 86,800 acres, respectively, over the life of this plan amendment.

Alternative B is more restrictive than the No Action Alternative, Alternative A, and Alternative D, but less restrictive than Alternative C and Alternative E for oil and gas development. However, this alternative allows the Federal government to work with industry to minimize the impacts to the habitat for sensitive species through adaptive management. Projected initially disturbed acreage would be 245 acres annually. The cumulative impact of 20 years of oil and gas development is estimated to be 4,900 initially disturbed acres, placing this alternative in the middle range for anticipated impacts to wildlife resources.

### Cultural Resources

Impacts to cultural resources would be similar to those described in the "Impacts Common to all Alternatives" section of this

chapter. Specifically, impacts to cultural resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

### Paleontological Resources

Impacts to paleontological resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. The direct impacts of new surface disturbance are shown in Table 4-1.

### Recreation

This alternative would set in place management that would allow for recreation to continue in the Planning Area while mitigating the effects of intrusion into the CMA and occupied habitat. Fewer impacts would occur under this alternative because recreation in the Planning Area would be managed to lessen the impact of users in prairie-chicken and sand dune lizard habitat.

At present, there is no data to support the premise that recreational activities within the Planning Area are the causes of species decline. However, through visitor monitoring in the Planning Area, if data becomes available that identifies recreational use as a factor in species decline, recreation planners would recommend that managers implement corrective management actions such as: seasonal closures of roads leading to lek areas; or the issuance of Special Recreation Permits (SRP). Additionally, time and noise restrictions would be in effect from 3 a.m. to 9 a.m. March 1 through June 15. These management actions would reduce impacts to the lesser prairie-chicken and the sand dune lizard.

### **Off-Highway Vehicle Management**

Pending the completion of route designation plans, OHV would be limited to existing roads and trails within the Planning Area. Impacts would be reduced by the limited

designation rather than the open designation in the Carlsbad Field Office portion of the Planning Area.

If visitor use does not warrant expansion of the Mescalero Sands North Dune OHV Area or if conflicts with lesser prairie-chicken or the sand dune lizard habitat develop, the expansion phases would not occur.

Acreage for the expansion of each phase of the Mescalero Sands North Dune OHV Area was suggested by the wildlife biologist for the Roswell Field Office. Prior to the release of the Draft EIS, wildlife biologists reported no conflicts with special status species or their habitat. Before expanding of any phase of Mescalero Sands North Dune OHV Area, the acreage would be surveyed again to ensure that conflicts do not exist.

Impacts would be reduced under this alternative because development would be based on monitoring of public use to determine expansion. The proposed expansion would allow the possibility of reducing visitor use pressure on the area and would reduce the possible incursions of OHV use into special status species habitat.

Vegetative study maps indicate the dune complex known as the Shugart Dunes, located in the northern portion of Hackberry Lake Intensive OHV Area, is not suitable habitat for the sand dune lizard. Designating roads and trails for OHV use in the Shugart Dunes would reduce habitat fragmentation by eliminating some roads or trails.

The Square Lake area is presently used by OHV recreation users and the formal establishment of this OHV area would recognize the use. Establishing the OHV area would allow for management of the area. Impacts to special status species habitat would be reduced because protective measures would be implemented that would protect potential sand dune lizard habitat and reduce noise during lesser

prairie-chicken mating season. Restricting vehicle width to less than 55 inches would reduce surface disturbance impacts in the OHV area and would exclude sand rails and dune buggies from using this area. Impacts would be reduced by designated routes that transverse between the open dunes.

The wildlife biologists in the Carlsbad Field Office identified the dune areas and the transverse routes between the dunes. The wildlife biologists found no conflicts exist in lesser prairie-chicken or sand dune lizard habitat. Prior to the release of the Draft EIS, wildlife biologists reported no conflicts with special status species or their habitat in the proposed Square Lake OHV Area. Prior to any development in the Square Lake OHV Area, BLM staff biologists would re-survey the area to confirm there are no conflicts with the Special Status Species or their habitat.

Interpretive signing in Mescalero Sands North Dune, Shugart Dunes, and the proposed Square Lake OHV Areas would provide opportunity for public education and awareness for the need to provide for and protect lesser prairie-chicken and sand dune lizard habitat. Impacts to special status species habitat would be reduced because of the education opportunity to inform the public land user engaged in OHV activity of the significance of protecting habitat.

In the Planning Area, impacts to lesser prairie-chicken booming would be reduced by implementing noise restrictions for OHV use if monitoring indicates this step is necessary. The noise from OHV use tends to mask lesser prairie-chicken booming which is necessary for mating.

### **Cumulative Effects**

OHV use of what is now the Mescalero Sands North Dune OHV Area dates from the late 1940s with the availability of four-

wheel drive vehicles. Use in the Area was boosted in the late 1960s with popularity of Volkswagen-base dune buggies. BLM established the Area for OHV use in 1989.

Currently, the public is using the Square Lake region for OHV recreation use.

Pending formal designation of roads and trails, this alternative would reduce impacts to special status species habitat. The controlled expansion of Mescalero Sands North Dune OHV Area would provide for greater OHV recreation opportunities without impacts to either lesser prairie-chicken or sand dune lizard habitat. Moving the designation of the Hackberry Lake OHV Area from open to limited recognizes the existing use within the OHV area and would have no impact on either lesser prairie-chicken or sand dune lizard habitat. OHV activity would continue in the Planning Area by limiting activity to open roads, trails, and designated routes. Monitoring of OHV areas would occur to ensure compliance and discourage cross country travel. Dune complexes would be designated open where special species habitat is not present.

Monitoring of OHV activity in each Field Office to ensure compliance of the limited designation would reduce impacts. Identification of open dune areas within the established OHV areas would reduce impacts and discourage cross country travel into special status species habitat.

Pressures of visitor use would decrease by possibly expanding the existing Mescalero Sands North Dune OHV Area and potentially establishing the Square Lake OHV Area.

### **Special Management Areas**

Impacts would be the same as the No Action Alternative.

## Social and Economic Conditions

Implementing the 2001 New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing in the Planning Area would produce the same social and economic impacts as described in its environmental impact statement. As described in this EIS the livestock industry in the four-county area (Chaves, Eddy, Lea and Roosevelt) would notice little, if any impact under this alternative.

Since the development of existing oil and gas leases would continue, revenues, employment and income generated by this activity would continue at or close to current levels for the foreseeable future. Costs associated with the development requirements (plans of development, designing road networks, reclamation) would be born by the lease holder under these alternatives. More intensive development planning, however, could lead to reduced developed costs and lower overall development costs. Larger factors such as market prices would have more impact on the economic viability leases and wells than the development prescriptions of this alternative.

Offering new oil and gas leases by the BLM within the Planning Area has no direct effect on employment or income levels in the local economy. Evidence of this disconnection can be seen in Table 3-9 and Table 3-12 of Chapter 3. In the mid-1980s, employment in the oil and gas industry as well as personal income from this industry plummeted. The decline was due to market prices, not the availability of Federal minerals for lease.

Increasing new oil and gas leasing by the BLM in the Planning Area would not produce much economic benefit. Tracts not under lease prior to 1997 were unleased due to the lack of interest, in some cases, and no evidence of payable petroleum zones. Additionally, some existing oil and gas leases remain undeveloped. (See Map

2-1 and Map 2-2.) The CMA of this alternative contains a large number of dry holes completed to depths ranging from 3,000 feet deep to 10,000 feet deep. If there are economic quantities of oil and gas beneath the CMA, current technology has been unable to locate and extract these resources.

While still an important component of the local economy employment in both the agriculture and petroleum fields has decreased in relation to total employment over the past 30 years. Personal income derived from agriculture has declined while personal income from jobs in the oil and gas industry has increased. The No Action Alternative and this alternative would be unlikely to affect this trend.

Changes in economic conditions such as employment and personal income are reflected in society as a whole. Large scale changes in these conditions would be more easily documented than smaller changes. In this analysis, the four-county area possesses a somewhat diverse employment index, 737 versus a median of 961 for all counties in the U.S. (See Chapter 3) Therefore, the local economy is better able to absorb small changes such as are anticipated under this alternative.

The per capita income in the four counties trails both the New Mexico and National averages. The average earnings per job in the four counties are slightly less than the New Mexico average and substantially less than the national average. Since 71 percent of the new jobs created in the area were in the Services & Professional category (see Chapter 3), this difference cannot be tied to dependence on public land and resources.

It is more difficult to quantitatively measure social impacts. In the social context of the communities in the four counties, changes would likely be minor and relatively unnoticed under this alternative. However, individuals and families with interests in either livestock or oil and gas would be

affected in particular localities. For these individuals and families, the most noticeable impact would likely be reduced personal income, reduced operational flexibility and an increase in personal stress through increased operational restrictions.

### Cumulative Effects Summary

Like Alternative A, the impacts of implementing Alternative B on specific elements have been documented in the previously in this chapter. Taken as a whole, the cumulative effects of this alternative include:

- This alternative would provide more habitat protection for both lesser prairie-chicken and sand dune lizard than Alternative A.
- A greater emphasis on sand dune lizard habitat and reclamation than Alternative A would yield greater results both in habitat protection and vegetation recovery.
- Given the relative economic diversity of the four counties surrounding the Planning Area, economic effects would be readily absorbed by the local economy and would not be noticeable to the general population. Individuals and companies would be directly affected.
- Long term impacts of implementing Standards for Rangeland Health would be a positive benefit to livestock operators. The short term impacts would be expected to be localized to certain allotments or pastures and would not occur throughout the Planning Area.
- The likelihood of listing either species would be reduced from Alternative A, thereby further reducing the potential for listing both species and the associated impacts of such a listing. Of the alternatives, this alternative best meets

the Purpose and Need described in Chapter 1.

## ALTERNATIVE C

The following analyzes the impacts of implementing Alternative C, which adopts the zone concepts of Interim Management.

### Lands and Realty

Same as No Action Alternative.

### Fluid Minerals

#### **Areas Closed to new Oil and Gas Leasing**

Only Zone 1 of this alternative would be closed to new leasing with some exceptions (see Chapter 2). The amount of unleased Federal mineral estate is approximately 19 percent of the Federal estate within the Planning Area or approximately 2 percent of the total Federal mineral estate within the Pecos District. See Table 4-9

#### **New Oil and Gas Leasing With a No Surface Occupancy Requirement**

Unleased tracts within Zone 2 would be offered with an NSO requirement. This would be applied to approximately 2 percent of the Federal mineral estate within the Planning Area. This would amount to approximately 0.3 percent of the total Federal mineral estate within the Pecos District. New leasing is allowed in Zone 2 with a NSO stipulation. An NSO stipulation under this alternative would have the same impact as in Alternatives A and B.

When the notice of a competitive sale of oil and gas leases clearly provides that a lease would be subject to a NSO stipulation, by making a bid for the indicated parcel the bidder is bound to accept the stipulation. Lessees would be advised that issuance of a lease in the Planning Area with the NSO

<b>TABLE 4-9 ALTERNATIVE C ACREAGE</b>					
<b>MANAGEMENT CATEGORY</b>	<b>ACRES LEASED FOR OIL AND GAS</b>	<b>UNLEASED ACRES</b>	<b>TOTAL ACRES OF FEDERAL MINERALS</b>	<b>COMPARISON OF LEASED ACREAGE TO TOTAL PLANNING AREA ACREAGE</b>	<b>COMPARISON OF TOTAL UNLEASED ACRES TO TOTAL PLANNING AREA ACREAGE</b>
Zone 1	144,622	221,195	365,817	13%	19%
Zone 2	59,910	27,257	87,167	5%	2%
Zone 3	453,546	56,573	510,119	40%	5%
Zone 4	167,652	14,568	182,220	15%	1%
Total	825,730	319,593	1,145,323	72%	28%

stipulation does not guarantee that a suitable surface location would be available for drilling or that the lease would be developed. Prospective lessees should take this into consideration prior to obtaining a lease with the NSO stipulation. If a lessee acquires a lease with an NOS stipulation attached, then it would be the responsibility of the lessee to locate a suitable surface location that does not adversely impact lesser prairie-chicken habitat or sand dune lizard habitat. The lessee also would be responsible for demonstrating through the use and application of peer-reviewed science that development of the lease would not adversely impact lesser prairie-chicken habitat or sand dune lizard habitat.

### **New Oil and Gas Leasing**

New leases offered within Zone 3 would include a stipulation requiring a plan of development (POD) to be approved before any development would be authorized. This would add planning time and costs to development. This requirement would also allow orderly development that avoids lesser prairie-chicken leks (see Wildlife later in this section). At the same time a 1.5 mile buffer zone around active leks would have some impact on the development of oil and gas resources by increasing the amount of land closed to development. No new leasing for this alternative would have the same impact as Alternatives A and B.

Unleased Federal tracts in Zones 4 would be offered with standard terms and conditions. Resource management stipulations and conditions of approval found in current resource management plans would be at the time of application for permit to drill. Impacts of these management prescriptions are described in the 1997 Roswell RMP and 1997 Carlsbad RMPA.

### **Development of Existing Oil and Gas Leases**

Plans of Development (PODs) are required for existing leases in Zones 1, 2 and 3. Use of PODs for orderly development began with implementation of Interim Management and therefore would have minimal additional impact in the form of increased time for planning and costs.

### **Sand Dune Lizard Habitat – No New Leasing**

Of the unleased Federal mineral estate in the Planning Area, 75,123 acres (7 percent of the Federal Minerals in the Planning Area) would receive this prescription. The remainder of the unleased Federal minerals would be either closed to new leasing (Zone 1) or have an NSO requirement (Zone 2). See Table 4-9 and Map C-1. No new leasing for this alternative would have the same impact as Alternatives A and B.

## **Cumulative Effects**

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year were drilled within the Planning Area, (10 within Roswell Field Office and 51 within Carlsbad Field Office). On average five wells per year were plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells were plugged in the Planning Area.

Based on the RFD and the management prescriptions of this alternative, approximately 49 wells would be drilled per year and 11 wells per year would be plugged and abandoned. Initial surface disturbance would be a total of approximately 245 acres of which approximately 113 acres would reclaim and stabilize by the end of 3 years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

Over the next 20 years, a total of 980 wells would be drilled in the Planning Area and approximately 220 wells would be plugged and abandoned. During that period approximately 4,900 acres of surface would be disturbed; 2,254 acres would reclaim and stabilize within one year of initial disturbance and approximately 360 acres would be reclaimed from plugged and abandoned wells.

Under this alternative, 12 fewer wells would be drilled per year than the No Action Alternative. Given the history of production in this region, 10 of those 12 wells would likely be producing wells. Over 20 years, this alternative may result in the loss of 200 producing wells in the region.

## Alternative Energy

Under this alternative, applications for wind and solar generating sites would be considered on a case-by-case basis. Impacts would be similar to those described under Impacts Common to All Alternatives.

The impacts to vegetation and wildlife by the construction and operation of wind energy sites have been analyzed in the 2005 Wind Energy Programmatic Environmental Impact Statement. These impacts are described in Chapter 5 of this document on pages 5-37 through 5-75. The EIS is available on-line at [www.windeis.anl.gov](http://www.windeis.anl.gov).

## Soils

Impacts to soils would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter.

Specifically, impacts to soils are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to soil resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

## Water Resources

Impacts to water resources would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter. Specifically, impacts to water resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to water resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV

recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Floodplains

Impacts to floodplain resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to floodplain resources are indirectly related to surface disturbance. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Impacts to air quality would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to air quality are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to air quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Vegetation

Same as No Action Alternative

### **Cumulative Effects**

Impacts would be similar to Alternative A. By issuing fewer leases and creating Plans of Development, less vegetation would be lost and watershed function would be maintained in these areas.

### Livestock Management

Same as No Action Alternative.

### **Cumulative Effects**

By issuing fewer leases and creating Plans of Development, less surface disturbance would make more forage available. This would result in healthier cows/ heavier calves, which would bring more money at sale time.

### Wildlife including Special Status Species

The impacts of this alternative would be the same as the No Action Alternative with the following additions:

Alternative C provides the most protection for lesser prairie-chicken habitat in Zone 1 (approximately 382,000 acres of Federal minerals) but would provide less protection in Zones 3 and 4 as compared to the SSPA and IPA in Alternatives A and B in both in terms of area covered and management prescriptions. The NSO stipulation identified for Zone 2 (87,167 acres of Federal minerals) under this alternative may not protect as much habitat as compared to the 1.5 mile buffer around known leks of SSPA and IPA of Alternatives A and B. Under this alternative there would be no impacts from future leasing of Federal minerals in Zone 1, which is much larger than the CMA identified in Alternatives A and B. Under this alternative, areas identified as sand dune lizard habitat would not be leased, resulting in protection of important sand dune complexes.

Potential negative impacts could result from this alternative in Zones 3 and 4, as compared to the IPA in Alternatives A and B. Under Alternative C isolated populations of lesser prairie-chickens in Zones 3 and 4 would not be awarded minimal protection,

since these zones are managed under the same prescription as the No Action Alternative with the exception of requiring PODs in Zone 3 as well as a 1.5 mile buffer around existing leks and minimal protection in Zone 4.

No new leasing in sand dune lizard habitat would have a beneficial impact to both species. This would eliminate surface disturbing activities and allow for the habitat to remain intact.

Based on the 20-year projection, construction of well pads, roads, and pipeline operations would have direct effects on 4,900 acres of habitat (245 acres per year avg.) within the Planning Area (See Table 4-10).

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment (*ibid*).

<b>TABLE 4-10 ALTERNATIVE C 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT</b>			
<b>Type of Action</b>	<b>Number of Actions on Federal Land</b>	<b>Approximate Total Acres Disturbed</b>	
		<b>Short Term (3- Years)</b>	<b>Long Term</b>
Oil & gas development wells	980	2,254	2,646

These activities would cause direct disturbance or displacement of ground dwelling animals, disturbance and loss of

habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion (BLM 2001). Animal species composition and densities could change within and adjacent to any mineral development activity (*ibid*). Changes in the animal community and habitat structure change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions (*ibid*). However, Re-vegetation of disturbed sites is typically very slow (*ibid*).

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment (*ibid*).

These activities would cause direct disturbance or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion (BLM 2001). Animal species composition and densities could change within and adjacent to any mineral development activity (*ibid*). Changes in the animal community and habitat structure change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions (*ibid*). However, Re-vegetation of disturbed sites is typically very slow (*ibid*).

For a discussion of indirect impacts, refer to the No Action Alternative and Table 4-3.

Under this alternative, it is estimated that 49 wells would be drilled per year in the Planning Area (approximately 3 full oil field developments). The total indirect disturbance would be 6,174 acres annually. Over the lifetime of this plan (20-Year) there would be approximately 123,480 acres indirectly disturbed based on the RFD.

Based on the prescriptions in the geographic areas discussed above, the direct impacts to 4,900 acres (245 acres per year avg.) and the indirect impacts of 123,480 acres (6,174 acres per year) would occur exterior to the unleased portions of lesser prairie-chicken habitat: Zones 1 and 2, occupied habitat within Zone 3. Regardless of the Zone designation no new leasing would occur in occupied and/or suitable sand dune lizard habitat, however; applying SUORs and requesting PODs, on existing leases, would aide in protecting sand dune lizard dunal complexes. Therefore the impacts from the 49 wells should have minimal impacts to occupied sand dune lizard and occupied/suitable lesser prairie-chicken habitat. This alternative provides greater protection than the 1997 RMPA, and Alternatives A and B only within occupied lesser prairie-chicken habitat but does not consider suitable lesser prairie-chicken habitats.

PODs are required in Zone 1 and 2 on existing leases, within Zones 3 and 4 PODs would be requested on a case-by-case basis. Requiring PODs within the Planning Area would provide the BLM an opportunity to work cooperatively with minerals leaseholders in developing leases, minimizing the impacts of well locations, and their associated roads, pipelines and power lines on wildlife habitat.

Impacts associated with OHV would be decreased under this alternative compared to the No Action Alternative since routes would be limited to designated roads and trails.

## **Cumulative Effects**

Zones 1 and 2 of this alternative would provide approximately the same level of habitat protection for both lesser prairie-chicken and sand dune lizard habitat as the CMA and PPA of Alternatives A and B. Zones 3 and 4 would provide less habitat protection than the SSPA and IPA of Alternatives A and B. However, management flexibility is reduced from either Alternative A or Alternative B, and would result in reduced ability to respond to changing conditions. There would be a corresponding reduction in opportunities to apply adaptive management and the resulting rigidity would prohibit quick management responses to changes in conditions.

Strategic planning of reclamation in lesser prairie-chicken and sand dune lizard habitats would have a beneficial impact to the habitat used by both species. Even though 2,254 acres per year of reclamation does not appear to be a lot, connectivity is the issue. If reclamation would take place in habitats that were once occupied by the lesser prairie-chicken and currently occupied by sand dune lizard, connectivity would increase on an average of 85,800 acres, respectively, over the life of this plan amendment. By removing roads down to native soils, removing unused power lines, pads down to native soils and any other infrastructure, coupled with proper seeding of native grasses, the avoidance areas would be decreased and the habitat expanded for potential occupancy.

## **Cultural Resources**

Impacts to cultural resources would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter. Specifically impacts to cultural resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

## Paleontological Resources

Impacts to paleontological resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to paleontological resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

## Recreation

Impacts would be the same as described in the No Action Alternative.

## **Off-Highway Vehicle Management**

Impacts would be the same as described in the No Action Alternative.

## Special Management Areas

Impacts would be the same as described in the No Action Alternative.

## Social and Economic Conditions

Implementing the 2001 New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing in the Planning Area would produce the same social and economic impacts as described in its environmental impact statement. As described in this EIS the livestock industry in the four county area (Chaves, Eddy, Lea and Roosevelt) would notice little, if any impact under this alternative.

Since the development of existing oil and gas leases would continue, revenues, employment and income generated by this activity would continue at or close to current levels for the foreseeable future. Costs associated with the development requirements (plans of development, designing road nets, reclamation) would be born by the lease holder under these alternatives. More intensive development planning, however, could lead to reduced

developed costs and lower overall development costs. Larger factors such as market prices would have more impact on the economic viability leases and wells than the development prescriptions of this alternative.

Offering new oil and gas leases by the BLM within the Planning Area has no direct connection to employment or income levels in the local economy. Evidence of this disconnection can be seen in Table 3-9 and Table 3-12 of Chapter 3. In the mid-1980s, employment in the oil and gas industry as well as personal income from this industry plummeted. The decline was due to market prices, not the availability of Federal minerals for lease.

Increasing new oil and gas leasing by the BLM in the Planning Area would not produce much economic benefit. Tracts not under lease prior to 1997, particularly those in Zone 1, were unleased due to the lack of interest in some cases and no evidence of payable petroleum zones. Additionally, some existing oil and gas leases remain undeveloped. (See Map 2-1.) The southwest portion of Zone 1 contains a large number of dry holes completed to depths ranging from 3,000 feet deep to 10,000 feet deep. If there are economic quantities of oil and gas beneath this area, current technology has been unable to locate and extract these resources.

While still an important component of the local economy employment in both the agriculture and petroleum fields has decreased in relation to total employment over the past 30 years. Personal income derived from agriculture has declined while personal income from jobs in the oil and gas industry has increased. This alternative would be unlikely to affect this trend.

Changes in economic conditions such as employment and personal income are reflected in society as a whole. Large scale changes in these conditions would be more easily documented than smaller changes.

In this analysis, the four-county area possesses a somewhat diverse employment index, 737 versus a median of 961 for all counties in the U.S. (See Chapter 3) Therefore, the local economy is better able to absorb small changes such as are anticipated under this alternative.

The per capita income in the four counties trails both the New Mexico and national averages. The average earnings per job in the four counties is slightly less than the New Mexico average and substantially less than the national average. Since 71 percent of the new jobs created in the area were in the Services & Professional category (see Chapter 3), this difference cannot be tied to dependence on public land and resources.

It is more difficult to quantitatively measure social impacts. In the social context of the communities in the four counties, changes would likely be minor and relatively unnoticed under this alternative. However, individuals and families with interests in either livestock or oil and gas would be affected in particular localities. For these individuals and families, the most noticeable impact would likely be reduced personal income, reduced operational flexibility and an increase in personal stress through increased operational restrictions.

### Cumulative Effects Summary

Like the other Alternatives, the impacts of implementing Alternative C on specific elements have been documented in the previously in this chapter. Taken as a whole, the cumulative effects of this alternative include:

- Zones 1 and 2 of this alternative would provide approximately the same level of habitat protection for both lesser prairie-chicken and sand dune lizard as the CMA and PPA of Alternatives A and B. Zones 3 and 4 would provide less habitat protection than the SSPA and IPA of Alternatives A and B. Therefore,

this alternative do not meet the Purpose and Need described in Chapter 1.

- Management flexibility is reduced from either Alternative A or Alternative B, reducing the ability to respond to changing conditions. There would be a corresponding reduction in opportunities to apply adaptive management. The resulting rigidity would prohibit quick management responses to changes in conditions.
- Given the relative economic diversity of the four counties surrounding the Planning Area, economic effects would be readily absorbed by the local economy and would not be noticeable to the general population. Individuals and companies would be directly affected.
- Long-term impacts of implementing Standard for Rangeland Health would be a positive benefit to livestock operators. The short term impacts would be expected to be localized to certain allotments or pastures and would not occur throughout the Planning Area.

## ALTERNATIVE D

The following analyzes the impacts of implementing Alternative D, which focuses on currently occupied habitat for both species.

### Lands and Realty

Impacts would be the same as described in the No Action Alternative.

### Fluid Minerals

This alternative closes new leasing of Federal minerals within occupied habitat. Unitization of leases would be required in the occupied habitat in an effort to minimize surface impacts in the proposed area. Under this alternative, cooperative

unitization and lease suspension opportunities that preserve occupied habitat would be promoted. Impacts to leasing, exploration and development of oil and gas resources with required unitization would be insignificant. This alternative restricts only the location of well pads and facilities.

No development would be allowed in occupied sand dune lizard habitat. This is a standard operating procedure and has no additional impact.

### **Cumulative Effects**

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year were drilled within the Planning Area, (10 within Roswell Field Office and 51 within Carlsbad Field Office). On average five wells per year were plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells were plugged in the Planning Area.

Based on the RFD and the management prescriptions of this alternative, approximately 54 wells would be drilled per year and 11 wells per year would be plugged and abandoned. Initial surface disturbance would be a total of approximately 270 acres of which approximately 124 acres would reclaim and stabilize by the end of three years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

Over the next 20 years a total of 1080 wells would be drilled in the Planning Area and approximately 220 wells would be plugged and abandoned. During that period

approximately 5,400 acres of surface would be disturbed; 2,484 acres would reclaim and stabilize within three years of initial disturbance and approximately 360 acres would be reclaimed from plugged and abandoned wells.

Under this alternative, 7 fewer wells would be drilled per year than the No Action alternative. Given the history of production in this region, 6 of those 7 wells would likely be producing wells. Over 20 years, this alternative may result in the loss of 120 producing wells in the region.

### Alternative Energy

Under this alternative wind and solar generation sites would be confined to areas that would have no negative impacts to occupied lesser prairie-chicken and sand dune lizard habitat.

The impacts to vegetation and wildlife by the construction and operation of wind energy sites have been analyzed in the 2005 Wind Energy Programmatic Environmental Impact Statement. These impacts are described in Chapter 5 of this document on pages 5-37 through 5-75. The EIS is available on-line at [www.windeis.anl.gov](http://www.windeis.anl.gov).

### Soils

Impacts to soils would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter.

Specifically, impacts to soils are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to soil quality resources is OHV use. Direct impacts to soil quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area.

TABLE 4-11 ALTERNATIVE D ACREAGE					
MANAGEMENT CATEGORY	ACRES LEASED FOR OIL AND GAS	UNLEASED ACRES	TOTAL ACRES OF FEDERAL MINERALS	COMPARISON OF LEASED ACREAGE TO TOTAL PLANNING AREA ACREAGE	COMPARISON OF TOTAL UNLEASED ACRES TO TOTAL PLANNING AREA ACREAGE
Occupied Habitat	823,555	120,851	200,917	1,145,323	11%

Impacts would be less those described under the No Action Alternative.

### Water Resources

Impacts to water resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to water resources is OHV use. Indirect impacts to water resources by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area.

### Floodplains

Impacts to floodplain resources would be similar to those described in the “Impacts Common to All Alternatives section of this chapter. Specifically, impacts to floodplain resources are indirectly related to surface disturbance. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Impacts to air quality would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to air quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Vegetation

Impacts would be the same as described in Alternative A, except the five year wait before treating adjoining areas in occupied habitat would be dropped. The impacts would be similar to Alternative A, and would allow more treatments to be completed in a shorter time frame. However, since treatments would target only areas with special status species occupied habitat, less acres would be treated than under Alternative A. Areas within the Planning Area, but without occupied habitat, would have impacts similar to the No Action Alternative.

### **Cumulative Effects**

Impacts would be the same as those described in Alternative A, but on a smaller scale since management focus would be on occupied habitat only.

### Livestock Management

Under this alternative, management direction would follow the No Action Alternative, except grazing management practices to meet vegetative and habitat parameters for the lesser prairie-chicken and sand dune lizard would be applied only

in those pastures with occupied habitat. Impacts would be similar to those described under Alternative A, but on a smaller scale and on fewer allotments, as only pastures with occupied habitat would be subject to these management prescriptions.

**Cumulative Effects**

Impacts would be the same as those described in Alternative A, but on a smaller scale since management focus would be only within occupied habitat. Fewer grazing operators would be impacted, since the management focus would only be in occupied habitat.

Wildlife including Special Status Species

Under this alternative, impacts to wildlife habitat would be the same as No Action Alternative, except the restrictions on new oil and gas leasing and associated rights-of-way would only occur within occupied habitats for the lesser prairie-chicken and the sand dune lizard. See the Minerals section of this chapter for acres of occupied lesser prairie-chicken habitat.

This alternative would provide the protection from new leasing in occupied habitats based on current information but would not afford protection from new leasing in habitat that is currently suitable but unoccupied. Therefore, this alternative would not protect habitat for population expansion because development would be allowed in suitable habitat or in un-surveyed areas that may currently be occupied but have not been surveyed for the presence of lesser prairie-chicken and sand dune lizard populations.

Based on the 20-year projection, construction of well pads, roads, and pipeline operations would have direct effects on 5,400 acres of habitat (270 acres per year average) within the Planning Area (See Table 4-12).

TABLE 4-12 ALTERNATIVE D 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT			
Type of Action	Number of Actions on Federal Land	Approximate Total Acres Disturbed	
		Short Term (3-Years)	Long Term
Oil & gas development wells	1080	2,484	2,916

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment (*ibid*).

These activities would cause direct disturbance and/or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion (BLM 2001). Animal species composition and densities could change within and adjacent to any mineral development activity (*ibid*). Changes in the animal community and habitat structure change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions (*ibid*). However, Re-vegetation of disturbed sites is typically very slow (*ibid*).

For a discussion of indirect impacts, refer to the No Action Alternative and Table 4-3.

Under this alternative it is estimated that 54 wells would be drilled per year in the Planning Area (approximately 3 full oil field developments). The total indirect disturbance would be 6,804 acres annually. Over the lifetime of this plan (20-Year) there would be approximately 136,080 acres indirectly disturbed based on the RFD.

Based on the prescriptions in this alternative discussed above, the direct impacts to 5,400 acres (270 acres per year avg.) and the indirect impacts of 136,080 acres (6,804 acres per year) would occur exterior to documented occupied habitat that is unleased. Therefore the impacts from the 54 wells should have minimal impacts to unleased documented occupied Lesser Prairie-chicken/Sand Dune Lizard habitat. However, all un-occupied suitable habitat would be open for new leasing and development.

PODs would be required in occupied Lesser Prairie-chicken/Sand Dune Lizard habitats. Requiring PODs within these occupied habitats would provide the BLM an opportunity to work cooperatively with minerals leaseholders in developing leases, minimizing the impacts of well locations, and their associated roads, pipelines and power lines on wildlife habitat. This alternative would decrease the number of PODs from alternatives A, B and C, therefore the degree of fragmentation and surface disturbance within suitable unoccupied habitats would be greater than in the above mentioned alternatives.

### **Cumulative Effects**

This alternative would provide the amount of habitat protection for both species and the cumulative effects of this alternative would be similar to those of the No Action Alternative. This alternative does not allow for the expansion of habitats or species populations within the entire Planning Area and, therefore, would be considered a negative impact to both species and their habitats.

Strategic planning of reclamation in lesser prairie-chicken and sand dune lizard habitats would have a beneficial impact to the habitat used by both species. Even though 2,484 acres per year of reclamation does not appear to be a lot, connectivity is the issue. If reclamation would take place in habitats that were once occupied by the lesser prairie-chicken and currently occupied by sand dune lizard, connectivity would increase on an average of 56,110 acres, respectively, over the life of this plan amendment. By removing roads down to native soils, removing unused power lines, pads down to native soils and any other infrastructure, coupled with proper seeding of native grasses, the avoidance areas would be decreased and the habitat expanded for potential occupancy.

Alternative D is more restrictive than the No Action Alternative but less restrictive than all of the other alternatives. Projected initially disturbed acreage would be 270 acres annually. The cumulative impact of 20 years of oil and gas development is estimated to be 4,900 initially disturbed acres. Impacts to wildlife resources would be considered greater under this alternative than in A, B and C.

### Cultural Resources

Impacts to cultural resources would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter. Specifically, impacts to cultural resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

### Paleontological Resources

Impacts to paleontological resources would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter. Specifically, impacts to paleontological resources are indirectly related to surface disturbance. The direct

impacts of new surface disturbance are shown in Table 4-1.

### Recreation

Same as No Action Alternative

### **Off-Highway Vehicle Management**

Pending the completion of route designation plans, OHV would be limited to existing roads and trails within the Planning Area. This management action would align the Carlsbad portion of the Planning Area with the current Roswell management prescription in the area. This management action would bring the Planning Area into compliance with current BLM planning guidance concerning OHV use.

Only phase one of the proposed three-phase development would occur at Mescalero Sands North Dune OHV Area (see Map B-3). Under this alternative Mescalero Sands North Dune OHV Area would be expanded from 562 acres to 980 acres. Surface disturbance impacts would be reduced as opposed to a three phase development under Alternative B. However, impacts to off highway vehicle use would occur and the Mescalero Sands North Dune OHV Area would be adversely impacted from over use as user activity increases.

Development and improvements of facilities would continue in established OHV areas in compliance with developed management and recreation activity plans for each area.

These plans would detail development in a manner that would provide for recreation and establish public health and safety.

This alternative would allow for interpretive signing providing opportunity for public education and awareness for the need to provide for and protect lesser prairie-chicken and sand dune lizard habitat.

In the Mescalero Sands North Dune OHV Area, impacts to male booming would be

reduced by implementing noise restrictions for off highway vehicle use. The noise from OHV use tends to mask male booming which is necessary for mating. Noise restrictions would be in effect from the hours of 3 a.m. to 9 a.m. from March 1 through June 15.

### **Cumulative Effects**

OHV use of what is now the Mescalero Sands North Dune OHV Area dates from the late 1940s with the availability of four-wheel drive vehicles. Use in the Area was boosted in the late 1960s with popularity of Volkswagen-base dune buggies. BLM established the Area for OHV use in 1989.

Currently, the public is using the Square Lake region for OHV recreation use.

Pending formal designation of roads and trails, this alternative would reduce impacts to special status species habitat. The controlled expansion of Mescalero Sands North Dune OHV Area would provide for greater OHV recreation opportunities without impacts to either lesser prairie-chicken or sand dune lizard habitat. Moving the designation of the Hackberry Lake OHV Area from open to limited recognizes the existing use within the OHV area and would have no impact on either lesser prairie-chicken or sand dune lizard habitat.

OHV activity would continue in the Planning Area by limiting activity to open roads, trails, and designated routes. Monitoring of OHV areas would occur to ensure compliance and discourage cross country travel. Dune complexes would be designated open where special species habitat is not present.

Monitoring of OHV activity in each field office to ensure compliance of the limited designation would reduce impacts. Identification of open dune areas within the established OHV areas would reduce impacts and discourage cross country travel into Special Status Species habitat areas.

Pressures of visitor use would decrease by possibly expanding the existing Mescalero Sands North Dune OHV Area.

### Special Management Areas

Impacts would be the same as the No Action Alternative.

### Social and Economic Conditions

Implementing the 2001 New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing in the Planning Area would produce the same social and economic impacts as described in its environmental impact statement. As described in this EIS the livestock industry in the four- county area (Chaves, Eddy, Lea and Roosevelt) would notice little, if any impact under this alternative.

Since the development of existing oil and gas leases would continue, revenues, employment and income generated by this activity would continue at or close to current levels for the foreseeable future. Costs associated with the development requirements (plans of development, designing road nets, reclamation) would be born by the lease holder under these alternatives. More intensive development planning, however, could lead to reduced developed costs and lower overall development costs. Larger factors such as market prices would have more impact on the economic viability leases and wells than the development prescriptions of this alternative.

Offering new oil and gas leases by the BLM within the Planning Area has no direct connection to employment or income levels in the local economy. Evidence of this disconnection can be seen in Table 3-9 and Table 3-12 of Chapter 3. In the mid-1980s, employment in the oil and gas industry as well as personal income from this industry plummeted. The decline was due to market

prices, not the availability of Federal minerals for lease.

Increasing new oil and gas leasing by the BLM in the Planning Area would not produce much economic benefit. Tracts not under lease prior to 1997 were unleased due to the lack of interest in some cases and no evidence of payable petroleum zones. Additionally, some existing oil and gas leases remain undeveloped. (See Map 2-1.) The portion of the Planning Area in southeast Chaves County contains a large number of dry holes completed to depths ranging from 3,000 feet deep to 10,000 feet deep. If there are economic quantities of oil and gas beneath this area, current technology has been unable to locate and extract these resources.

While still an important component of the local economy employment in both the agriculture and petroleum fields has decreased in relation to total employment over the past 30 years. Personal income derived from agriculture has declined while personal income from jobs in the oil and gas industry has increased. This alternative would be unlikely to affect this trend.

Changes in economic conditions such as employment and personal income are reflected in society as a whole. Large scale changes in these conditions would be more easily documented than smaller changes. In this analysis, the four-county area possesses a somewhat diverse employment index, 737 versus a median of 961 for all counties in the U.S. (See Chapter 3) Therefore, the local economy is better able to absorb small changes such as are anticipated under this alternative. The per capita income in the four counties trails both the New Mexico and national averages. The average earnings per job in the four counties is slightly less than the New Mexico average and substantially less than the national average. Since 71 percent of the new jobs created in the area were in the Services & Professional category (see

Chapter 3), this difference cannot be tied to dependence on public land and resources.

It is more difficult to quantitatively measure social impacts. In the social context of the communities in the four counties, changes would likely be minor and relatively unnoticed under this alternative. However, individuals and families with interests in either livestock or oil and gas would be affected in particular localities. For these individuals and families, the most noticeable impact would likely be reduced personal income, reduced operational flexibility and an increase in personal stress through increased operational restrictions.

### Cumulative Effects Summary

Like the other Alternatives, the impacts of implementing Alternative D on specific elements have been documented previously in this chapter. This alternative provides occupied habitat protection for both species and the cumulative effects of this alternative would be similar to those of the No Action Alternative. Therefore, it does not meet the Purpose and Need described in Chapter 1.

## ALTERNATIVE E

The following analyzes the impacts of implementing Alternative E, which would apply the suggestions for special management from the Lesser Prairie-chicken Area of Critical Environmental Concern (ACEC)

### Lands and Realty

Impacts would be the same as described in Alternative A with additional impacts on rights-of-way development from setbacks would be the same as those described for avoidance or exclusion areas, with delays in construction and increases in distance from realignments. Increased construction costs would result.

### Fluid Minerals

This alternative requires a 5-year moratorium on all new oil and gas activity in certain areas of the proposed ACEC. This action would have a significant impact on leasing, exploration, and development of resources within the proposed ACEC. There are 584 leases in the moratorium area.

Implementing a 5-year moratorium would require legislation because a moratorium would pre-empt existing lease rights and deny lessees rights granted under the Mineral Lease Act. Denying existing lease rights, which would deny access to the lease, would likely result in takings cases being filed for existing leases in the moratorium area.

No drilling would be allowed within 1.5 km (.9 miles) of known leks in the Adaptive Management Area of the proposed ACEC. The impact associated with this action is one of scale. This alternative would not allow drilling within 1.5 km (0.9 miles), while other alternatives would not allow drilling within 1.5 miles.

This alternative proposes the withdrawal of locatable and salable mineral entry from the entire proposed ACEC area. This action would potentially have a significant impact on exploration and development of mineral material resources within the proposed ACEC and subsequently impact the development of oil and gas resources by increasing the hauling and transportation costs of surfacing materials. It would also have a significant impact on other industries that use mineral materials, such as road and highway construction, general construction, etc.

This alternative proposes to withdraw the entire proposed ACEC area from non-energy mineral leasing. This action would have a significant impact on the exploration and development of solid leasable (sulfur) mineral resources.

## Cumulative Impacts

Based on the calculations in Appendix 7 over the past 30 years, an average of 337 wells per year were drilled on Federal minerals within the Pecos District. During that same period, an average of 27 Federal wells were plugged and abandoned. Approximately 18 percent of the activity within the Pecos District occurs within the Planning Area. Using that percentage, approximately 61 wells per year were drilled within the Planning Area, (10 within Roswell Field Office and 51 within Carlsbad Field Office). On average five wells per year were plugged and abandoned on Federal lands in the Planning Area, one within Roswell Field Office and four within Carlsbad Field Office. Eleven total wells were plugged in the Planning Area.

The impacts of this alternative would negatively impact new oil and gas development since no new development of any mineral resources would be allowed for 5 years. This alternative affects 237,231 acres, less than 25 percent of the total lands included in the other alternatives.

Based on the RFD and the management prescriptions of this alternative, approximately 32 wells would be drilled per year in those areas outside the proposed ACEC. There would be no mineral exploration or development inside the proposed ACEC. Eleven wells per year would be plugged and abandoned outside the proposed ACEC. Initial surface disturbance would be a total of approximately 160 acres of which approximately 74 acres would reclaim and stabilize by the end of three years. Successful reclamation of the plugged and abandoned wells would total approximately 18 acres.

Over the 5 years of the moratorium, a total of 160 wells would be drilled in the Planning Area and approximately 55 wells would be plugged and abandoned. During that period approximately 800 acres of surface would

be disturbed; 368 acres would reclaim and stabilize within three years of initial disturbance and approximately 90 acres would be reclaimed from plugged and abandoned wells.

Under this alternative, 29 fewer wells would be drilled per year than the No Action Alternative. Given the history of production in this region, 23 of those 29 wells would likely be producing wells. Over 20 years, this alternative may result in the loss of 460 producing wells in the region.

Exploration and development of fluid mineral resources beyond the 5-year moratorium is unknown. If this ACEC proposal is adopted and approved as written, additional legislation would be required to manage resources after the 5-year moratorium has expired.

## Alternative Energy

The ACEC nomination made no mention of alternative energy sites (see Appendix 3). Under this alternative, applications for wind and solar generating sites would be considered on a case-by-case basis. Impacts would be similar to those described under the No Action Alternative.

The impacts to vegetation and wildlife by the construction and operation of wind energy sites have been analyzed in the 2005 Wind Energy Programmatic Environmental Impact Statement. These impacts are described in Chapter 5 of this document on pages 5-37 through 5-75. The EIS is available on-line at [www.windeis.anl.gov](http://www.windeis.anl.gov).

## Soils

Impacts to soils would be similar to those described in the "Impacts Common to all Alternatives" section of this chapter. Specifically, impacts to soils are indirectly related to surface disturbance. The direct

TABLE 4-13 ALTERNATIVE E ACREAGE					
MANAGEMENT CATEGORY	ACRES LEASED FOR OIL AND GAS IN ACEC	UNLEASED ACRES IN ACEC	TOTAL ACRES OF FEDERAL MINERALS IN ACEC	PERCENT OF TOTAL LEASED IN ACEC	PERCENT OF TOTAL UNLEASED IN ACEC
Moratorium	126,890	110,341	237,231	53%	47%

impacts of new surface disturbance are shown in Table 4-1.

The other impact to soils resources is OHV use. Direct impacts to soils by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Water Resources

Impacts to water resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to water resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to water resources is OHV use. Direct impacts to water resources by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Floodplains

Impacts to floodplain resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to floodplain resources are indirectly related to surface disturbance. However surface disturbance would not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains.

### Air Quality

Impacts to air quality would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to air quality are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

The other impact to air quality resources is OHV use. Direct impacts to air quality by OHV use would be confined to designated OHV recreation areas and trails and existing trails and roads within the Planning Area. Impacts would be less those described under the No Action Alternative.

### Vegetation

Under this alternative, there would be no tebuthiuron use within the boundaries of the proposed ACEC. If herbicides are deemed useful by the management team to retard growth of shinnery oak and promote grass cover, other less lethal herbicides should be used in place of tebuthiuron. The outright ban on tebuthiuron use could reduce the effectiveness and increase the cost of treatments needed to move the vegetative resource towards meeting the New Mexico Standards for Public Land Health.

As described in the Energy section above, over the 5 years of the moratorium, 800 acres of surface would be disturbed; 368 acres would reclaim and stabilize within three years of initial disturbance and approximately 90 acres would be reclaimed from plugged and abandoned wells. This leaves 342 acres of vegetative disturbance.

## Cumulative Effects

Under Alternative E, areas outside of the proposed ACEC but within the Planning Area would be managed under current management practices (No Action). Therefore, impacts would be the same as those in No Action. This alternative may protect and have a positive effect on vegetation and make progress towards meeting Standards for Rangeland Health within the proposed ACEC boundary, but does not provide these opportunities on a landscape scale.

In the moratorium area and experimental grazing around lek areas, there would be more cover/standing biomass, resulting in improved watershed functions in these areas. As in Alternative A, the impact would be largely dependant on precipitation. The rest of the Planning Area would have impacts similar to the No Action Alternative.

## Livestock Management

Under this alternative, areas outside of the proposed ACEC but within the Planning Area would be managed under current management practices (No Action Alternative) and with similar impacts. Those allotments not meeting Public Land Health Standards would result in a reduction of approximately 7,660 AUMs.

Areas within the proposed ACEC would be subject to no grazing for 5 years within the Moratorium Areas, and limited grazing in the Adaptive Management Areas (see Appendix 3 and Map E- 1). A total of 36,510 AUMs per year would be lost during the 5-year no grazing moratorium.

The Moratorium Area includes 23 allotments in the Roswell Field Office and 9 allotments in the Carlsbad Field Office. Impacts of no grazing can be described as low, moderate, and high for each allotment.

Low impact allotments are those that have a small portion of the allotment within the

Moratorium Areas and would thus have limited acreage excluded from livestock use. The ranching operation would proceed with no or minimal change. Moderate impact allotments are those that have enough of the allotment included in the Moratorium Area that some type of livestock use would be made, but numbers would be reduced and fences would need to be installed to exclude the no graze area from livestock. The ranching operation would continue, but with substantial change. High impact allotments are those that have all or most of the allotment within the Moratorium Area, so livestock grazing would not occur.

In the Roswell Field Office, four allotments would be low impact, four allotments would be moderate impact, and 15 allotments would be high impact. In the Carlsbad Field Office, three allotments would be low impact, one allotment would be moderate impact, and five allotments would be high impact.

Table 4-14 shows grazing allotments that would be included in the Moratorium Area.

The allotment numbers that start with a "6" are managed by the Roswell Field Office and those that start with a "7" are managed by the Carlsbad Field Office.

AUMs lost due to the 5-year no graze period proposed in this alternative range from 2.5 percent to 100 percent of any given permit or lease. For this 5-year period, a total of seven allotments would lose all the AUMs authorized for grazing, nine would lose more than 75 percent of authorized AUMs and an additional five would lose 50 to 75 percent of authorized AUMs. In other words, 21 of the 32 allotments, or 64 percent, in the Moratorium Area would lose half to all of their income derived from cattle ranching over this time frame. Another negative impact to livestock grazing would be that the remaining 11 allotments would have additional costs to fence out the Moratorium Area and would lose revenue due to AUM reductions.

Experimental livestock grazing in the Adaptive Management Area, and within 1.5 miles of lek sites, would result in approximately 3,200 acres not being grazed and another 3,200 acres having light intensity grazing after June 30 of each year. In order to avoid these lek sites, some type of fence would have to be installed around the buffer area or livestock would have to be removed from the entire pasture.

If fences are constructed around lek sites, this could possibly be a detriment to lesser prairie chickens, as they become perching posts for raptors and may cause direct mortality or injury when to lesser prairie chickens flying into or out of booming grounds. These fences may also effect livestock movement patterns and create bottlenecks depending upon location and size.

This would result in negative economic impacts to ranching operations such as fewer calves being produced from the experimental grazing acreage, additional costs to move livestock from a "lek" pasture to a "non-lek" pasture, renting additional private pasture to support the herd while they could not graze on public land, and increased maintenance costs on range improvement projects necessary to meet habitat requirements. If cattle numbers on the allotment stay the same, higher utilization of forage would occur in the "non-lek" areas. A positive impact would be increased forage production and forage diversity that the remaining cattle may graze.

The Adaptive Management Area also contains a number of large, tebuthiuron treated pastures where high concentrations of the herbicide were applied (See Appendix 3). Surveys within these treated pastures have failed to locate lesser prairie-chickens nesting or rearing broods. Therefore, these areas would be exempt from the livestock management recommendations discussed here, and livestock grazing would simply comply with all applicable Federal law in

these areas. Impacts would be similar to the No Action Alternative.

Under Alternative E, areas outside of the proposed ACEC but within the Planning Area would be managed under current management practices (No Action Alternative). This alternative would provide livestock management practices to improve lesser prairie-chicken habitat within the proposed ACEC boundary, but would not address applying these practices across the entire Planning Area.

### **Cumulative Effects**

In the moratorium area there would be no grazing for 5 years, effectively putting these operators out of business. This economic impact would not only be felt at the ranch level, but cause losses to other businesses that support ranching. In the experimental grazing areas around leks, less area would be available to graze, causing increased costs to fence out cattle, supplemental feed, or rent other pastures. These higher costs would take money out of ranch budgets that would normally be spent at other businesses that support ranching. These businesses would also suffer economic losses. The rest of the Planning Area would have impacts similar to the No Action Alternative.

### Wildlife including Special Status Species

Under this alternative, impacts to wildlife habitat from realty actions would be the same as the No Action Alternative, outside the ACEC boundaries, with the exception of positive impacts from the result of lands acquisitions.

A 5-year moratorium on livestock grazing and oil and gas production would have a positive impact for that time frame.

Based on a 5-year projection, construction of well pads, roads, and pipeline operations would have direct effects on 800 acres of

**TABLE 4-14  
GRAZING ALLOTMENTS WITHIN THE MORATORIUM AREA**

<b>ALLOTMENT NUMBER</b>	<b>ALLOTMENT NAME</b>	<b>PUBLIC LAND ACRES</b>	<b>PERMITTED AUMS</b>	<b>AUMS REDUCED</b>	<b>PERCENT REDUCTION</b>
65010	Mitchell Dairy	2,478	516	336	65.1
65013	Falsey Draw	1,924	348	144	41.4
65015	J. Southard	160	36	36	100.0
65016	Southard	920	144	144	100.0
65029	Wilcox Well	6,203	1,420	1,368	96.3
65030	Vest Lake	320	84	84	100.0
65032	Davis	8,479	1,881	1,881	100.0
65034	White Lakes-Crosby	16,814	3,527	972	27.6
65039	Palla Ranch	1,965	336	168	50.0
65043	Sand Ranch	27,112	4,822	3,876	80.4
65044	Andrus Ranch	1,361	297	297	100.0
65045	Caprock Ranch	1,860	352	16	4.5
65049	Clemmons	52,68	1,609	1,609	100.0
65050	Clemmons Sec 15	1,920	468	84	17.9
66051	Marley Cap Sec 3	10,695	2,100	1,740	82.9
65053	Pearce Ranch	31,406	4,984	3,732	74.9
65063	Julia Culp	2,944	449	348	77.5
65065	Under The Hill	6,124	2,004	1,512	75.4
65073	Millard Derrick	2,956	549	360	65.6
65074	Sand Camp Ranch	7,283	1,283	132	10.3
65075	Turkey Track	230,502	37,940	2,208	5.8
65077	LS Wouldiams	18,828	2,978	2,676	89.9
65078	Slash ML	5,792	967	348	36.0
76006	Pumpjack S.	16,760	1,758	315	17.9
76007	Maljamar S.	12,448	1,452	1,360	93.7
76008	Querecho Plains	9,562	1,339	1,339	100.0
76011	Laguna Tonto	14,238	11,860	6,526	55.0
76058	Eddy 13	6,400	633	501	79.1
77004	Loco Hills	14,183	1,806	45	2.5
77012	Twin Wells N.	120,469	11,664	1,382	11.8
77013	Clayton Basin	50,448	10,200	425	4.2
77043	Little Lake	5,119	691	549	79.5
<b>TOTALS</b>		<b>*642,943</b>	<b>110,497</b>	<b>36,510</b>	<b>33.0</b>

NOTE: Total acres do not equal the area of the proposed ACEC or the Planning Area because these allotments overlap the boundaries of the proposed ACEC or the Planning Area or both.

habitat (160 acres per year avg.) within the Planning Area (See Table 4-15).

Construction activities would use heavy equipment for leveling pads and roads, trenching and backfilling pipeline corridors and building electrical power lines (BLM 2001). Specific effects of this disturbance would include: soil churning, compaction, and loss of top soil; loss of vegetation cover, specific habitat features such as large shrubs, and species composition; and alteration of surface water flow, increased erosion, and increased likelihood of exotic plant species establishment (*ibid*).

TABLE 4-15 ALTERNATIVE E 20-YEAR PROJECTION (DIRECT IMPACTS) FOR OIL AND GAS DEVELOPMENT			
Type of Action	Number of Actions on Federal Land	Approximate Total Acres Disturbed	
		Short Term (3- Years)	Long Term
Oil & gas development wells	160	303	497

These activities would cause direct disturbance and/or displacement of ground dwelling animals, disturbance and loss of habitat structures such as shrubs with nests, habitat loss through erosion, and changes in food and cover relationships due to vegetative change and increased erosion (BLM 2001). Animal species composition and densities could change within and adjacent to any mineral development activity (*ibid*). Changes in the animal community and habitat structure change in plant species composition and density would persist until habitat within the development areas is restored to near pre-disturbance conditions (*ibid*). However, Re-vegetation of disturbed sites is typically very slow (*ibid*).

For a discussion of indirect impacts, refer to the No Action Alternative and Table 4-3.

Based on the RFD (see Appendix 7), it assumes that there would be 32 wells (approximately 2 full field developments) developed on an annual basis, for a total indirect disturbance of 4,032 acres annually. Over the lifetime of this plan (5-Year) there would be approximately 20,160 acres indirectly disturbed based on the RFD.

Based on the prescriptions in this alternative discussed above, the direct impacts to 800 acres (160 acres per year avg.) and the indirect impacts of 20,160 acres (4,032 acres per year) would occur exterior to occupied habitat. Therefore, the impacts from the 32 wells should have minimal impacts to occupied lesser prairie-chicken habitat within the ACEC. The remainder of lesser prairie-chicken/sand dune lizard habitat would be managed with the same prescriptions in the No Action Alternative.

Areas of sand dune lizard habitat outside the boundaries of the proposed ACEC would receive no direct management direction under this alternative. Therefore, impacts to sand dune lizard habitat in areas outside the proposed ACEC boundaries would be the same as the No Action Alternative

Alternatives A, B and C would cover most of the public land and Federal mineral estate intersecting with the habitat of the lesser prairie-chicken and sand dune lizard. In comparison, the proposed ACEC boundary covers only 26 percent of the same area, consequently alternatives A, B or C would provide additional protection over the proposed ACEC proposal.

### Cumulative Effects

The proposed ACEC focuses management only on the lesser prairie-chicken and ignores all other special status species occupying the same ecosystem. The proposed ACEC and its nomination package (see Appendix C) would provide no management recommendations or guidance for occupied habitat occurring outside the

boundaries of the proposed ACEC. Therefore, the impacts on the portions of the Planning Area outside the proposed ACEC boundaries would be the same as the No Action Alternative. Additionally, the proposed ACEC and its nomination package neither mentions nor provides for expansion of the species habitat or population outside the boundaries of the proposed ACEC. This alternative does not allow for management to work with industry for the development of minerals that are located in areas that are located in unsuitable habitat for both species.

The negative effects on lesser prairie-chicken and sand dune lizard habitat would outweigh the positive effects on these two habitat types by discounting connectivity issues from the northern habitat to the southern habitat, not allowing the BLM to work with industry to coordinate conservation in the two habitat types, ignoring the habitat that is exterior the proposal for both species, and incorporates adaptive management only in a small portion of the Planning Area.

### Cultural Resources

Impacts to cultural resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically, impacts to cultural resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

### Paleontological Resources

Impacts to paleontological resources would be similar to those described in the “Impacts Common to all Alternatives” section of this chapter. Specifically impacts to paleontological resources are indirectly related to surface disturbance. The direct impacts of new surface disturbance are shown in Table 4-1.

### Recreation

This alternative would allow more impact to occur in the Planning Area outside the proposed Lesser Prairie-chicken ACEC boundaries. Management of the Planning Area under this alternative would have less affect on protecting special species habitat outside the ACEC boundaries. Access into the proposed Lesser Prairie-chicken ACEC during mating season would be by special recreation permit. Impacts inside the proposed ACEC boundary would be the same as those in Alternative B.

Recreation in the ACECs would be limited to activities appropriate for extensive recreation management areas (ERMAs).

This alternative would be counter productive to the Bureau’s policy of providing unique and quality recreation experiences. Encroachment and intrusions into ACEC boundaries would be expected and could lead to non-monitored illegal activity that could be detrimental to the lesser prairie-chicken and sand dune lizard habitat. As described in Alternative B, areas outside the established OHV areas would be managed as rural or natural areas and interpretive signing would be placed in key areas throughout the Planning Area.

Recreation activity outside the proposed ACEC would have no management prescriptions in place to protect future possible habitat for the lesser prairie-chicken or the sand dune lizard.

### **Off-Highway Vehicle Management**

The proposed ACEC boundaries are restrictive to recreation use on public land and do not take into consideration management strategy to reduce or mitigate impacts.

OHV areas outside the ACEC boundaries would remain unchanged, but would not

provide for expansion opportunities. As a result public health and safety would be compromised by not allowing for expansion to meet the need of the recreating public.

### **Cumulative Effects**

OHV use of what is now the Mescalero Sands North Dune OHV Area dates from the late 1940s with the availability of four-wheel drive vehicles. Use in the Area was boosted in the late 1960s with popularity of Volkswagen-base dune buggies. BLM established the Area for OHV use in 1989.

Currently, the public is using the Square Lake region for OHV recreation use.

Impacts to lesser prairie-chicken and sand dune lizard habitat within the proposed ACEC boundaries would be the same as Alternatives A and B. Impacts to lesser prairie-chicken and sand dune lizard habitat outside the proposed ACEC boundaries would be the same as the No Action Alternative.

### **Special Management Areas**

Under this alternative the lesser prairie-chicken ACEC would be established. This ACEC would consist of 4 tracts totaling 362 square miles or approximately 231,680 acres (see Map E-1). The impacts of establishing this ACEC are discussed under other elements within this chapter.

### **Social and Economic Conditions**

Outside the boundaries of the Proposed ACEC but within the Planning Area social and economic trends identified in Chapter 3 would continue for the foreseeable future. The 5-year moratorium on livestock grazing and new oil and gas development in the proposed ACEC south of US Highway 380 would result in noticeable social and economic impacts.

The impacts of a 5-year livestock grazing moratorium on individual grazing allotments have been noted in the Livestock Grazing section of this chapter (See Table 4-13.) No grazing for 5 years effectively puts these operators out of business. This economic impact would not only be felt at the ranch level, but cause losses to other businesses that support ranching. In addition to these impacts already noted, allotment operators would probably note a decline in the value of their permit, limiting their ability to obtain loans. Since the proposed ACEC is located in Chaves and Eddy Counties, these counties would probably notice a decline in property tax revenues from the base properties and livestock.

In the experimental grazing areas around leks, less area would be available to graze, causing increased costs to fence out cattle, supplemental feed, or rent other pastures. These higher costs would take money out of ranch budgets that would normally be spent at other businesses that support ranching. These businesses would also suffer economic losses. The rest of the Planning Area would have impacts similar to the No Action Alternative.

A 5-year moratorium on new oil and gas development (not just new oil and gas leasing) would seriously impact existing rights of lease holders. Therefore, to implement this moratorium, Congressional action would be needed.

### **Cumulative Effects Summary**

Like the other Alternatives, the impacts of implementing Alternative E on specific elements have been documented previously in this chapter. The concept of this alternative is the establishment of the proposed ACEC for lesser prairie-chicken. Some of the issues of the proposal have been discussed previously in this chapter. Limitations of the proposal include:

- BLM planning guidance calls for management of ecosystems on a landscape scale. The proposed ACEC would not meet this requirement. Instead, the proposed ACEC focuses management on one species, ignoring all other special status species occupying the same ecosystem.
  - The proposed ACEC and its nomination package provide no management suggestions or guidance for occupied habitat existing outside the boundaries of the proposed ACEC. Therefore, the impacts on the portions of the Planning Area outside the proposed ACEC boundaries would be the same as the No Action Alternative.
  - The proposed ACEC and its nomination package neither mentions nor provides for expansion of the species population outside the boundaries of the proposed ACEC. Therefore, the impacts on the portions of the Planning Area outside the proposed ACEC boundaries would be the same as the No Action Alternative.
  - Opportunities for expansion of the species, both in population numbers and occupied habitat, would be necessary to avoid listing the lesser prairie-chicken and sand dune lizard as a threatened or endangered species.
- Adopting the proposed ACEC as nominated would not provide those opportunities. Therefore, listing either species as threatened or endangered is more likely than Alternatives A, B or C. Under this alternative, less habitat would be protected from surface disturbing activities.
- In the moratorium area and experimental grazing around lek areas, there would be more ground cover or standing biomass, resulting in improved watershed functions in these areas but speed of recovery of vegetation as a result of eliminating livestock grazing in the moratorium area would be largely dependant on precipitation. The rest of the Planning Area would have impacts similar to the No Action Alternative.
  - Taken as a whole, implementing Alternative E would produce the largest degree of negative impacts within the Planning Area and the surrounding to the local economy. Implementing Alternative E would not set in place the management prescriptions over an area large enough area to avoid listing the lesser prairie-chicken or the sand dune lizard as threatened or endangered species. Therefore, this alternative does not meet the Purpose and Need described in Chapter 1.