Draft Environmental Assessment for Reestablishment of the Endangered Northern Aplomado Falcon into New Mexico and Arizona.

Summary/Finding of No Significant Impact:

The US Fish and Wildlife Service proposes to, based on the scientific and commercial data available, restore northern aplomado falcons (falcon) to Chihuahuan Desert grasslands in New Mexico and Arizona through the rule making process of designating New Mexico and Arizona as a "non-essential experimental population" (NEP) area pursuant to section 10(j) of the Endangered Species Act (ESA). Within a 10(j) designated area, falcons would be treated as proposed for listing outside National Wildlife Refuges or National Parks where they will be treated as threatened. The final rule, which will be published in the Federal Register, will define allowable take (harm or harassment) of falcons in New Mexico and Arizona. Allowable take is also addressed in the Environmental Assessment. A release program in New Mexico should provide sufficient falcons for colonizing potentially suitable habitat in New Mexico and Arizona. We anticipate releasing falcons for at least a decade. In addition to the preferred alternative, we considered the following alternatives: 1) no action, 2) releasing falcons on private lands using Safe Harbor Agreements, 3) releasing falcons under the current ESA protections, and 4) releasing falcons under 10(j) with portions of New Mexico and all of Arizona covered by the NEP. The preferred alternative was selected over the other alternatives because land managers should be more likely to accept falcons on their lands with the flexibility provided by section 10(j). Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. A monitoring plan for this action has been developed.

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Assistant Regional Director Date

Introduction, Purpose and Need

1.1 Introduction

The northern aplomado falcon (*Falco femoralis septentrionalis*) (falcon) was once common in Texas along the Rio Grande and in southern New Mexico and southeastern Arizona until the mid-twentieth century. Declines in falcon numbers in the United States (U.S.) have been attributed to habitat changes, pesticide contamination, and collection (U.S. Fish and Wildlife Service [Service] 1986).

The falcon is a long-tailed falcon. The size of the falcon is intermediate between the American kestrel (*Falco sparverius*) (kestrel) and prairie falcon (*Falco mexicanus*) (Hector 1983). The back and dorsal side of the wings are blue-gray with a pronounced white trailing edge across the wing. The upper breast is bleach white to creamy with variable amounts of black streaking, depending on the sex. There is a distinct broad dark or blackish band on the lower breast, which at close range may show faint white barring. The lower abdomen and undertail feathers are rufous (red), the tail striped. Unique to this falcon and useful to field identification is a pronounced white stripe above the eye.

Falcons appear to be year-long residents across most of their northern range where populations currently exist in Mexico (Hector 1981). Nesting primarily occurs from March to June in northern Chihuahua, Mexico (Montoya 1995). Falcons typically use stick nests constructed by other large birds such as Swainson's hawks (*Buteo swainsoni*), white-tailed hawks, (*Buteo albicaudatus*), red-tailed hawk (*Buteo jamaicensis*), Chihuahuan ravens (*Corvus cryptoleucus*), and possibly white-tailed kites (*Elanus leucurus*). Nests are usually situated in yuccas (*Yucca sp*.) or in the tops of mesquite (*Prosopis sp*.) trees, or manmade structures (power poles).

Falcons have been documented in a variety of open woodland, savanna, and grassland habitats (Hector 1981, Service 1990). Within the Chihuahuan Desert, falcons typically occur in open grasslands with scattered mesquite and/or soaptree yucca (*Yucca elata*) or Torrey yucca (*Y. torreyi*) (Ligon 1961, Montoya *et al.* 1997).

Historic distribution of the *septentrionalis* subspecies of falcon ranged from southeastern Arizona, southern New Mexico, and southern Texas in the U.S., to Tamaulipas, Chiapas,

Campeche, Tabasco, Chihuahua, Coahuila, Sinaloa, Jalisco, Guerrero, Veracruz, Yucatan, and San Luis Potosi in Mexico, and the western coast of Guatamala (Service 1986).

The Service is the principal Federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service administers the ESA, and federally listed the falcon as endangered in 1986. Both the final listing rule (50 FR 6686) and the Recovery Plan (Service 1990) implicated habitat changes, pesticide contamination, and collection as reasons for the falcon's decline. The Recovery Plan identified a self-sustaining falcon population of 60 pairs in the U.S. as criteria for downlisting to threatened status, but provided no criteria for delisting. The Recovery Plan outlined six objectives to be implemented toward reaching this downlisting goal:

1) Evaluate, monitor, and minimize all threats including pesticides (and other contaminants) to extant populations.
2) Identify, maintain, and improve habitat.
3) Reestablish the falcon in the U.S. and Mexico.
4) Conduct studies of habitat requirements, physiological ecology, and behavior of wild falcons.
5) Enhance public support for this recovery effort through educational programs.
6) Encourage national and international cooperation in carrying out these objectives.

Since the Recovery Plan was completed, much information has been collected and analyzed in order to identify suitable falcon habitat in the U.S. and Mexico (Montoya et al. 1997, Keddy-Hector 2000, Truett 2002, Young et al. 2002). This environmental assessment (EA) primarily addresses objective 3, reestablishment of falcons. The task of releasing falcons (in order to reestablish populations) was identified as a priority 1 task (highest priority) in the Recovery Plan and has been ongoing in Texas since 1985 on Service Wildlife Refuges, or on private lands through the use of Safe Harbor Agreements. As a result, at least 39 established pairs have successfully fledged more than 125 young (A. Montoya, Peregrine Fund, pers. comm. 2003).

1.2 Purpose of the Action

The overall purpose of the proposed action is to reestablish successfully breeding falcons to potentially suitable habitat found in the Chihuahuan desert grasslands within the U.S. Once established, this effort would provide an additional falcon population in the U.S. The presence of an additional U.S. falcon population would decrease the risk of extirpation to the subspecies from environmental catastrophe, disease, or other unforeseen events. Establishment of a falcon population in Chihuahuan desert grasslands in the U.S. would contribute to falcon recovery.

1.3 Needs for the Action

The action needed is establishment of a self-sustaining falcon population in U.S. Chihuahuan desert grasslands. In addition to the Chihuahua, Mexico, and Texas populations, establishment of a population in the U.S. Chihuahuan desert grasslands would reduce the risk of catastrophic events eliminating all populations. To attain a resident, self-sustaining falcon population in these habitats, the Service believes releases in New Mexico are necessary where there are large areas of unoccupied habitat within the historic range of the species. The Service considers a "self-sustaining population" to be a group (2 or more pairs) of falcons that are capable of maintaining or increasing their numbers without augmentation. We anticipate falcons will be able to persist as sub-populations in the largest unfragmented portions of potential habitat in New Mexico; Otero Mesa and Fort Bliss, White Sands Missile Range, the Jornada Plain (Armendaris Ranch and Jornada del Muerto), and the southwestern corner, or bootheel, (south of Interstate 10) of New Mexico. In Arizona, falcons or their progeny may colonize the intermountain Chihuahuan grasslands of southeastern Arizona.

The exact number of falcons required to create a "self-sustaining population," and their spatial distribution within the Chihuahuan desert grassland, are questions that cannot be answered at this time. However, we believe there is sufficient potentially suitable habitat for falcon recovery in New Mexico. There are approximately 4,026,000 acres (ac) of potentially suitable falcon habitat in New Mexico (Young et al. 2002).

Using Montoya's 1995 estimate of 1 falcon pair per 10,625 ac, for Chihuahua, Mexico, and applying it to Otero Mesa and Fort Bliss, White Sands Missile Range, the Jornada Plain

(Armendaris Ranch and Jornada del Muerto), and the southwestern corner, or bootheel, (south of Interstate 10) of New Mexico, we can expect up to 132 falcon pairs in New Mexico. Even if the carrying capacity of New Mexico is half of what Montoya found in Chihuahua, and falcons persist only on Otero Mesa and Fort Bliss, White Sands Missile Range, the Jornada Plain (Armendaris Ranch and Jornada), and the southwestern corner, or bootheel, (south of Interstate 10) of New Mexico, we could still expect 65 falcon pairs in New Mexico. Although releases will occur in New Mexico, falcons will likely colonize potentially suitable habitat in southeastern Arizona, further increasing the number of falcons inhabiting Chihuahuan desert grasslands (Montoya 1995).

1.4 Scoping and Public Participation

The Service solicited public input for this EA through written comments and public meetings held;

- February 3, 2003, in Douglas, Arizona
- February 4, 2003, in Deming, New Mexico
- February 5, 2003, in Alamogordo, New Mexico
- February 6, 2003, in Carlsbad, New Mexico
- February 11, 2003, in Socorro, New Mexico

Table 1.1 provides a summary of the comments received in the form of e-mails, letters, and verbally at the public meetings.

Comment Category	Number
Support 10(j) releases, in general	50
Support 10(j) releases, entire state (NM)	1
Support 10(j) releases, for select areas	1
Support releases, but not 10(j)	1
Support releases in general	2
Support releases in general, but are concerned about habitat condition and protection	3

Support unaided recolonization (no releases)	8
Concerned about the survival of birds released during a drought period	2
Concerned about mixing genetics between release birds and "wild" birds	3
Concerned the habitat in New Mexico and Arizona is not suitable	7
Concerned that habitat will not be protected	6
Questioned use of 10(j) when falcons were documented breeding in New Mexico	1
Concerned about land use restrictions on agriculture	41
Concerned about land use restrictions on oil and gas development	1

One commenter suggested that the released birds be identifiable in order to distinguish between released falcons and wild falcons. Although this idea seems logical, after review we determined that the probability of individually marking each successive generation of offspring would prove infeasible.

1.4.1 Geographic scope of the proposed action

All the alternatives included in this EA address restoring falcons to the Chihuahuan Desert in Arizona and New Mexico. Impacts from the proposed action will therefore be limited to the Chihuahuan desert within New Mexico and Arizona. This geographic area is roughly depicted in Figure 1.

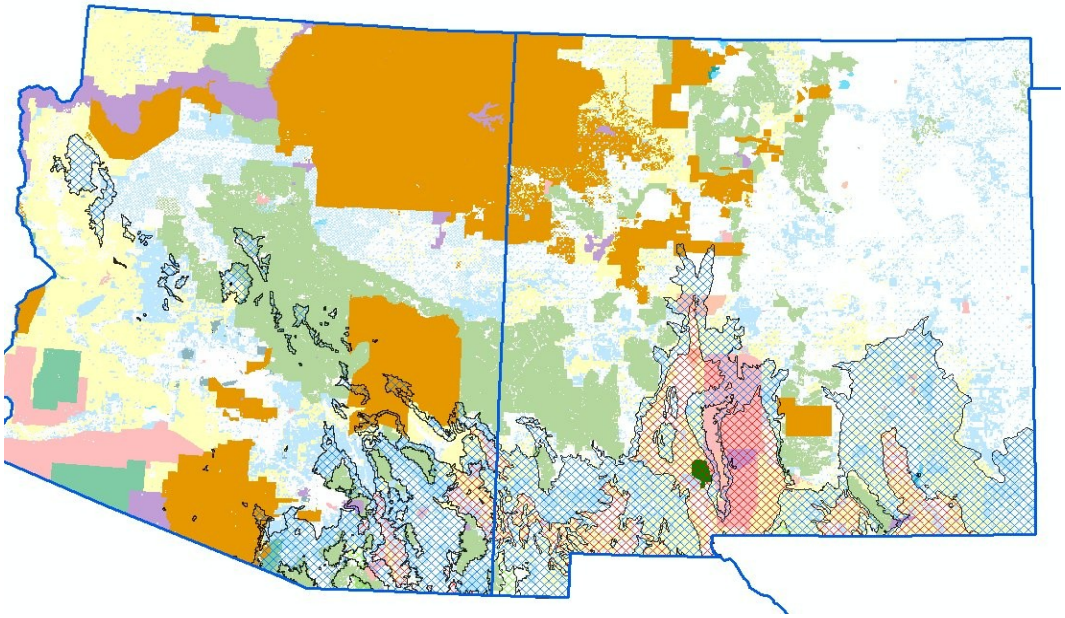

Figure 1. Action Area. Chihuahuan Desert (stippled). The isolated patches extending into central and western Arizona are not within the historic range of the falcon, and were not included for analysis. The entire states of Arizona and New Mexico are considered for 10(j) area designation. Any impacts from the action would occur in Chihuahuan Desert. (Digital geographic data of Brown, Lowe, and Pace (1994) community types were queried to select Chihuahuan desert scrub, semi-desert grassland, and areas of plains and Great Basin grassland embedded in the previous types. These data were clipped to remove areas that are not part of the Chihuahuan Desert. Subsequently, geographic layers containing land ownership data were clipped to the boundary of the approximation of the Chihuahuan Desert represented by the Brown, Lowe, and Pace data. The clipped ownership layer was then summarized for acreage by ownership).

1.5 Decisions to be Made

Prior to presenting the alternatives analyzed in this document, a short description of the decision making process is in order. The first question asked was, "Do we need a falcon population in New Mexico and Arizona?" Currently in the U.S. there is one established falcon population in south Texas, and a recently initiated release program in west Texas. If either of these populations were lost, due to environmental catastrophe, disease, or other unforeseen event, then the likelihood of falcon survival in the U.S. would be reduced. A falcon population in New Mexico and Arizona would increase the distribution of this subspecies within its historic range.

The second question was, "Do we release birds into New Mexico or wait for potential recolonization?" The absence of a falcon population in New Mexico and Arizona, coupled with

the apparent success of the release effort in Texas, prompted us to consider releases. The final question was, "Under what authority would we instigate releases?" After reviewing the pros and cons of possible ESA designations for released falcons, we preferred the flexibility provided by the 10(j) provisions, which are elaborated in Alternative A (Section 2.1).

The possible ESA designations available to the Service are; 1) endangered status without any conditions to allow for incidental take other than those promulgated through section 7 (a)(2) consultation and section 10(a)(1)(B) habitat conservation planning (Alternative B), 2) endangered status with Safe Harbor Agreements for private landowners, and section 7 consultation for Federal agencies (Alternative D), 3) proposed status (as delegated through the section 10(j) process) except on National Wildlife Refuges, and National Parks (Alternatives A and C).

1.6 Habitat Needs (all alternatives)

For all alternatives considered, in order to ensure needed habitat elements exist, we recommend the following guidelines for land managers wishing to harbor falcons. We believe the implementation of these guidelines will help ensure adequate habitat is available for the falcon.

1. Conduct land use and management activities to maintain the areal extent and quality of grasslands within areas of suitable topography that provide sufficient prey.
2. Minimize disturbance and fragmentation of falcon habitat.
3. Restore and maintain natural grassland communities and prevent encroachment of brush species (such as creosotebush, mesquite, tarbush).
4. Avoid practices that cause erosion (in the form of gullying or dune formation) or shift species composition toward increaser or invader species.
5. Maintain woody species composition as primarily soaptree yucca and/or ephedra (mormon tea). Other species such as tree form mesquites, little leaf sumac, or other tree like species may suffice where yuccas or mormon tea is lacking in this requirement.
6. Maintain raptor nesting activity in the area, through protection of nest sites, and maintenance of habitat conditions supporting those species (which are generally the same as for aplomado falcons).

7. Protect and maintain raptor nesting and perching structures >2m in height such as yuccas, mesquites, littleleaf sumacs, and others.
8. Avoid use of facility designs that are hazardous to falcons. Modify existing facilities so that they do not present hazards. Examples are improperly constructed powerlines, open liquid storages that have no escape or entry prevention mechanism, and hazardous chemicals left available to wildlife.

We anticipate working with land managers to develop agreements (such as Memoranda of Understanding) to further guide habitat management.

1.7 Monitoring

A monitoring plan is currently being developed and will be appended to this EA.

2.0 Alternatives Considered.

2.1 Alternative A, Proposed Action: Designate New Mexico and Arizona as an experimental non-essential 10(j) area. Release falcons into potentially suitable habitat in New Mexico

2.1.1 What is 10(j)?

Under the ESA, species listed as endangered or threatened are afforded protection primarily through the prohibitions of the ESA outlined in section 9 and the requirements of section 7. Section 9 of the ESA prohibits the take of endangered wildlife species. "Take"' is defined by the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Section 7 of the ESA outlines the procedures for Federal interagency cooperation to conserve federally listed species. Section 7(a)(1) mandates all Federal agencies utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Section 7(a)(2) states that Federal agencies shall, in consultation with the Service, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat. Section 7(a)(2) of the ESA does not affect activities undertaken on private lands unless those activities are authorized, funded, or carried out by a Federal agency.

Congress made significant changes to the ESA with the addition of section 10(j) in 1982, which provides for the designation of specific reintroduced populations of listed species as "experimental" populations. The Service has always had the authority to reintroduce populations into unoccupied portions of a listed species' historical range when doing so would foster the recovery of the species. However, local citizens often opposed these reintroductions because they were concerned about possible restrictions and prohibitions on Federal and private activities. Under section 10(j), the Secretary of the Interior can designate reintroduced populations established outside the species' current range, but within its historical range, as "experimental."

For the purposes of the ESA, each member of an experimental population shall be treated as a threatened species. An experimental population that is determined to be not essential to the continued existence of the species shall be treated as proposed. For the purposes of section 7 of the Act, falcons occurring in National Parks or National Wildlife Refuges would be treated as threatened. Therefore section 7(a)(1) and the consultation requirements of section 7(a)(2) of the ESA would both apply. Outside National Parks or National Wildlife Refuges falcons would be treated as a species proposed for listing, and Federal agencies would be required to conference with the Service only on actions that are likely to jeopardize the continued existence of the falcon. Section 7(a)(1), which requires Federal agencies to use their authorities to conserve endangered and threatened species, still applies to all Federal agencies.

Section 10(j) is designed to increase our management flexibility by allowing us to treat falcons as threatened, regardless of the species' designation elsewhere in its range. Threatened designation gives the Service more discretion in developing and implementing management programs and special regulations for falcons, and the development of any regulations we consider necessary to provide for the conservation of a threatened species. In situations where we have experimental populations, certain section 9 prohibitions would no longer apply. The special rules written for this proposed action include defining allowable take of falcons.

2.1.2 Allowable take

Take of falcons which is not intentional and is incidental to otherwise lawful activity will be permitted. Intentional take such as shooting, knowingly destroying a nest, or knowingly harassing falcons from an active nest for purposes other than authorized data collection, would not be permitted.

2.1.3 Why “non-essential, experimental”

The proposed experimental population will be designated “non-essential, experimental” (NEP) because; 1) there are established populations in Mexico and an establishing population in south Texas. 2) reintroductions continue in western Texas, 3) the Boise, Idaho, captive population is producing enough offspring to maintain the captive flock and provide falcons for release, 4) the

possible failure of this action would not be likely to reduce the likelihood of survival of the subspecies in the wild, and 5) the NEP designation lessens ESA related land use restrictions, which makes the establishment of falcons in New Mexico and Arizona less controversial to land managers, and may allow for a greater number of release sites. The use of the NEP is the fastest, least controversial way to establish a falcon population in New Mexico and Arizona.

2.1.4 Why a NEP for all of Arizona and New Mexico?

We believe including the entire States of Arizona and New Mexico in the NEP provides a more effective recovery strategy by eliminating changing regulatory requirements as a falcon moves into or out of the NEP area. This alternative is preferred over Alternative C because it provides assurances to private and public land managers outside Chihuahuan desert grassland. This additional area outside the falcon's historic range is important in case released birds disperse beyond their historic range. For the Service to succeed with this release program we need the support of the land managers within both states. Increasing the 10(j) boundary to include areas outside the falcon's historic range provides an additional level of comfort to land managers that might otherwise not support the release effort.

2.1.5 Selection Criteria For Falcon Release Sites: (Same for Alternatives A,C,D)

Release locations will be selected based on site visits by Peregrine Fund biologists in coordination with the Service, private landowners, and agency land managers. Primary considerations for identifying falcon release sites include:

1) Within or in proximity to potentially suitable habitat. This would include open grassland habitats that have scattered trees/shrubs/yucca for nesting and perching.
2) Available prey (insects, small to medium-sized birds, and rodents) to support falcons.
3) Minimal natural and man-made hazards (i.e., predators, open-water tanks). Potential hazards should be addressed and minimized where practical.
4) Access for logistical support.
5) The extent of potentially suitable habitat surrounding a potential release site and its proximity to other similar habitats.
6) Willing landowner or manager.

2.1.6 Where will falcons be released?

Initially, we anticipate releasing falcons in potentially suitable habitats on private lands of willing landowners in New Mexico. There will be no releases in Arizona. The Armendaris Ranch, north of Truth or Consequences, New Mexico, has requested falcon releases to occur on their lands and has what appears to be potentially suitable habitat (Henry 1995, Mader et. al. 2001). Releases on other lands would occur if landowners are agreeable and have potentially suitable habitat. The scope of this proposed action covers all falcon releases in the NEP.

2.1.7 Release Methodology (same for alternatives A, C, D)

The following description of the release methodology was provided by the Peregrine Fund. Falcons are hatched and raised in The Peregrine Fund's captive propagation facility in Boise, Idaho. Newly hatched falcon chicks are fed by hand for 9-10 days. They are then raised in sibling groups with minimal human exposure until their transportation to a release site at 32-37 days of age. Falcons are shipped by air between Boise and release locations, in airline-approved containers provisioned with food. Peregrine Fund employees meet the arriving aircraft, pick up the falcons, and drive them to the hack site. The hack site is the place where falcons are released. Hack sites consist of a hacking tower, or towers, (where birds are fed and from where they are released), and can have a parking area. A typical hack tower is shown in Figure 2.

Figure 2

A typical hacking tower with attendants in Texas. (Ruth Mutch, Texas).

Young falcons are placed in a hack tower upon arrival at the release site and are kept in confinement for approximately one week after their arrival. Two hack site attendants care for the young and monitor each release cohort continuously until the birds achieve independence at the age of six to eight weeks. Individuals that experience problems, (e.g., injured or premature dispersal) are recaptured and re-released, or they are returned to the breeding facility in Boise. The young falcons are fed quail *(Coturnix japonica)* from The Peregrine Fund's food production facility. Notes are recorded on the falcon's behavior and movements. No destruction or modification of native habitats is anticipated for construction or maintenance of hacking towers. Towers are placed along existing roads (including two-tracks). In cases where vegetation must be disturbed, the area will be reclaimed (planted and/or, seeded) after the hack site has been abandoned. Hack site attendants will either live on site, or in housing nearby.

Falcons remain confined at the release site and fed until they are old enough (39 to 42 days) to be released. Falcons will be released in groups of 5 to 7 similarly-aged nestlings at multiple release towers with the total anticipated annual release not exceeding 150 birds. Within a single year, up to 20 falcons can be released from a single release tower. Allowing multiple releases from a single tower increases chances of establishing breeding pairs and also allows later released birds to learn from successfully fledged birds that are already established on the site.

Given that no more than 150 falcons will be available for release in any one year, if each tower were only used once, the maximum number of hack towers constructed each year would be 30 (5 falcons at 30 towers equals 150 falcons). Hack towers will remain in place as long as they are still being used. This could range from a few months to a few years.

2.1.8 Timing and duration of release activities (same for alternatives A,C,D)

In order to meet the Purpose and Need of the proposed action, we anticipate releasing falcons into New Mexico until either: 1) an evaluation of the program shows the Needs of the Action (Section 1.3) have been met, or 2) the establishment of falcons in potentially suitable habitat becomes highly unlikely. The Service, and cooperators of the release program, will evaluate the program every five years. The evaluation will include an analysis of release protocols to

determine whether modifications may be necessary to increase the likelihood of success, and an assessment of incremental progress in meeting objectives.

On-going recovery efforts in Texas involving the release of captive-bred falcons have demonstrated the viability of reintroduction as a tool for falcon conservation (Jenny 2003). Currently, coastal southern Texas supports the vast majority of falcons in the U.S. Since 1985, captive-bred falcons have been reintroduced to southern Texas around Laguna Atascosa and Matagorda Island National Wildlife Refuges. As of June 2004, there were at least 39 documented pairs of falcons in the wild in south Texas that have produced at least 179 fledglings. Beginning in 2002, falcons have been released in west Texas. One hundred and twenty-five young have been released at four sites on private ranches near Valentine, Texas. (P. Jenny, Peregrine Fund, Pers. Comm. 2004). Based on releases in Texas, the Service anticipates a successful program may take at least a decade or more.

2.2 Alternative B, No Action: Allowing Unaided Recolonization

The no action alternative represents existing falcon management and would not include releases. Through this alternative, falcon recolonization of New Mexico and Arizona would be dependent on dispersing falcons from Mexico, Texas, or possibly unknown nesting pairs within the U.S. This alternative would provide full protection under the ESA to any falcon found within the States of New Mexico and Arizona. Any take of falcons will continue to be prohibited. Federal agencies would be required to consult with the Service pursuant to section 7(a)(2)of the ESA. Non-Federal actions that could result in “take” of falcons would require a permit pursuant to section 10 of the ESA.

2.2.1 Arguments For the unaided recolonization alternative

Any existing falcons in New Mexico and Arizona have the full regulatory protections provided by the ESA. The designation of a NEP reduces incidental take prohibitions and section 7(a)(2) consultation requirements within that NEP. Falcons, and their habitat, that have had the full protection afforded by the ESA would lose that protection. Any Federal action that may affect falcons would require consultation pursuant to section 7(a)(2) of the ESA

Falcon sightings have increased in Arizona and New Mexico in the past decade (see Appendix A), and a single pair successfully nested in 2002 in Luna County, New Mexico, the first nesting documented in New Mexico in 50 years. This pair was unsuccessful in its first documented nesting attempt in 2001. In spring and summer of 2002, two reproductively active pairs of falcons were documented in southwest New Mexico. The assumed same pair that attempted to nest in 2001 successfully fledged three offspring in the summer of 2002 on a second nesting attempt. The other pair was documented searching for potential nest sites and copulating. Three individuals were documented on separate occasions in February, May, and August of 2002, while the known pair was being monitored. In 2003, only a single female was seen in the area of the 2002 nest (Meyer pers. comm. 2004). In 2004, a pair of falcons was seen on one monitoring site visit and a single falcon on several other occasions. (R. Meyer, La Tierra Environmental, pers. comm. 2004).

Releasing falcons may harm any existing birds by introducing "unnatural" genes. Falcons bred in captivity may not have the same genetic traits as the falcons that have evolved to survive in Chihuahuan desert grassland habitats. Should these captive raised birds breed with wild falcons, the genetic traits that have facilitated their survival may be compromised in their offspring. The only genetic study to date compared falcons from southern and northern Mexico and found little genetic diversity overall and very little genetic difference between falcons from southern and northern Mexico populations (Fleischer et. al. 1998).

2.2.2 Arguments against the unaided recolonization alternative

We do not consider the unaided recolonization a preferred alternative for a number of reasons. The half century absence of falcons in Arizona and New Mexico suggests that the Chihuahua, Mexico, falcon population cannot recolonize New Mexico and Arizona with sufficient numbers to establish a population. The low fledging success in Chihuahua, and stable or declining breeding numbers there since observations first began in 1992 (Montoya et al. 1997), suggest that birds in this area are not likely to provide enough dispersers to populate New Mexico. We do not consider the presence of the documented 2001 and 2002 breeding pair in Luna County to represent a population. Although there may be occasional falcon dispersal movements from Mexico to New Mexico, we do not believe this will lead to the establishment of a viable

population within New Mexico. Given the lack of a falcon population in the action area, and the low probability that falcons from Chihuahua, Mexico, can recolonize New Mexico, we believe that releases are needed in order to establish a resident falcon population in the U.S. Chihuahuan desert grasslands.

2.3 Alternative C, Designate Portions of New Mexico and Arizona as a Non-essential, Experimental 10(j) area. Release falcons into potentially suitable habitat in New Mexico

This alternative is similar to Alternative A, the preferred alternative, except the NEP area is restricted to portions of both states. The counties surrounding the documented New Mexico pair (Hidalgo, Grant and Luna Counties) would be excluded from the NEP area. Falcons would not be released in this excluded area, and any falcon found within this excluded area, regardless of origin, would be considered endangered and receive the full protection of the ESA.

2.3.1 Arguments for alternative C

This alternative is a combination of Alternatives A and B. The conditions outlined in Alternative A would apply to the NEP area, and the conditions of Alternative B would apply to Hidalgo, Grant and Luna Counties in New Mexico. Releases of captive raised birds could occur in the NEP area, and all falcons found within the NEP area would be treated as threatened, except for the purposes of ESA section 7(a)(2) consultations on non-Service owned lands, in which case they would be considered proposed for listing. Therefore, regulatory restrictions would be lessened (see section 2.1.1) in the NEP. Those falcons outside the NEP area would continue to receive the full protections afforded by the ESA.

2.3.2 Arguments against alternative C

Designation of a 10(j) NEP requires that the reintroduced animals be “wholly separate” from any existing population. We do not consider the pair of falcons that bred in 2002 in Luna County to constitute a viable population. Therefore the exclusion of the counties surrounding the 2002 pair is not necessary. Creating a NEP area that excludes the counties surrounding the documented New Mexico pair (Hidalgo, Grant and Luna Counties) would create a complex regulatory situation. If falcons that are released in the NEP move into the excluded area, then they would

receive the full protection of the ESA. Federal land managers in the NEP-excluded area may therefore be subject to the full regulatory requirements of section 7(a)(2) for falcons that were released as experimental non-essential. If a falcon released in the NEP area settles on private lands, the private land owner would be prohibited from any action that may "take" the falcon. We believe the recovery of the falcon can be achieved without imposing the regulatory restrictions on land managers and the public that this alternative would require.

2.4 Alternative D, Release falcons in New Mexico under Safe Harbor Agreements. No 10(j) designation.

Under this alternative, the Service and The Peregrine Fund would release falcons on private lands that have Safe Harbor Agreements (SHAs). Safe Harbor Agreements are voluntary arrangements between the Service and cooperating non-Federal landowners. The agreements benefit endangered and threatened species while giving the landowners assurances that no additional restrictions would be imposed as a result of the release and establishment of falcons. Following development of an agreement, the Service issues an "enhancement of survival" permit to authorize any necessary future incidental take to provide participating landowners with assurances that no additional restrictions will be imposed as a result of their conservation actions. When falcons released on private lands recolonize Federal lands, managers would be required to consult with the Service on actions that may affect falcons.

2.4.1 Arguments for Alternative D

Safe Harbor Agreements have proven to be an effective tool for aiding recovery of falcons on private lands (Environmental Defense Fund 1999). The Peregrine Fund has been successful using SHAs to aid recovery of falcons in Texas. We believe there are landowners in New Mexico that would be interested in SHAs.

2.4.2 Arguments against Alternative D

The majority of Chihuahuan desert grasslands in New Mexico are federally managed, and often intermingled with State and private land. Similar to the argument against Alternative C, falcons moving between SHA areas, and other (non-SHA) lands would receive different levels of protection from the ESA. Activities that may affect falcons on Federal lands (or on non-Federal

lands for projects using Federal permitting, funding or authorization) would require section 7(a)(2) consultation. Falcons released on private lands with SHAs that move to non-SHA lands would receive the full protection of the ESA. Actions that may take falcons on private lands would also be subject to ESA regulatory requirements.

2.5 Alternative E, Voluntary Releases of falcons in New Mexico.

Under this alternative, falcons would be released without SHAs or 10(j) designations. The ESA's prohibitions against take, consultation requirements of section 7(a)(2), and the permitting for take through sections 7 and 10 of the ESA would be in place for all falcons in New Mexico and Arizona. Under this alternative, all falcons would be treated as endangered.

2.5.1 Arguments for Alternative E

This alternative emphasizes falcon management through regulatory protection. Falcons may respond favorably to restrictions placed on activities that could destroy or degrade habitat, incidentally kill, harm, or harass individuals.

2.5.2 Arguments against Alternative E

We believe the reestablishment of the falcon can be achieved without imposing the regulatory restrictions on land managers and the public that this alternative would require. Falcons currently inhabit lands under cultivation, and active cattle ranches (Keddy-Hector 2000, Truett 2002). It may be difficult to find land owners and managers that would voluntarily release an endangered species on their private lands.

Alternatives	**A)**	**B)**	**C)**	**D)**	**E)**
Purpose and Need: Reestablish a viable falcon population in New Mexico	Meets Purpose and Need if potential habitat is suitable and can be maintained.	May meet Purpose and Need if unaided recolonization increases dramatically.	Meets Purpose and Need if potential habitat is suitable and can be maintained, and unaided recolonization increases	Meets Purpose and Need on private lands (about 30% of area) and surrounding habitats.	Meets Purpose and Need if willing landowners can be found.

Table 2.1 Alternatives presented with regard to meeting the Purpose and Need of the action.

3.0 Affected Environment

The affected environment consists of agency and public land use practices, biotic, aesthetic, economic, and cultural components of Chihuahuan desert grasslands that may be affected by the proposed action. There are two geographic areas addressed in this document. The 10(j) area is the area covered by the NEP (States of Arizona and New Mexico for alternative A, and the same area excluding the southwest corner of New Mexico for alternative C), while the action area of the affected environment consists of Chihuahuan desert grasslands in Arizona and New Mexico, which coincides with the historic range of the falcon (see Figure 1). We believe there is very low probability that falcons will populate lands outside their historic range because their behavioral ecology is not adapted to survival in those habitats. Therefore the affected environment and impact analysis are limited to Chihuahuan desert grasslands.

Land within the action area is administered by State and Federal agencies, including the States of Arizona and New Mexico, BLM, U.S. Forest Service, DOD, National Park Service, and the Service. In addition, large amounts of land within the NEP boundary are privately owned. Native American lands make up only a small percentage of the total land ownership. Table 3.1 shows the land area and percentages within the action area.

Ownership	Acres AZ	%	Acres NM	%	TOTALS
BUR. LAND MANAGEMENT	947,316	3	8,451,167	29	9,398,482
BUR. OF. RECLAMATION	0	<1	39,480	<1	39,480
DEPT. OF. AGRICULTURE	0	<1	109,468	<1	109,468
DEPT OF DEFENSE	83,551	<1	2,032,114	7	2,115,665
DEPT. OF. ENERGY	0	<1	10,245	<1	10,245
FOREST SERVICE	481,858	2	106,976	<1	588,834
FISH & WILDLIFE SERVICE	115,844	<1	229,404	1	345,248
NATIVE AMERICAN	384,629	1	44,790	<1	429,419
NATIONAL PARKS	19,881	<1	168,016	1	187,897
PRIVATE	2,302,722	8	6,875,714	24	9,178,436
STATE	2,560,264	9	3,682,961	13	6,243,225
STATE GAME & FISH	2,962	<1	33,974	<1	36,936
STATE PARKS	605	<1	5,956	<1	6,560
OTHER	333	<1	0	0	333
TOTALS	6,899,964	24	21,790,264	76	28,690,228

Table 3.1 Land ownership within the action area.

Within the 28,690,228 ac action area, there may be effects to the following elements of the environment:

3.1 Land Use

Land uses within the action area that may be affected by the proposed action are grazing, oil and gas production, military training, and recreation.

3.1.1 Grazing

Livestock grazing occurs on private, State, Federal, and Native American lands and is arguably the most extensive land use in the action area. Livestock grazing has occurred for up to 400 years in portions of New Mexico and Arizona. In New Mexico, on lands managed by the Las Cruces and Carlsbad BLM Field Offices (an area that roughly corresponds to the action area), there are approximately 4.9 million ac, 1,249 allotments, and 759,664 Animal Unit Months (AUMs) (Howard pers comm 2003, Mader et. al. 2001). In Arizona, the Safford BLM Field Office (Southeastern Arizona) manages 265 allotments on approximately 1.6 million ac (http://www.az.blm.gov/fr_offices.htm). Stocking rates and duration of use are determined by the land manager. Therefore, on private lands, the landowner decides the stocking rates, season of use and target range condition. On state lands, stocking rates and utilization are managed by the permittees consistent with leases from the State. On Federal lands, grazing management is promulgated through specific laws and regulations of the respective agencies. For purposes of the Affected Environment, the only regulatory elements that may be affected by the proposed action are those related to the ESA. To date, section 7(a)(2) of the ESA has been used successfully to minimize the effects of livestock to falcons and their habitat in the boot-heel region of New Mexico.

3.1.2 Oil, Gas and Mineral

There are oil, gas, and mineral resources in portions of the action area on lands managed by BLM, DOD, states, Tribes, and private entities. Mineral resources are primarily oil, gas, copper, aggregate, and silver. The southwestern portion of New Mexico, and southeastern Arizona contain most of the locatable hard rock minerals in the action area. The BLM reports: 10 claims from the Carlsbad Field Office (FO), 339 from the Socorro FO, 540 from the Roswell FO, and

3,892 from the Las Cruces FO (M. Howard, BLM, Pers. Comm. 2003), and over 4,000 active mining claims are located within the Safford BLM Field Office boundaries. The Morenci mine, operated by Phelps Dodge, is the largest copper-producing operation in North America. In addition to copper, minerals include zeolite, gypsum, diatomaceous earth, and silver. (http://www.az.blm.gov/sfo/index.htm)

Commodity	Quantity	Value
Clay	withheld	withheld
Copper	1,360	$2,930,000,000
Gemstones	na	3,220
Gold	withheld	withheld
Sand and Gravel	44,500	200,220,000
Silver (troy ounces)	5635,000	22,300,000
Stone - crushed	6,700	38,000,000
Coal	11,723	279,000,000
Other	na	325,000,000
Total	--	**$3,797,740,000**

Table 3.2 Arizona Oil, Gas and Mineral Production – 1997 - USGS Preliminary figures (thousand of tons unless otherwise noted) Taken from Arizona Department of Mines and Oil, gas and mineral Resources at http://www.admmr.state.az.us/deptpub.htm

Within the New Mexico portion of the action area, the primary leasable minerals are oil and gas, and potash (BLM 2000). Current oil and gas production in the action area occurs mostly in Lea, Eddy and Chaves Counties. The oil and gas production from these counties is shown in Table 3.3. Otero Mesa (Otero County) and the Nutt grasslands (Sierra County) have moderate potential for oil and gas development. There is approximately 280,000 ac of potential falcon habitat in these areas (BLM 2003). The BLM anticipates approximately 8,050 kilometers (5,000 miles) of seismic operations, and 2,500 ac of exploratory and production construction within Otero and Sierra Counties. Most of these impacts would occur on Otero Mesa. The Nutt

grasslands have potentially suitable falcon habitat but low potential for oil and gas (BLM 2003). Section 7(a)(2) of the ESA has been used to minimize the effects of oil and gas development to falcons and their habitat in the Otero Mesa region of New Mexico.

New Mexico Gas and Oil Produced in 2000		
County	Million Cubic Feet of Gas	Barrels of Oil:
Eddy	282,543,725	21,050,746
Lea	219,801,987	40,043,655
Chaves	20,063,393	696,025

Table 3.3 The New Mexico Oil and Gas Association reported this information for New Mexico Counties in 2000. Taken from http://www.nmoga.org/nmoga/production.html

3.1.3 Military Activities

Military training is an important land use within the action area. White Sands Missile Range, Fort Bliss Army Installation, Holloman Air Force Base, and Fort Huachuca Army Installation, cover more than 3.3 million ac of land in the action area. This is over 10 percent of the total land base that the DOD manages. Of the 54 million ac in the Chihuahuan Desert Ecoregion, almost half (24.3 million ac) is under Federal management, and about 13 percent of those lands are DOD managed (Leslie et. al. 1996). Military land uses within the action area include training and testing activities by all branches of the DOD. The operational readiness of active duty, reserve, and National Guard units is maintained through these testing and training activities. Ground based training includes classroom training as well as field training exercises involving various combinations of field operations, communications, command and control, simulated enemy contact, and weapons systems firing and testing. The Army and Air Force operate firing and bombing ranges for testing and training of small caliber guns, artillery and tank firing, aircraft-delivered weapons, and ground-launched rockets and missiles. In addition to land bases, the action area provides important airspace for all types of military aircraft training from U.S. airbases and some foreign countries. Much of this airspace is over non-DOD lands. Military aviation training activities in the action area include low-level flights along designated military

training routes and flight operations within military operating areas and restricted airspace. In general, these military training routes consist of high-speed corridors connecting bases to military operating areas and restricted areas, where the ranges are located.

3.1.4 Recreation

The action area provides recreational opportunities such as wildlife viewing, photography, and falconry.

3.2 Biotic

3.2.1 Vegetation

The historic range of the falcon in New Mexico and Arizona is the Chihuahuan Desert, which if taken simplistically, is comprised of three basic community types; desert scrub, desert grasslands, and woodlands. Falcons are primarily associated with grasslands, although small patches of scrub and woodlands may be used. Chihuahuan grasslands are best developed on plateaus, rolling hills, and basin floors where the soils are relatively deep. Grama grasses (*Bouteloua sp),* are the dominant species in uplands, with wetter areas having a predominance of tobosa grass (*Pleuraphis mutica*). Chihuahuan Desert scrub habitats in New Mexico and Arizona are dominated by creosotebush (*Larrea tridentata),* with agave (*Agave lechuguilla),* sotol (*Dasylirion sp.*), yucca (*Yucca sp*.) mimosa (*Mimosa sp*.), acacia (*Acacia spp*.), mesquite (*Prosopis sp.*), mariola (*Parthenium incanum*), fourwing saltbush (*Atriplex canescens*), tarbush (*Flourensia cernua*), javelinabush (*Microrhamnus ericoides*), present. Riparian woodlands, and arroyo habitats, containing such trees as cottonwoods (*Populus sp.*), willows (*Salix sp.*), salt cedar (*Tamarix sp.*), and sycamores (*Platanus sp.*) provide important woody tree and brush species for falcon nesting.

Young *et al.* (2002) described falcon habitat in Chihuahua, Mexico as having vegetative basal cover ranging from 43 and 48 percent (nesting and detection areas, respectively), with tobosa and blue grama grasses being the dominant grass species. Grass height was 8.4 inches (21.3 centimeters) in nesting areas and 7.8 inches (19.8 centimeters) in perching areas. Shrub density was 105 and 253 shrubs/ac in nesting and detection habitat, respectively. Dominant shrubs were longleaf ephedra (*Ephedra trifurca*), acacia, tarbush, honey mesquite (*Prosopsis glandulosa*),

soaptree yucca, and creosote bush. Biomass, measured after nest site selection, was 744 and 862 pounds/acre in nesting and detection areas, respectively.

3.2.2 Fish and Wildlife

Fish and wildlife resources in the action area potentially affected by the proposed action include those animals that are potential falcon prey, predators, or competitors. Montoya (1995) found the most important falcon food species to be meadowlarks (*Sturnella sp.*), common nighthawks (*Chordeiles minor*), northern mocking birds (*Mimus polyglottos*), western kingbirds (*Tyrannus verticalis*), brown-headed cowbirds (*Molothrus ater*), Scott's orioles (*Icterus parisorum*) and mourning doves ((*Zenaida macroura*). In an evaluation of potential falcon habitat in Arizona, the Arizona Department of Game and Fish identified the following species as potential prey: scaled quail (*Callipepla squamata*), Gambel's quail (*Callipepla gambelii*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), common ground-dove (*Columbina passerina*), yellow-billed cuckoo (*Coccyzus americanus*), Gila woodpecker (*Melanerpes uropygialis*), ladder-backed woodpecker (*Picoides scalaris*), northern flicker (*Colaptes auratus*), ash-throated flycatcher (*Myiarchus cinerascens*), Cassin's and western kingbird (*Tyrannus vociferans* and *verticalis*), horned lark (*Eremophila alpestris*), Botteri's sparrow (*Aimophila botterii*), Cassin's sparrow (*Aimophila cassinii*), rufous-crowned sparrow (*Aimophila ruficeps*), lark sparrow (*Chondestes grammacus*), lark bunting (*Calamospiza melanocorys*), chestnut-collared longspur (*Calcarius ornatus*), eastern and western meadowlark, brown-headed cowbird, and orioles (*Icterus sp.*) (Corman 1992). In addition, loggerhead shrike (*Lanius ludovicianus*), swallows (family Hirundinidae), Inca dove (*Columbina inca*), nighthawks, wrens (family Troglodytidae), thrushes (family Turdidae) , mockingbirds and thrashers (family Mimidae), pipits (Anthus sp.), warblers (family Parulidae), tanagers (*Piranga sp.*), sparrows (family Emberizidae), cardinals (family Cardinalidae), blackbirds (family Icteridae), and finches (family Fringillidae) are potential falcon prey species.

Falcon predators include great-horned owls (*Bubo virginianus*), crows, ravens and jays (family Corvidae), coyote (*Canis latrans*), and bobcats (*Lynx rufus*) (Montoya et. al. 1997). Prairie falcons (*Falco mexicanus*), loggerhead shrike and Swainson's hawk (*Buteo swainsoni*) may compete with falcons for food.

3.2.3 Federal endangered and threatened species

The following listed species may be encountered in habitats used by falcons: Lesser long-nosed bats (*Leptonycteris curasoae yerbabuenae*), and Mexican long-nosed bats (*Leptonycteris nivalis*) are summer residents associated with agave stands. Southwestern willow flycatcher (*Empidonax traillii extimus*) are found in riparian areas with perennial water. Cactus ferruginous pigmy owls (*Glaucidium brasilianum cactorum)* are residents of the Sonoran Desert in Arizona, and are associated with Saguaro cactus.

3.3 Aesthetics

The aesthetic value of the Chihuahuan Desert is difficult to quantify, but stems from the open spaces, clear skies, subtle colors and dramatic landscapes. In addition, the unique biotic communities and wildlife add to the aesthetic values of the Chihuahuan desert.

3.4 Social and Economic

3.4.1 Grazing

The following summary is copied from the BLM 2000, Final Statewide Resource Management Plan Amendment/Environmental Impact Statement, New Mexico Standards for Public Land health and Guidelines for Livestock Management (page 3-56). Although it addresses the entire State of New Mexico, and not the action area, we believe it demonstrates the economic value of livestock grazing, and gas and oil development:

> Since cattle prices follow a cycle it was determined that a 12-year (1985 through 1996) average of values per AUM would encompass a full price cycle between two lows in the cycle (Figure 3-1). The value of production per AUM and the number of AUMs were run in the NMSU New Mexico Input-Output model to predict the total economic losses to the New Mexico economy. In 1992, the cattle industry fared well, it was an extremely wet year, and cattle prices were at a high. If this was the year used as input data, the economic situation would be overestimated. The other extreme would be to use 1996, when New Mexico was in a drought and cattle prices were at a low. This year would underestimate the economic situation. Although sheep and goats do not follow the same

price cycle as cattle, values per AUM and numbers of AUMs were used for the same 12 year period. Because there are a greater number of cattle AUMs than sheep and goat AUMs, the cattle cycle was used. In 1992 the range cattle industry directly provided almost $314 million in economic activity to the state of New Mexico, including $19 million in personal income and 2,632 Full Time Equivalents (FTEs). This industry provided total (direct and indirect) economic activity of over $620 million. of which almost $97 million was in personal income from 5,500 FTEs. The sheep industry directly provided $10 million in economic activity for the state of New Mexico, which included $976,000 in personal income and 299 FTEs. Indirectly the industry provided $22 million in economic activity, $3.5 million in personal income and 192 FTEs.

3.4.2 Oil and Gas

The same BLM 2000 report describes mineral assets in New Mexico in the following manner:

> Based on filings over the last 10 years, an average of just under 900 permits to drill is received annually by BLM Field Offices for federal lands in New Mexico. During 1995, a little over 953 billion cubic feet of natural gas, 27.6 million barrels of oil, and 9.2 billion cubic feet of carbon dioxide were produced from Federal leases in New Mexico. The total sales value of this production was approximately $1,579,000,000.

3.4.3 Military

White Sands Missile Range, Holloman Air Force Base, and Fort Huachuca contribute to the economy in nearby communities. Military employment from White Sands Missile Range, Fort Bliss, and Holloman Air Force Base was just over six percent of the 1995 total full and part-time employment of Dona Ana and Otero Counties New Mexico (U.S. Army 2000).

3.4.4 Recreation

The action area provides an abundance of recreational opportunities. Many avid and casual bird watchers visit the action area each year. Hunters pursuing big game and upland birds, off road vehicle users, and rock hounds help the economy of local communities. Falconers use the action

area to exercise their birds and hunt. The economic contribution to the local economy from recreation has not been determined.

3.5 Cultural

Cultural elements include physical structures and places, as well as activities, and beliefs. The culture within the action area is the result of Native American, Mexican, and European cultures interacting for centuries. The most important element of the cultural landscape for the purposes of this document that may be affected by the proposed action is the people's belief in the use of public land, and private property rights.

4.0 Environmental Consequences

The following elements of the environment will not be impacted by the implementation of any of the alternatives:

Air Quality
Areas of Critical Environmental Concern
Cultural Resources
Environmental Justice
Farm Lands
Floodplains
Invasive, non-native species
Hazardous or Solid Waste
Water Quality
Wetlands/Riparian Zones
Wild and Scenic Rivers
Wilderness

4.1 Alternative A, Proposed Action: Designate New Mexico and Arizona as a experimental non-essential 10(j) area. Release falcons into potentially suitable habitat in New Mexico

4.1.1 Land Uses

The proposed action of establishing a NEP for all of Arizona and New Mexico is intended to lessen the ESA's regulatory prohibitions associated with managing falcons and their habitat. Although the authorities and directives for maintaining (and restoring) falcon habitat is part of all Federal agencies' regulations and policies, the ESA has provided a regulatory focus for falcon conservation. Federal management programs may become less responsive to falcon habitat needs without the regulatory pressure of the ESA. The Service would no longer have as stringent ESA section 7(a)(2) regulatory oversight for the falcon as a result of implementation of the proposed action. Past ESA compliance activities have shown that modifications to land uses are warranted, but will now be at the discretion of land managers. Federal land managers will still have section 7(a)(1) responsibilities, which require all Federal agencies to use their authorities to further the purposes of the ESA.

4.1.1.1 Grazing

We do not believe that implementation of the proposed action will impact grazing management.

4.1.1.2 Oil, gas and mineral

No impacts are expected to oil, gas, or mineral resources development as a result of the proposed action. In general, the regulatory authority for minimizing impacts to falcon habitat and protecting and restoring falcon habitat would move from regulatory requirements of ESA section 7(a)(2) to the land management agencies' mandates. The proposed action would lessen protections afforded to Chihuahuan desert grasslands currently provided through section 7(a)(2) consultation.

4.1.1.3 Military

No restrictions to military activity are anticipated with implementation of the preferred alternative. The DOD would no longer have to consult under section 7(a)(2) regarding military activities for actions that may impact falcons. We do not believe this will impact military activities. Requirements of ESA section 7(a)(1), that the DOD use its authorities to further the purposes of the ESA, will remain in place.

4.1.1.4 Recreation Hunting/Falconry

There exists slight potential for released falcons (or their progeny) to harass falconers' birds. The potential for such an interaction is remote. Even with better than expected success of the release program, the falcon density in the action area will likely be low (i.e., 1 pair/4,300 ha) (Montoya 1995), therefore, the probability of a released falcon interfering with a falconer is so remote as to be insignificant. Collection of falcon eggs, young, or adult falcons would be prohibited pursuant to the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703-712).

4.1.2 Biotic

Falcons prey on grassland birds, insects, and small mammals. The density of falcons expected as a result of any of the alternatives is not expected to be high enough to adversely affect birds, small game and non-game mammals, reptiles, and insects. Hack towers, and housing hack site attendants are not anticipated to significantly impact any natural resources. Hack towers may be attractive to avian predators such as great-horned owls, ravens, and hawks. These birds may impact local wildlife populations. We do not anticipate this to be a significant issue. During releases, hack site attendants will be present to document and discourage predator use of the hack towers. If the presence of a hack tower does attract predators to the degree that the local biota may be significantly impacted, then remedial action (tower removal, harassing predators) would be implemented. Due to the low densities of falcons, no adverse impacts to threatened or endangered species are anticipated.

4.1.3 Aesthetic

We do not anticipate any aesthetic impacts from any of the alternatives. Hacking towers may be considered a visual intrusion, but they will be positioned to blend into the landscape, placed on property at the discretion of the landowner, and removed when no longer needed.

4.1.4 Social and Economic

Implementation of the preferred alternative is not anticipated to negatively impact the social and economic sectors of the action area. There may be an increase in bird watchers in the action

area. Hack site attendants and birdwatchers can be expected to contribute to the economy of small towns near the release sites.

4.1.5 Cultural

All the alternatives address the goal of returning this falcon to their historic range. Very few people in New Mexico and Arizona have seen a falcon. How falcons affect community culture depends mostly on individual perceptions and legal implications. If people perceive the falcon to be an obstacle to their personal freedoms, then the cultural experience will be negative. However, if people see the falcon as a beautiful creature that belongs in the Chihuahuan Desert, then the cultural experience will be positive. Using this logic, the alternative that provides the greatest potential for a positive experience is the preferred alternative. Voluntary releases and the no action alternative would carry with them the full protections of the ESA, and may elicit a negative response. The same issues of the legal protections and rights presented above would hold for Tribes. The main issue again is the positive aspects of returning a species to the landscape versus the negative aspects of the ESA's restrictions. The preferred alternative would reduce restrictions imposed by the ESA.

None of the alternatives included ground disturbance activities. Therefore no impacts to archaeological resources would occur.

4.2 Alternative B, Unaided Recovery/No Action.

4.2.1 Land Use

This alternative represents the status quo. Consultations under section 7(a)(2) of the ESA would continue to be required for all Federal actions that may affect falcons. The terms and conditions of existing biological opinions would remain in place. Incidental take on private and public lands could be permitted through either section 7 or 10 of the ESA. Since this is the status quo, the management approach would not change from the current situation for any of the land uses analyzed. If the number of projects being proposed in falcon habitat or the number falcons in the action area increase, the number of section 7(a)(2) consultations would likewise be expected to increase. Terms and Conditions resulting from those consultations, could impact grazing, oil and gas development, and/or military activity.

4.2.2, Biotic

Section 7(a)(2) consultations, as described in 4.2.1, may benefit the biotic community by increasing the focus on falcon habitat restoration during management planning, vegetation manipulation projects, and oil and gas development projects. These actions could benefit native plants and animals.

4.2.3 Aesthetic

No significant impacts would be expected to the aesthetic environment.

4.2.4 Social and Economic

Section 7(a)(2) consultations, as described in 4.2.1, may reduce the opportunity to maximize profits from grazing or oil and gas development. Section 7(a)(2) consultations can increase the cost of planning, operations, and maintenance. Habitat management directives included in section 7(a)(2) consultations may indirectly benefit livestock by increasing the quality and quantity of grasses.

4.2.5 Cultural

No significant impacts would be expected to the cultural environment. (See section 4.1.5)

4.3 Alternative C, Designate Portions of New Mexico and Arizona as a Non-Essential Experimental 10(j) Area. Release Falcons into Potentially Suitable Habitat in New Mexico

4.3.1 Land Uses

Released birds that colonize lands not included in the NEP designation would be federally endangered. Regulations that provided the full protections of the ESA would be in effect on Federal and non-Federal lands outside the NEP area. Any Federal actions (including permitting, leasing, and granting contracts) that may affect falcons would require section 7(a)(2) consultations. If released falcons colonize lands not included in the NEP area, then the number of section 7(a)(2) consultations could increase for Federal activities. If the possibility for take of

falcons occurs for non-Federal activities occurring outside the NEP area, then a Habitat Conservation Plan would need to be developed and any take would require a permit.

4.3.1.1.1 Grazing

This alternative would be the same as Alternative A (preferred alternative) for falcons within the NEP boundaries. Any falcon occurring outside the NEP boundary would be considered endangered and the regulations providing the full protection of the ESA would still apply, as described for Alternative B. However, due to releases inside the NEP area, the potential for falcons to recolonize the non-NEP area would be higher. The conditions contained in existing biological opinions would remain in effect. Any Federal actions (including permitting, leasing, and granting contracts) outside the NEP area that may affect falcons would require section 7(a)(2) consultation. This alternative could increase the number of section 7(a)(2) consultations if released falcons (or their offspring) recolonize the non-10(j) area. Terms and conditions resulting from those consultations, could impact grazing through habitat improvement actions, reductions in stocking numbers, or capital expenses.

4.3.1.2 Oil, gas and mineral

Oil and gas development on Otero Mesa would be inside the NEP boundary, and falcons found there would be treated as proposed for listing for the purposes of section 7(a)(2) consultation. Oil and gas development outside the NEP would be subject to section 7(a)(2) consultation if the development may affect falcons.

Inside the NEP boundary, the effects of this alternative would be the same as those for Alternative A. Any falcon occurring outside the NEP boundary would be considered endangered and impacts would therefore be similar to Alternative B (the no action alternative). Under this alternative there might be a slight increase in the number of section 7(a)(2) consultations if released falcons (or their offspring) recolonize the non-NEP area. Terms and conditions resulting from those consultations could impact oil and gas production activities by limiting well numbers or spacing.

4.3.1.3 Military

Falcons found on military lands within the NEP boundary would be treated as proposed for the purposes of section 7(a)(2) consultation. Falcons found on military lands outside the NEP area would be treated as endangered. This alternative might increase the number of section 7(a)(2) consultations if released falcons (or their offspring) colonize the non-NEP area. Terms and Conditions resulting from those consultations could impact military activities.

4.3.1.4 Recreation Hunting/Falconry

No Impact.

4.3.2 Biotic

Falcons prey on grassland birds, insects and small mammals. The density of falcons expected as a result of Alternative C is not expected to be high enough to significantly affect birds, small game and non-game mammals, reptiles and insects. Hack towers, and hack site attendants are not anticipated to significantly impact any natural resources.

4.3.3 Aesthetic

We do not anticipate any aesthetic impacts from any of the alternatives. Hacking towers may be considered a visual intrusion, but they will be positioned to blend into the landscape, placed on property at the discretion of the landowner, and removed when no longer needed.

4.3.4 Social and Economic

The need to consult on actions that may affect falcons on Federal lands outside the NEP area, coupled with releases inside the NEP area, may create an environment that makes some military and agricultural activities less desirable. In addition, the section 7(a)(2) or Habitat Conservation Planning processes could include additional protective measures for the falcon that might increase the costs or delay some actions, such as oil and gas exploration, grazing, or military activity.

4.3.4 Cultural

The agricultural and military cultures may be negatively affected by the regulatory requirements for falcon management outside the NEP. Negative attitudes toward endangered species and the Federal government, could be exacerbated if released falcons enter non-NEP areas and receive full protection of the ESA

4.4 Alternative D, Release in New Mexico under Safe Harbor Agreements.

4.4.1 Land Use

4.4.1.1 Grazing

Landowners entering into SHAs implement actions that the Service agrees are beneficial to the falcon. Therefore, for the life of the SHAs there may be modifications made to agricultural practices on private lands. Safe Harbor Agreements are voluntary agreements, therefore any changes made to the agricultural activities would be voluntary and most likely not significant. This alternative may increase the number of section 7(a)(2) consultations if released falcons recolonize Federal lands or private lands, subject to a Federal action. On private lands, incidental take for non-SHAs lands would require the development of a Habitat Conservation Plan.

4.4.1.2 Oil, gas and mineral

The regulations that provide the full protection of the ESA would apply on non-SHA lands. This alternative may increase the number of section 7(a)(2) consultations for oil, gas and mineral development if released falcons recolonize Federal lands or private lands, subject to a Federal action. Oil, gas and mineral activities on Federal lands would likely be done in a manner that provides additional protection for falcons and their habitat when activities may adversely affect falcons. Oil, gas and mineral development on private lands may be impacted if they have potential to take falcons.

4.4.1.3 Military

Section 7(a)(2) consultations would be required for activities that may affect falcons. This alternative may increase the number of section 7(a)(2) consultations if released falcons recolonize DOD lands (or private lands, subject to a DoD action). Additional protections for falcons and their habitat could occur if DOD activities adversely affect falcons. These additional protections could have negative impacts to military activities.

4.4.1.4 Recreation Hunting/Falconry

No impacts to recreational hunting or falconry interests are expected.

4.4.2 Biotic

Falcons prey on grassland birds, insects and small mammals. The density of falcons expected as a result of any of the alternatives is not expected to be high enough to significantly affect birds, small game and non-game mammals, reptiles and insects. Hack towers, and hack site attendants are not anticipated to significantly impact any natural resources. Towers will be removed after the completion of releases at a given site. Safe Harbor Agreements are intended to improve the biotic environment of those lands enlisted in the agreement.

4.4.3 Social and Economic

The need to consult on actions that may affect falcons on Federal lands, coupled with releases on lands covered by SHAs may create an environment that makes some activities more controversial. In addition, the section 7(a)(2) requirement for Federal agencies or Habitat Conservation Planning processes for private lands could include additional protective measures for the falcon that might increase the costs or delay some actions, such as oil and gas exploration or grazing.

4.4.4 Aesthetics

No significant impacts to the aesthetics of the area are expected.

4.4.5 Cultural

There may be some changed attitudes toward endangered species if falcon releases are focused on voluntary private lands. Taking an approach to falcon recovery that provides landowners with a sense of ownership of the process may improve attitudes toward endangered species. However, based on the information gathered through the scoping process, most land owners would rather use 10(j) for falcon reestablishment.

4.5 Alternative E, Voluntary Releases of falcons into historic range with the full protections afforded by the ESA

4.5.1 Land Use

4.5.1.1 Grazing

The full protections afforded by the ESA and the requirement for section 7(a)(2) consultation would remain in place. This alternative could impact agricultural land uses on both Federal and non-Federal lands. Any Federal actions (including permitting, leasing, and granting contracts) that may affect falcons would require section 7(a)(2) consultation. If more falcons were released with the full protection of the ESA, then the number of section 7(a)(2) consultations would be expected to increase. When the possibility for take (see section 2.1.1) of falcons occurs for agricultural practices that occur without any Federal involvement, then a Habitat Conservation Plan would need to be developed and any take would require a permit. In either situation, a modification to current livestock management practices that provide additional protection for the falcon and its habitat may be required. On some grazing allotments, this could constitute a negative impact. There may be a benefit to grazing operations due to section 7 consultation in the form of expenditure of funds to improve facilities and vegetative conditions.

4.5.1.2 Oil, gas and mineral

Any Federal actions (including permitting, leasing, and granting contracts) that may affect falcons would require section 7(a)(2) consultation. If more falcons are released with the full protection of the ESA, then the number of section 7(a)(2) consultations would also increase.

Terms and conditions resulting from those consultations, or designation of critical habitat, could impact oil and gas development activities. The same conditions outlined for non-Federal agricultural practices would apply to oil, gas and mineral development on non-Federal lands.

4.5.1.3 Military

All military operations that may affect falcons would require section 7(a)(2) consultations. An increase in consultations, and terms and conditions resulting from those consultations, or designation of critical habitat, could impact military activities.

4.5.1.4 Recreation Hunting/Falconry

No impacts to hunting or falconry are anticipated.

4.5.2 Biotic

Falcons prey on grassland birds, insects and small mammals. The density of falcons expected as a result of any of the alternatives is not expected to be high enough to significantly affect birds, small game and non-game mammals, reptiles and insects. Hack towers, and hack site attendants are not anticipated to significantly impact any natural resources.

4.5.3 Aesthetic

We do not anticipate any aesthetic impacts from any of the alternatives. Hacking towers may be considered a visual blemish, but they will be positioned to blend into the landscape, placed on property at the discretion of the landowner, and removed after use.

4.5.4 Social and Economic

This alternative has the highest potential to impact the social and economic facets of the livestock and oil and gas industries. The legal protection afforded to the falcon would be equal to the no action alternative; however, the potential for adverse effects to the falcon would be higher because of released birds. Under this scenario, any recolonizing falcon would be provided the full protection of the ESA If recolonization were to occur, and constraints placed on activities, then there could be economic impacts to the agricultural, military, and gas and oil development communities.

4.5.5 Cultural

Voluntary releases and the no action alternative would carry with them the full protections of the ESA, and may elicit a negative response from agricultural, military, and mining cultures.

Table 4.1. Summary of impacts by alternative.

Alternative	A) Proposed Action: Designate New Mexico and Arizona as a experimental non-essential population (NEP) area. Release falcons into potentially suitable habitat in New Mexico	B) Unaided Recovery/ No Action	C) Designate portions of New Mexico and Arizona as a NEP area. Release falcons into potentially suitable habitat in New Mexico	D)Reintroductions using Safe Harbor Agreements (SHA)	E)Voluntary Reintroductions
Grazing	Less section 7(a)(2) consultation. Conferencing still required.	Status Quo. (Status Quo = section 7(a)(2) for may affect situations on Federal lands. Permitees on public lands would be subject to section 7(a)(2) restrictions. Prohibitions against take on private lands.)	Inside NEP area same as Alternative A. Outside the NEP area same as Alternative B. Potential for increased consultations / outside NEP area	Safe Harbor Agreement has a grazing management component for the private lands. Permitees on public lands would be subject to section 7(a)(2) restrictions. Some grazing allotments could incur impacts.	Section 7(a)(2) for may affect management of Federal lands. Prohibitions against take on private lands. Permitees on public lands would be subject to section 7(a)(2) restrictions. Some grazing allotments could incur impacts.

Oil, gas and mineral	Less section 7(a)(2) consultation. Conferencing still required.	Status Quo.	Inside NEP area same as Alternative A. Outside the NEP area same as Alternative B. Potential for increased consultations / outside NEP area.	If falcons colonize non-SHA lands section 7(a)(2) consultations required for may affect situations	Section 7(a)(2) for may affect management on Federal lands. Prohibitions against take on private lands.)
Military	Less section 7(a)(2) consultation. Conferencing still required.	Status Quo.	Inside NEP area same as Alternative A. Outside the NEP area same as Alternative B. Probable increase in consultations and restrictions to training and testing activities outside NEP area.	If falcons colonize non-SHA lands section 7(a)(2) consultations required for may affect situations. Probable increase in consultations and restrictions and training or testing activities.	Section 7(a)(2) for may affects situations. Probable increase in consultations and restrictions to training and testing activities.
Recreation	Benefit	No change	Benefit	Benefit	Benefit
Vegetation	Vegetation management for falcon will be directed toward the guidelines in section 2.1.2	Status Quo. Section 7(a)(2) consultations required for actions that may affect falcons, such as issuing permits for grazing allotments	Inside NEP area same as Alternative A. Outside the NEP area same as Alternative B	Continued current or improved conditions depending on the specific SHA.	Continued current to improved conditions.
Wildlife	No impact	No impact	No impact	No impact	No impact
Esthetics	No impact/ benefit	No impact	No impact/benefit	No impact / benefit	No impact/ benefit
Cultural	Benefit	No impact	No impact	No impact	No impact

5.0 List of Preparers

U.S. Fish and Wildlife Service.

6.0 List of Agencies, Organizations and Persons Contacted

Bureau of Land Management

Department of Defense

Peregrine Fund

Turner Endangered Species Fund

New Mexico Department of Game and Fish

Arizona Game and Fish Department

Tribes and Pueblos in New Mexico and Arizona

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7.0 Appendices

A.

Historical and recent sightings of aplomado falcons by county (Williams 1998, updated by BLM LCFO 06/19/2002).

County	*Historical Sightings 1853 - 1952*	*Recent Sightings 1962-2002*
Es. Chihuahua, Mexico	3/1892 Palomas, 5-6/1952 nest near Berendo,Chihuahua	1998 Near Palomas, 1999 Near Palomas,
AZ/Hidalgo County		3/1977 4 mi S of Rodeo
Hidalgo County	8/1908 Playas Valley, 10/1939 near Animas	3/1971 Playas Valley east, 12/1978 N of Rodeo, 12/1978 N of Rodeo, 9/1982 Fitzpatrick/Cloverdale area, 11/1990 Cotton City area, 1/1991 10-25 mi S Animas (incl Fitzpatrick/Cloverdale area, 2/1994 Fitzpatrick/Cloverdale area, 1&3/1995 Fitzpatrick/Cloverdale area, 2/9/1998 Peloncillo Mtns,
Grant County	8/1875 Fort Bayard, 6/1886 near Hatchita, 7/1908 Playas Valley, 6/1924 4 mi N of Separ	10/1979 City of Rocks St. Park, 3/1987 N of Hatchita, 5-6/1994 Managas Valley, 12/1996-02/1997 N of Hatchita, 10/1999 3.5 mi S of Hatchita, 05/31/2002 26 mil S of Silver City US 1800
Grant/Luna	9/1918 20 mi SE Silver City, 9/1928 SE of Silver City	
Luna County	3/1853 near Deming, 9/1917 near Nutt, 7/1951 3 sites/obs near Hermanas, 5/20/1952 -nest w 2 young SW of Deming - near Hermanas	2/1982 S of Deming 10/2000 N of Hermanas - 3 birds incl 1 possible pair 01/2001 - Nesting activity SW of Deming 03/2002 - Nesting activity SW of Deming 05/08/2002 - Pair observed SW of Deming allotment approx 20 mi SW of Deming 05/10/2002 - Single adult SW of Deming 05/08/2002 sighting SW of Deming.
Dona Ana County	8/1909 1 nest w young 10mi E of Rincon, 1908 & 1909 several nests Jornada, 5/1975 near Santa Teresa	7/1996 Isaacks Lake, 4/17/1998 Jornada Exp Range, 4/18/1998 Santa Theresa near the airport, 8/2/1999 Baylor Canyon Rd near Organ (unconfirmed), 9/9/1999 1 Mi E of I-10 Lazy E Exit,
Otero	6/1917 45 mi S of Alamogordo at 5500 ft.	5/1991 Holloman Lakes, 6-7/1991 near Tularosa, 9/1993 W of Orogrande, 6-7/1994 near Tularosa, 5/1997 4 km East of Mack Tanks (unconfirmed), 8/11/1999 Mile Marker 185 Hiway 70 on WSMR, 9/11/1999 Otero Mesa, McGregor Range 9/18/1999 Otero Mesa, McGregor Range 11/14/2001 2 mi SE of Hat Ranch Hdq,

Sierra	11/1918 N of Engle, 12/23/1918 10 mi NE of Engle, 5/1924 Cutter, 15 mi SE of TorC (8 mi S of Engle, 15 mi SE of Cutter)	
Socorro	8/1917 25 mi N of Engle	8/1992 W of Bingham
Socorro/Valencia		1/1998 N of Bernardo
Eddy		12/1963 near Otis, 4/1988 30 mi E Carlsbad near Laguna Grande, 11/1993 Carlsbad
Lea		5/1962 San Simon Ranch
TX Culberson		1996 Hwy 90 3 mi S of Van Horn
TX Jeff Davis		1992 Hwy 90 near Valentine