United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

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Memorandum

To: State Director, Bureau of Land Management, Sacramento, California

From: Acting Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion for the California Desert Conservation Area Plan [Desert Tortoise] (6840(P) CA-063.50) (1-8-01-F-16)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the California Desert Conservation Area Plan. The proposed action is the California Desert Conservation Area Plan as it has been formally amended since 1980, modified by previous consultations related to grazing in the western Mojave Desert, modified by proposed interim conservation measures, and proposed to be modified by the Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans. At issue are the effects of the California Desert Conservation Area Plan, as modified and proposed for modification, and ongoing activities occurring in the California Desert Conservation Area on the federally threatened desert tortoise (*Gopherus agassizii*) and its critical habitat. This document was prepared in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). Your request for formal consultation was received on January 31, 2001.

This biological opinion is based on the following information: (1) the California Desert Conservation Area Plan, as modified by various planning amendments between 1980 and 1999 (Bureau of Land Management [Bureau] 1999); (2) the draft environmental impact statement for the northern and eastern Mojave Desert planning area (Bureau 2001b); (3) the draft environmental impact statement for the northern and eastern Colorado Desert planning area (Bureau and California Department of Fish and Game 2001); (4) your biological evaluation (Bureau 2001a); (5) information that you transmitted to us in a memorandum on September 27, 2001; (6) various written and oral communications, including meetings among staff of the Service and the Bureau; (6) previous biological opinions on sheep and cattle grazing; and (8) various reports and publications. A complete administrative record of this consultation is on file in the Service's Ventura Fish and Wildlife office.

CONSULTATION HISTORY

On March 16, 2000, the Center for Biological Diversity, the Sierra Club, and the Public Employees for Environmental Responsibility filed a lawsuit against the Bureau. The plantiffs alleged that the Bureau violated section 7(a)(2) of the Act and its implementing regulations by failing to initiate and complete a programmatic consultation with Service on the effects of the California Desert Conservation Area Plan, its amendments, and all related actions that may affect listed species in the California Desert Conservation Area that are authorized, approved, allowed, or otherwise carried out pursuant to the California Desert Conservation Area Plan and its amendments. The plantiffs also alleged that the Bureau violated section 7(d) of the Act and its implementing regulations by authorizing, allowing, or otherwise carrying out a variety of land use practices and other projects that may affect federally listed species prior to completing consultation with the Service on the California Desert Conservation Area Plan and its amendments.

On August 25, 2000, the plantiffs and the Bureau agreed to a settlement agreement that was approved by the U.S. District Court, Northern California Division. Terms of the agreement required that the Bureau enter into formal consultation with the Service under section 7(a)(2) of the Act on the California Desert Conservation Area Plan as it would be modified by proposed amendments resulting from various planning efforts. On January 16, 2001, the plantiffs and the Bureau agreed to a second settlement agreement that described 58 measures intended to promote the conservation of various listed species within the California desert.

We provided a draft biological opinion on the effects of the California Desert Conservation Area Plan on the desert tortoise and its critical habitat to you on May 8, 2002 (Service 2002). By memorandum dated May 24, 2002, you provided comments on our draft document (Bureau 2002b). We have addressed and incorporated, where appropriate, the comments in your memorandum.

In the Northern and Eastern Mojave and Northern and Eastern Colorado plans, the Bureau proposed an expedited consultation mechanism for future projects that may occur in these areas. Given the results of recent court decisions, we do not believe that the mechanism proposed by the Bureau would not provide adequate project-specific review. Personnel from the Service and Bureau discussed alternative means of conducting adequate project-specific reviews in an expedited manner while the Bureau was considering the draft biological opinion; however, we did not develop a process that satisfied both agencies. Consequently, we have agreed to discuss this issue again after issuance of this document.

DESCRIPTION OF THE PROPOSED ACTION

Purpose and Function of the California Desert Conservation Area Plan

Congress designated the California Desert Conservation Area with section 601(c) of the Federal Land Policy and Management Act of 1976. To provide for management of recreational use and

to resolve other resource and public land use conflicts, the Federal Land Policy and Management Act also directed the Secretary of the Interior to "prepare and implement a comprehensive, long-range plan for management, use, development, and protection of the public lands within the California Desert Conservation Area." The purpose, as specified by Congress, was "to provide for the immediate and future protection and administration of the public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." The California Desert Conservation Area Plan was signed in January 1980 and now serves as the primary document that describes the basic management principles the Bureau uses for managing its portion of the California Desert Conservation Area. Since adoption, nine major amendments to the California Desert Conservation Area Plan have been completed.

The California Desert Conservation Area Plan employs three basic tools for managing resources in the California Desert Conservation Area. These tools are:

1. Four multiple-use classes are the basis of a land zoning system that allows for a variety of uses and resource conservation activities.

2. Twelve elements provide detailed treatments and prescriptions addressing the management of different land uses and resources.

3. The designation of special management areas, including, but not limited to Special Areas and Areas of Critical Environmental Concern provides for the conservation of specific resource values.

Previous Consultations

The Bureau and Service have completed approximately 292 formal consultations for actions affecting the desert tortoise or its critical habitat within the boundary of the California Desert Conservation Area. This number does not accurately reflect the number of actions that the Bureau has authorized or implemented for several reasons. First, several formal consultations were programmatic in nature and considered the effects of numerous separate actions; the several biological opinions that evaluated the effects of pipeline maintenance are examples of this type of consultation. Other consultations were conducted as a result of the designation of critical habitat for the desert tortoise; these biological opinions evaluated the effects on critical habitat of actions for which consultation on the desert tortoise had already been completed. Finally, we have completed consultation on several actions which were never implemented; the waste disposal sites in the Cady Mountains and at Broadwell and Bristol Dry Lakes are examples of such consultations. In addition to these formal consultations, the Bureau and Service have engaged in numerous informal consultations.

Previous consultations on the effects of livestock grazing in the California desert on the desert tortoise have substantially changed, at least in some cases, the manner in which this activity

occurs. As a result of consultations on sheep grazing (1-6-F-91-F-18 and 1-8-94-F-16), the Bureau has not allowed the grazing of sheep within most of the area of critical habitat of the desert tortoise since approximately 1991. The later consultation will remain in effect in the western Mojave Desert until the Western Mojave Coordinated Management Plan is finalized and implemented.

We have issued several biological opinions to the Bureau with regard to cattle and the desert tortoise. We issued a biological opinion regarding 4 allotments along the eastern slope of the Sierra Nevada in August 1992 (1-6-92-F-55, Service 1994b)). In March 1994, we issued a biological opinion regarding 25 allotments, primarily in the eastern Mojave Desert (1-8-94-F-17). Both of these biological opinions concluded that the Bureau's cattle grazing program in the California Desert Conservation Area was not likely to jeopardize the continued existence of the desert tortoise. On April 20, 1994, the Service issued a biological opinion that evaluated the effects of cattle grazing on critical habitat, which had recently been designated (1-5-94-F-107); we concluded that the Bureau's rangewide cattle grazing program was not likely to adversely modify critical habitat the desert tortoise (Service 1994a).

The Service and Bureau have also consulted programmatically on the effects of small mines, small projects, remediation of illegal dumps, dual sport events, installation of minor electrical utilities, and pipeline maintenance on the desert tortoise and its critical habitat. These consultations were conducted to expedite the consultation process for the numerous projects that were similar in nature and had relatively minor effects on the desert tortoise; because of compensation requirements imposed by the Bureau, some acquisition of lands important to the recovery of the species has also occurred as a result of these programs. In the biological opinions for all of these consultations, the Service concluded that the proposed actions were not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat because of the protective measures proposed by the Bureau, the likelihood that these actions could be undertaken with little or no injury to or mortality of desert tortoises, and the small area of disturbance in relation to the available habitat of the species. These consultations will remain in effect throughout the California Desert Conservation Area unless subsequent consultation procedures are implemented.

Purpose and Function of the Proposed Interim Measures

The Bureau has proposed to implement several interim measures to protect threatened and endangered species within the California Desert Conservation Area. The interim measures were developed to provide short-term conservation benefits that can be implemented without incurring the long time frames that are required to complete the comprehensive bioregional plans.

Most of the interim measures will remain in effect until the California Desert Conservation Area Plan can be amended through the development of the bioregional plans. The final measures amending the California Desert Conservation Area Plan in the bioregional plans may differ from the interim measures presented here. As new amendments are proposed for the Plan, the Bureau will consult, pursuant to section 7(a)(2) of the Act, with the Service on the proposed changes.

The following measures have been modified to some degree since the Bureau requested consultation because of changes in the settlement agreement and the completion of at least a portion of the tasks. The numbering of the measures follows that contained in the Bureau's biological assessment. However, the Bureau (2002c) provided additional information regarding changes to measure 7 in a memorandum dated April 29, 2002; additionally, measure 6 from the biological assessment has been combined with measure 1.

1. The Bureau has implemented emergency road closures in the west Mojave planning area in the Red Mountain, Kramer, Fremont, Superior, and Newberry/Rodman route subregions. The Bureau will maintain the emergency route closures in the Ord Mountain pilot area and the route closures in the Red Mountain, Fremont, Kramer, Superior, and Newberry/Rodman polygons of the west Mojave planning area until the West Mojave Coordinated Management Plan is completed.

2. The Bureau will close the Red Mountain, Fremont, Superior, Kramer, and Newberry/Rodman route subregions in the west Mojave planning area to shooting, except for hunting and target practice at paper targets specifically created for such purpose.

3. To benefit the desert tortoise (and other threatened and endangered species), the Bureau will amend its brochures and maps distributed to the public to encourage camping only in previously disturbed sites.

4. The Bureau will not authorize competitive events for motorized off-highway vehicles outside of designated off-highway vehicle open areas except for events passing through the Navy Parachute Range between the Plaster City and Superstition Hills Off-highway Vehicle Management Area. Dual sport events conforming with the existing biological opinion are not restricted by this interim measure.

5. The Bureau will place the highest priority of its management program for burros (*Equus asinus*) on the removal of burros in the habitat of threatened or endangered species. The Bureau hired two monitoring specialists to conduct habitat evaluations in burro herd management areas during 2001.

7a. Cattle grazing will not be authorized in desert tortoise habitat in the Tunawee Common and Hansen Common allotments as shown on maps provided by the Bureau (2002c). In the Hansen Common Allotment, grazing would not occur on an 3,500-acre area downslope of the Second Los Angeles Aqueduct. In the Tunawee Common Allotment, grazing would not occur on an 1,800-acre area south of Little Lake between the western boundary of the Naval Air Weapons Station, China Lake and Highway 395.

7b. Grazing will not be authorized in desert tortoise habitat in the Ord Mountain, Cronese Lake, Harper Dry Lake, Cady Mountains, Rattlesnake Canyon, Rudnick Common, and Walker Pass allotments in the areas shown on maps provided by the Bureau (2002c) from

March 1 through June 15 and from September 7 through November 7. Information on the areas from which grazing would be excluded is provided in the following table.

Allotment	Acres in Allotment	Acres in Exclusion Area (% of allotment)	Acres of Critical Habitat in Allotment	Acres of Excluded Critical Habitat (% of Critical Habitat in Allotment)
Ord Mountain	154,848	67,350 (43)	102,141	41,650 (41)
Cronese Lake	65,304	18,000 (28)	30,080	18,000 (60)
Harper Dry Lake	26,314	18,954 (72)	16,482	16,482 (100)
Cady Mountains	231,897	88,320 (38)	0	-
Rattlesnake Canyon	28,757	6,600 (23)	0	-
Rudnick Common	236,184	31,000 (13)	0	-
Walker Pass	96,974	32,100 (33)	0	-

7c. On the Ord Mountain, Cronese Lake, and Harper Dry Lake allotments, grazing will not exceed 62,842 animal-days per year, 13,383 animals-days per year, and 17,033 animal-days per year, respectively. [These limits are the average use reported in the 1997, 1998, and 1999 billing years.]

8. For protection of habitat of the desert tortoise (and other threatened and endangered species), the Bureau will maintain the Whitewater Allotment in rest until the Coachella Valley bioregional plan is signed.

9. For protection of habitat of the desert tortoise, the Bureau will not authorize grazing in the Pilot Knob Allotment until the West Mojave Coordinated Management Plan is signed.

10. The Bureau will develop, in coordination with the Service and others, and implement a stipulation regarding roadside berm size and slope for graded roads on Bureau lands. The intent of the stipulation is to reduce the entrapment and mortality of desert tortoises on graded roads. The Bureau will require right-of-way holders to change grading practices

on Bureau-administered public lands to conform to this new stipulation. The Bureau will work with county governments to encourage application of the stipulation to county maintained roads. The Bureau will implement the new stipulation as soon as reasonably possible.

Purpose and Function of the Bioregional Plans

Because the California Desert Conservation Area covers approximately 25 million acres and land management issues are substantially different across the desert landscape, federal, state, and local land management agencies have divided the California Desert Conservation Area into five bioregional planning areas. These include the Western Mojave Desert, the Northern and Eastern Mojave Desert, the Northern and Eastern Colorado Desert, the Western Colorado Desert, and the Coachella Valley. Major interagency planning efforts have been underway for some time in four of the five areas. Planning efforts have not yet begun in the Western Colorado Desert bioregion. The bioregional plans will be or have been written to develop region-specific management activities that are applicable to the local region. As such, the plans will address unique biological resource issues that are applicable to a given area and provide solutions that address local land management needs. The Bureau has participated in the bioregional planning efforts with the intent of amending the California Desert Conservation Area Plan to develop area-specific management plans that will address and improve conservation management of biological resources, particularly as it relates to protection and recovery of threatened and endangered species. The desert tortoise occurs within all of the bioregional planning areas. The West Mojave Coordinated Management and Coachella Valley Plans are currently being developed; the draft Northern and Eastern Mojave and Northern and Eastern Colorado plans have been released for public review.

Future Consultations

The California Desert Conservation Area Plan provides program guidance in numerous places that threatened and endangered species will be protected through compliance with the Act. The Bureau also notes in other documents that future consultations, pursuant to section 7(a)(2) of the Act, would be required for site-specific actions. Consequently, we have not repeated these commitments throughout the description of the proposed actions.

Multiple-Use Classes

To more effectively and consistently manage its portion of land within the California Desert Conservation Area boundary, the Bureau has developed a land zoning system that provides specific land management prescriptions. Under this zoning strategy, lands managed by the Bureau are assigned one of four multiple-use classes. The multiple-use class assignment is based on the considered sensitivity of resources and kinds of uses occurring in each geographic area. The four multiple-use classes are Class C (Controlled Use), Class L (Limited Use), Class M (Moderate Use), and Class I (Intensive Use).

Multiple-Use Class C: Formally designated wilderness areas and areas that have been recommended as being suitable for wilderness designation are managed under this class. Congress designated wilderness areas across large portions of the California Desert Conservation Area in 1994 with the California Desert Protection Act; these Congressional designations supercede the multiple-use class boundaries assigned by the Bureau in 1980 when the California Desert Conservation Area Plan was finalized.

Multiple-Use Class L: Lands within this class include areas that are managed to provide for lower density, carefully controlled multiple uses of resources while ensuring that sensitive values are not significantly diminished.

Multiple-Use Class M: Lands within this class include areas that are managed to provide for a wide variety of present or future uses that include mining, livestock grazing, recreation, energy, and utility development.

Multiple-Use Class I: Lands within this class include areas that will experience concentrated use serving human needs. The Bureau attempts to mitigate impacts to resource values in Multiple-Use Class I lands and attempts to rehabilitate these disturbed areas to the extent possible.

All land-use actions and resource-management activities on public lands must meet the guidelines for the class of land on which they would occur. These guidelines are divided into 19 categories and are more fully described in the California Desert Conservation Area Plan (Bureau 1999).

In addition to the four multiple-use classes, the Bureau also manages a limited amount of land that has not been classified. Parcels in the "unclassified lands" category are managed on a case by case basis, according to the land tenure adjustment element that is described in greater detail below.

Desert tortoises may be found on all classes of land, including those that are unclassified. The following table, which was adapted from the California Desert Conservation Area Plan (Bureau 1999), describes the differences among the classes of lands as they relate to the desert tortoise. When the guidelines for a particular multiple-use class are such that the desert tortoise will not be affected by certain activities, we have included "no effect" in that portion of the table. Such guidelines will not be discussed for that multiple-use class again in this biological opinion.

We have attached a table which describe the multiple-use classes the Bureau employs to provide program guidance. Within the table, we have enclosed our determinations when we conclude that specific program guidance will not affect desert tortoises or their critical habitat.

Elements

Twelve program elements provide more specific application of the multiple-use class guidelines for resources or activities that have been identified as a matter of public interest. Each element

has a set of goals and planned actions and a description of how these goals and actions will be implemented and monitored. Descriptions of the twelve elements follow; we omitted information that is not relevant to the desert tortoise, such as that regarding the protection of wetlands and riparian areas.

Cultural Resources Element: Historic and prehistoric remains that include, but are not limited to, paleontological resources, such as vertebrate and invertebrate fossils, historic and prehistoric routes, road side artifacts, and historic buildings are managed under this element. Typically, activities associated with this program element are designed to protect historic and prehistoric remains. The Bureau may undertake activities to stabilize or restore areas supporting cultural and paleontological resources. Locations supporting these resources may be monitored. The Bureau may also permit well-directed research at sites supporting these resources.

Native American Element: American Indian tribes have lived within the boundary of the California Desert Conservation Area for several thousand years and have left thousands of sites containing Native American artifacts such as burial remains, lithic scatter sites, and objects associated with historic or prehistoric hunting camps or long-term residences. Members of Native American tribes consider Bureau lands within the California Desert Conservation Area as part of their tribal homeland; they may wish to use these lands for a variety of activities that relate to hunting, religious worship, and the collection or cultivation of plant resources.

To protect historic and prehistoric artifacts and provide for the continued use of the desert landscape by Native Americans, the Bureau uses several tools, including land use designations (*e.g.*, Class C or L) to protect Native American artifacts and promote traditional land uses and customs and designation of areas of critical environmental concern and development of activity plans for site-specific management guidelines. The Bureau and different tribal governments also hold formal and informal discussions or communications on an irregular basis. Guidance for this element requires the Bureau to provide full consideration to Native American values in land use planning and management decisions; the Bureau has also committed to manage and protect these values whenever prudent and feasible.

Wildlife Element: The Bureau manages wildlife through a variety of mechanisms that include the development of habitat management plans or activity plans for areas of critical environmental concern, the designation of special management areas or vehicle routes, or the development of Sikes Act agreements. This element calls for baseline monitoring of certain wildlife populations and how use of the desert may be affecting this resource.

Vegetation Element: Vegetation management within the California Desert Conservation Area may include vegetation production; plant harvesting; management of rare, threatened, and endangered species; designation and management of unusual plant assemblages; and vegetation manipulation that is designed to promote the growth of desirable species such as jojoba (*Simmondsia californica*) or retard the spread of undesirable weedy plants such as salt cedar (*Tamarix ramosissima*). Vegetation production is typically a passive, naturally occurring process

that is influenced by seasonal growth patterns and precipitation rates. Management of rare, threatened, or endangered species typically includes survey work designed to determine their distribution, abundance, and status. Unusual plant assemblages are plant communities that are recognized for their unusual age, size, cover, or density, or that represent a disjunct distribution. Unusual plant assemblages also include relatively rare plant assemblages that are typically associated with wetland, riparian, limestone outcrop, or sand dune habitats. Designation of an unusual plant assemblage benefits vegetation communities because these areas receive additional consideration during impact analyses.

Wilderness Element: The California Desert Conservation Area Plan established guidelines for how the Bureau would conduct an inventory to determine which of its lands may be appropriate for wilderness designation, study the identified areas, and provide a report to Congress with its recommendations. This process has been completed. Additionally, Congress designated numerous other wilderness areas on Bureau lands in 1994 through the passage of the California Desert Protection Act. The Bureau's program guidance for managing wilderness includes maintenance of an enduring system of high-quality wilderness, maintenance of the plants and animals indigenous to the area, consideration of the needs of listed species and their habitats, and maintenance of stable watersheds. The Bureau's guidance allows some activities, such as maintenance of existing facilities to occur within wilderness areas. We will discuss those activities within the context of the specific guidance.

Wild Horses and Burros Element: The Bureau's goals with regard to wild horses and burros is to provide for their requirements in specified areas, protect them from unauthorized removal, remove all wild horses and burros from areas not designated for their retention, and removal of excess wild horses and burros from designated retention areas. To ensure that the number of burros and wild horses does not exceed appropriate numbers, the California Desert Conservation Area Plan notes that the Bureau would estimate the number of animals annually, monitor population dynamics, monitor the condition of vegetation in areas used by burros and wild horses, and adjust the number of animals based on the results of the monitoring. The Bureau's specific actions with regard to wild horses and burros within the Northern and Eastern Mojave Northern and Northern and Eastern Colorado planning areas are described later in this biological opinion in the sections that discuss those plans.

Livestock Grazing Element: The goals of this element are to use range management to maintain or improve vegetation to meet the needs of livestock and other objectives in the California Desert Conservation Area Plan; continue to use the California Desert Conservation Area for production of livestock to contribute to satisfying the need for food and fiber from public land; and maintain good and excellent range condition and improve poor and fair range condition by one condition class through the development and implementation of feasible grazing systems or allotment management plans. A key component of meeting the last goal is monitoring to determine where changes are necessary to meet resource objectives.

The California Desert Conservation Area Plan identified three types of range to attempt to manage grazing allotments. Perennial range usually occurs at elevations greater than 3,500 feet or in the northern portions of the California Desert Conservation Area. The production of vegetation and growing season are more consistent than elsewhere in the desert, except in extreme conditions; this consistency generally allows the Bureau to allocate forage without major changes from year to year.

Ephemeral range typically occurs below 3,500 feet in elevation where annual plants provide most of the forage. The production of annual forage can vary greatly from year to year, depending on many factors such as the amount and timing of rainfall, temperatures, and wind conditions. Sheep and cattle are managed differently. An interdisciplinary team determines when cattle would be allowed on ephemeral range each year; the forage needs of wildlife, visual needs, and the potential for erosion are considered in determining when cattle can be turned out on the range. An interdisciplinary team also determines when sheep would be allowed on the range. The amount of forage would need to be at least 200 pounds per acre of dry weight before sheep can graze; in habitat that the Bureau rated as highly crucial for desert tortoises, 350 pounds per acre of dry weight before sheep can graze.

Ephemeral/perennial range combines aspects of both types of grazing. A stocking rate is based first on the perennial forage and then is increased in years when climatic conditions produce sufficient quality and quantity of forage; the same methods employed to determine stocking rates on ephemeral allotments are employed on ephemeral/perennial ranges. The Bureau allows ephemeral use of ephemeral/perennial range through short-term authorizations.

Since the signing of the California Desert Conservation Area Plan, numerous factors have altered grazing programs in the California desert. The listing of the desert tortoise resulted in the completion of consultations, pursuant to section 7(a)(2) of the Act, that substantially altered the area grazed by sheep in the western Mojave Desert; the consultations did not alter cattle grazing to the same degree. The creation of the Mojave National Preserve in 1994 spurred a process of the acquisition of grazing privileges by conservation groups and the subsequent retirement of allotments by the National Park Service. At least some of these allotments were located in part on lands that continued to be managed by the Bureau after 1994; the Bureau reviewed the viability of the remaining portions of these allotments and, determining that some could no longer support a viable grazing operation, retired the allotment.

At least partially as a result of these actions, alternative grazing strategies have been developed for the Northern and Eastern Colorado and Northern and Eastern Mojave planning areas. The Bureau has also proposed an interim strategy for the area that would be included in the West Mojave Coordinated Management Plan and Coachella Valley planning areas. Details of these strategies are provided elsewhere in this biological opinion.

Recreation Element: This element includes activities that involve both motorized (*e.g.*, dune buggies, dirt bikes, all terrain vehicles, and other vehicles) and non-motorized recreation (*e.g.*,

target shooting, land sailing, rock hounding, hiking, sight seeing, hunting, camping, bird watching, and nature study). Motorized recreation includes point-to-point travel on existing routes as part of organized events or on a casual basis; it also involves free play within designated off-highway vehicle management areas. The element also provides for the development of trails and facilities to meet visitor service needs. The Bureau has a public outreach program that is intended to provide visitors with information on the desert and increase environmental awareness; a volunteer program and maps and brochures produced by the Bureau assist in this effort. Most of these elements are designed to provide accurate information on recreational opportunities and public facilities.

Motorized-Vehicle Access Element: Motorized vehicles are the primary tool that most visitors use to access various portions of the California Desert Conservation Area. A primary goal of the Bureau's management is to provide for constrained access for motorized vehicles in a manner that balances the needs of all users of the desert, private landowners, and other public agencies; another goal is to avoid adverse impacts to resources, to the degree possible, when designating or amending routes for access by motorized vehicles. The Bureau distinguishes between the use of mechanized vehicles for recreation purposes (*e.g.*, use of off-highway vehicles) and the use of vehicles to convey visitors to various areas of the desert. Because funding is limited and Bureau lands in the California Desert Conservation Area are extensive, the Bureau does not intensively patrol lands under its administration to ensure that the public complies with its vehicular access guidelines.

Motorized vehicular access on Bureau lands within the California Desert Conservation Area is managed with the aid of area and route designations. Area designations include "open," "closed," or "limited" use categories.

Areas that are classified as being "open" allow travel anywhere if the vehicle is driven in a responsible manner and private property rights are respected. Lands in this category include certain sand dunes and lake beds. Several off-highway vehicle management areas are designated as open. The Johnson Valley, Stoddard Valley, Spangler Hills, and El Mirage off-highway vehicle management areas are the only such areas that affect the desert tortoise; all are located in the western Mojave Desert. The Bureau and Service have completed formal consultation, pursuant to section 7(a)(2) of the Act, on these areas.

Vehicular use in "closed" areas is normally not permitted. Prohibitions against vehicular use typically apply to land in areas of critical environmental concern and special areas where provided for in management plans, certain sand dunes and dry lake beds, and select areas that are identified in the Bureau's Interim Critical Management Plan. This Interim Critical Management Plan established guidelines for vehicle use that are to remain in effect until routes are designated for the California Desert Conservation Area.

Vehicle use in "closed" areas may be permitted in certain cases. Fire, military, emergency, or law enforcement vehicles may be used in these areas for emergency purposes. Combat or combat

support vehicles may be used for national defense purposes. Finally, vehicle use may be expressly authorized by an agency head under a permit, lease, or contract; and when vehicles are used for official purposes by employees, agents, or designated representatives of the federal government or one of its contractors.

In "limited" use areas, motorized-vehicle access is allowed only on certain "routes of travel" which include roads, ways, trails, and washes. At a minimum, vehicle use is restricted to existing routes of travel. An existing route of travel is a route that existed before the approval of the California Desert Conservation Area Plan in 1980. These routes must have had a minimum width of 2 feet, showed substantial surface evidence of prior vehicle use, or, for washes, had a history of prior use.

Vehicle access in "limited" use areas is further modified by different land use classifications. Within Class I lands, those areas not "open" will be limited to use of existing routes, unless further limitations are necessary. Within Class M lands, access is limited to existing routes, unless the Bureau has determined that use on specific routes must be limited further. Within Class L areas, vehicle access is directed toward use of approved routes of travel. Approved routes include primary access routes intended for regular use and for linking desert attractions for the general public and secondary access routes intended to meet specific user needs. In areas of critical environmental concern where vehicle use is allowed, vehicle access will be managed under the guidelines for Class L lands. Vehicles are not normally allowed in wilderness areas. In areas that have not been assigned to a multiple-use class, the route approval process will be applied, as needed, to resolve specific problems and to establish a cohesive program.

Stopping, parking, and vehicular camping along "routes of travel" is limited to within 300 feet of a route. In some locations, specific parking or stopping areas may be signed "open" or "closed" to protect fragile or sensitive resources adjacent to the route or to provide a safe place to stop. The Bureau has proposed different standards for stopping, parking, and vehicular camping in the Northern and Eastern Mojave and Northern and Eastern Colorado plans; these differences will be discussed in the portions of this biological opinion which describe those plans.

Vehicle use in desert washes is governed by the local area designation. Vehicle use in desert washes is prohibited in areas that have been designated as being "closed." Vehicle access in desert washes is permitted in areas that are designated as being "open." In all "limited" use areas, vehicle use in desert washes will be controlled according to the travel restrictions that are applicable to the local multiple-use class category. In addition, washes may have travel restrictions (*e.g.*, speed limits or seasonal closure) that are designed to protect resources found in or along the wash or to minimize conflicts with other uses. Again, the Bureau has proposed different standards in the Northern and Eastern Mojave and Northern and Eastern Colorado plans.

The Bureau may post signs that describe the approved type of motorized vehicle access (open, closed, limited) that applies to a given area. The Bureau will also, with public involvement,

determine which routes in Class L or M lands need to be closed or limited in some way. Routes not approved for vehicle access would, in most instances, be obliterated, barricaded, signed, or otherwise marked.

In areas with mining operations, additional access needs are managed in accordance with the Bureau's Exploration and Mining-Wilderness Review Program regulations (43 CFR 3802) and the Surface Management of Public Lands under the U.S. Mining Laws (43 CFR 3809). Access needs for other uses, such as roads to private lands, grazing developments, competitive events, or communication sites, are permitted on an individual basis under Federal Land Policy and Management Act guidelines and other appropriate regulations.

Geology, Energy, Minerals Resources Element: Forty-six mineral commodities, including some of national and international importance, are known to exist in the California Desert Conservation Area. Substantial resources of geothermal energy are also present in the California desert. In the California Desert Conservation Area, approximately 360 exploration and mining plans of operation are active; approximately 22 of the mining and 5 to 10 of the exploration operations that are currently active have substantial development footprints.

Most exploration and development activity on public lands in the California Desert Conservation Area is guided and authorized under the General Mining Law of 1872 (30 U.S.C. 22 *et seq.*). Other applicable laws that regulate extraction and exploration for mineral resources include the Mineral Leasing Act of 1920 (30 U.S.C. 181 *et seq.*), Geothermal Steam Act of 1970 (30 U.S.C. 1001 *et seq.*), and the Materials Act of 1947, as amended (30 U.S.C. 701 *et seq.*). Collectively, these laws allow use of surface resources provided that the activities comply with appropriate federal and state laws and rules. Regulations developed pursuant to the Federal Land Policy and Management Act (43 CFR 3802 and 3809) guide the Bureau in managing surface operations under the mining laws for purposes of preventing undue or unnecessary degradation to public land and undue impairment to public lands and resources in the California Desert Conservation Area.

The Code of Federal Regulations addresses three distinct levels of mining law. Text appearing in the 1980 California Desert Conservation Area Plan has been revised to include changes that were addressed in the revised surface management regulations at *43* CFR 3809, published in the *Federal Register* on January 20, 2001, and amended in October 2001. The new regulations affect three distinct levels of mining operations based on surface disturbance and degree of impact in sensitive areas. These include casual use, notices, and plans of operation.

Casual Use: Casual use is defined as activities causing no or negligible surface disturbance to public lands or resources. Mining conducted under the casual use category includes the collection of geochemical, rock, soil, or mineral specimens using hand tools, hand panning, sluicing, and small portable suction dredges. It also generally includes use of metal detectors, gold spears and other battery-operated devices for sensing the presence of minerals, and hand and battery-operated drywashers. Casual use does not include use of mechanized earth-moving

equipment, truck-mounted drilling equipment, motorized vehicles in areas when designated as closed to off-road vehicles, chemicals, or explosives. Operators may use motorized vehicles for casual use activities provided the use is consistent with the regulations governing such use, off-road vehicle use designations contained in land-use plans, and the terms of temporary closures ordered by the Bureau. Because of the guidelines in the California Desert Conservation Area Plan, vehicles cannot be operated off roads as part of the casual use provisions of the mining regulations within habitat of the desert tortoise on Class C, L, M, and some I lands. Vehicles can be used under the casual use provisions for mining within the boundaries of the Bureau's designated off-highway vehicle management areas, which are managed as Class I and designated as open; driving off established routes is permitted within these areas, provided that the vehicle is operated in a safe manner. Because the casual use of vehicles for mining is prohibited throughout the California Desert Conservation Area except in areas where anyone can drive off established routes, we will not discuss this issue again in this biological opinion; off-road driving in open areas will be addressed in the discussion on recreation.

Casual use does not include "occupancy" or operations in areas where the cumulative effects of the activities result in more than negligible disturbance. Mining activity conducted under the casual use category does not require that the operator notify the Bureau or acquire its approval prior to conducting field activities. Operators must reclaim any casual-use disturbance that is created during their activities. If activities do not qualify as casual use, an operator must submit a notice or plan of operation, whichever is applicable.

Where the cumulative effects of casual use by individuals or groups have resulted in, or are reasonably expected to result in, more than negligible disturbance, the Bureau's State Director may establish specific areas as he or she deems necessary. In such cases, any individual or group intending to conduct activities under the mining laws must contact the Bureau 15 calendar days before beginning activities to determine whether the individual or group must submit a notice or plan of operation.

Notices: Operations under a notice are limited to exploration activity and involve surface disturbances greater than those associated with casual use. Actions associated with this category involve sampling, drilling, or developing surface workings to evaluate the type, extent, quantity, or quality of mineral values present. Exploration does not include activities where material is extracted for commercial use or sale.

Notices are not allowed on "any lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat, unless [the Bureau] allows for other action under a formal land-use plan or threatened or endangered species recovery plan" (43 CFR 3809.11(c)(6)). None of the Bureau's land-use plans in the California Desert Conservation Area provide for the use of notices in habitat of threatened or endangered species. For these reasons, operations conducted under a notice are not likely to adversely affect the listed species under consideration in this biological opinion. We will not discuss notices further in this document.

Plan of Operation: A plan of operation approved by the Bureau is required before the initiation of exploration or mining activities that are greater than casual use or are acceptable under a notice. A plan of operation is required for any bulk sampling in which the operator will remove 1,000 tons or more of presumed ore for testing. A plan of operation is required for any operations causing surface disturbance greater than casual use in:

1. lands designated as Class C or L,
2. designated areas of critical environmental concern,
3. areas designated as "closed" (under regulations at 43 CFR 8364 and published in the *Federal Register*) to off-road vehicle use (meaning cross-country travel), and
4. any lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat, unless the Bureau allows for other action under a formal land-use plan or recovery plan.

The plan of operation must contain a complete description of the entire mining operation. Pertinent information in the plan will include, but not be limited to, the location and spatial extent of the proposed mining operation, the type of equipment that will be used to extract ore, a map showing the location of the project area in sufficient detail for Bureau staff to be able to find it and the location of access routes intended to be used, improved, or constructed during the mining activity, the type of support facilities, location of drill sites (to the extent possible), measures to prevent unnecessary or undue degradation, and a reclamation plan for the land involved. The plan of operation must demonstrate that the proposed operations would not result in unnecessary or undue degradation, or undue impairment to public lands in the California Desert Conservation Area.

Under the mining regulations, lands affected by all operations will be reclaimed, regardless of whether the operations are conducted under the casual use category, under a notice, or under a plan of operation. Regulations for reclamation activities are provided in 43 CFR 3809.1-3(d) and include guidance regarding the development of access routes; disposal of tailings, dumps, deleterious materials or substances, and other waste produced by the operations; reclamation of the disturbed area; and inspection of the reclaimed area.

Approval of any plan of operation will be subject to changes or conditions that are necessary to meet the performance standards and to prevent unnecessary or undue degradation. The Bureau may require the operator to incorporate into the plan of operation other agency permits, final approved engineering designs and plans, or other conditions of approval. No operations may be conducted until the Bureau approves the plan of operation and receives the financial guarantee.

Extraction of geothermal, oil, and gas reserves may also take place on Bureau lands. Areas that may contain geothermal resources may be designated as a "known or potential geothermal resource area."

All plans of operation are reviewed to ensure that the compliance guidelines of the National Environmental Policy Act are met. A plan of operations may be conditioned and required to

proceed with stipulations, modifications, or amendments that are developed through the process of environmental review. Plans are stipulated to bring the operation into compliance with the requirements regarding undue or unnecessary degradation and undue impairment, and to ensure protection of natural resources, reasonable reclamation, and proper conservation of the mineral resource. Policy directs that all operating plans and operations conducted on public land be inspected to ensure compliance with the terms of approval, regulations, and statutes.

Reclamation includes those activities associated with recontouring waste piles, reshaping pit walls and other excavations, removal of permanent or temporary facilities or structures, and soil placement, preparation, and in some cases, reseeding and maintenance of plants. Reclamation may also include any measures required to enhance or facilitate enhancement of previously disturbed areas or to modify areas to facilitate or accept displaced wildlife. As related to assuring a diverse and complete habitat as existed before operations, restoration of the area may be required. This normally entails inventory and consideration of the local biological features and the development of measures and time frames to ensure complete recovery, if required.

The Bureau requires that operators post a bond for surface disturbing operations conducted under a notice, plan of operation, or activity conducted under the Mineral Leasing or Materials Acts. The bond is required to cover liability for reclaiming disturbances approved in the plan of operation.

Mineral leasing, or any other activity, will require an environmental analysis pursuant to the National Environmental Policy Act unless exempted. Activities affecting a threatened or endangered species will not qualify for an exemption (*i.e.*, categorical exclusion) from this requirement. Mineral material sales in Class L and M lands are processed under 43 CFR 3600. If a new extraction area in a Class L area is expected to be larger than 5 acres in size, documentation pursuant to the National Environmental Policy Act will be prepared to cover the entire area of potential extraction.

No mining operations will be allowed if such activity would cause unnecessary or undue degradation.

Energy Production and Utility Corridors Element: The goals of the California Desert Conservation Area Plan for this element included the full implementation of a network of planning corridors to meet the projected utility needs to the year 2000, the identification of environmental constraints and siting procedures to be used by telecommunications firms and public agencies, and the identification of potential sites for geothermal development, wind energy parks, and powerplants. Sixteen planning corridors were identified in the California Desert Conservation Area Plan. They are intended to include new electrical transmission lines of 161 kilovolts or above, all pipelines with diameters greater than 12 inches, cables for interstate communications, and major aqueducts or canals for interbasin transfers of water. The corridors vary in width from 2 to 5 miles.

The California Desert Conservation Area Plan also identifies nine contingent corridors in the event transmission needs change. A contingent corridor can be activated with an amendment to the California Desert Conservation Area Plan.

Since the California Desert Conservation Area Plan was signed, the Bureau has amended it to approve two additional corridors, moved a portion of corridor BB, and deleted contingent corridor W and portions of corridors M and E. The Bureau has also designated new corridors, provided permission to construct gas and oil pipelines and fiber optic cables outside corridors, and activated portions of contingent corridors as project-specific amendments to the California Desert Conservation Area Plan.

The Bureau may also allow the siting of microwave tower sites, and conventional, solar, geothermal, wind, and nuclear power plants on Bureau lands within the California Desert Conservation Area.

Land-Tenure Adjustment Element: The goal of this element is to direct the acquisition and disposal of public lands to maximize the efficiency and consistency of their management. The objectives are to establish a program that complements the goals of other elements of the California Desert Conservation Area Plan through the consolidation of public lands with special management areas, such as areas of critical environmental concern, recreation areas where the use is intensive, and Class C areas; initiate a program for the disposal of public land through sale and exchange within the unclassified areas of the California Desert Conservation Area to reduce the need to manage isolated and fragmented parcels; sell, exchange, or lease public lands to meet the needs of other government agencies for public facilities; and cooperate with other public agencies to ensure that locally adopted land use plans are considered in any land tenure action.

At the time the California Desert Conservation Area Plan was signed, approximately 300,000 acres of scattered and isolated parcels of public lands were not included within one of the multiple-use categories. The Bureau proposed to retain or transfer to other appropriate agencies those unclassified parcels containing sensitive resources. Parcels with known mineral resources will be selectively retained. Prior to any disposal action, parcels would be inventoried for sensitive resources; parcels that do not support sensitive resources and would be appropriate for development would be sold or exchanged.

Special Management Areas

The third major management tool that is used for planning and management purposes in the California Desert Conservation Area Plan involves the designation of special management areas, such as areas of critical environmental concern or other special areas. Other areas which possess rare, unique, or unusual qualities of scientific, educational, cultural, or recreational significance may be designated as research natural areas, outstanding natural areas, other natural areas, national natural landmarks, national historical landmarks, national register of historic places, historic American engineering record, national scenic trails, national historic trails, man and biosphere reserves, and recreation lands.

After an area has been formally designated as an area of critical environmental concern or other special area, a site-specific activity plan is prepared. Activity plans vary in size and complexity depending on the nature of the resources and uses within the area of critical environmental concern. Activity plans clearly identify the ongoing management objectives for the area of critical environmental concern. The activity plan also includes a description of types of future uses, activities, or management practices considered compatible with the purposes of the area of critical environmental concern and a description of any existing incompatible uses, activities, or practices within the area. The plan also provides a schedule for implementing management goals. The activity plan includes the "details" of implementing the special management requirements, such as patrol schedules, posting signs, patrolling, and fencing specifications for facilities. Plans are prepared by interdisciplinary teams that consider all of the resources and uses present. Plans are subject to public review and environmental analysis.

Development, when wisely planned and properly managed, may occur in areas of critical environmental concern if the basic intent of protection of historic, cultural, scenic, or natural values is assured. In the case of certain wildlife and cultural resources, surface disturbances from mining, motorized-vehicle access, and grazing or other uses will be controlled. In some cases, fencing may be used to prevent unintentional impacts. Some valuable wildlife resources will require assistance in the way of reducing or eliminating competition for water sources or forage. Directional signs and visitor use areas will be developed and designated to encourage visitor cooperation, and informational facilities and interpretive programs will be instituted to increase visitors' knowledge of and sensitivity to the protective needs of important natural and cultural resource values. Consultation with the adjacent land owners will be conducted when areas of critical environmental concern and their management may conflict with adjacent owners' land uses and requirements.

Management prescriptions for areas of critical environmental concern may override the multiple-use class guidelines for the local area. The Bureau monitors existing conditions within an area of critical environmental concern to ensure that resource degradation is not occurring. Monitoring data will be used to guide corrective actions that may be necessary.

In summary, areas of critical environmental concern and other special areas are established to conserve specific resources; the presence of a listed taxon within such an area would prompt the development and implementation of management to conserve that taxon. Therefore, the program guidance for special management areas is not likely to adversely affect the desert tortoise or its critical habitat. The program guidance for this basic component of the California Desert Conservation Area Plan will not be discussed further in this biological opinion.

Management Actions associated with the Proposed Northern and Eastern Mojave Bioregional Plan

One of the goals of the Northern and Eastern Mojave bioregional plan is recovery of the desert tortoise. To achieve this goal, the Bureau proposes to identify the boundaries of desert wildlife

management areas and multiple-use classes, implement a general management strategy, manage vehicles, livestock grazing, and burros, and acquire private lands. The following section provides general summaries of the aspects of the preferred alternative that are relevant to the desert tortoise. Details of this alternative are contained in the draft environmental impact statement (Bureau 2001b).

The Bureau proposes to create 3 areas of critical environmental concern, totaling 312,485 acres, to form 3 desert wildlife management areas for the desert tortoise. ("Desert wildlife management area" is a concept that was proposed in the recovery plan for the desert tortoise (Service 1994c); more information on this concept is located in the Status of the Species section of this biological opinion.) The locations and acreage of the desert wildlife management areas would be:

Desert Wildlife Management Areas	**Acreage**
Piute-Fenner	173,850
Ivanpah Valley	36,780
Shadow Valley	101,355
Total	312,485

These desert wildlife management areas would include all critical habitat in the Northern and Eastern Mojave planning area except for approximately 12,700 acres west of Turquoise Mountain Road in the Shadow Valley unit and 485 acres adjacent to the community of Nipton in the Ivanpah unit. (By memorandum dated April 29, 2002, the Bureau proposed to remove approximately 60 acres of private land and 425 acres of public lands from the Ivanpah Valley Desert Wildlife Management Area; the acreage in the table reflects this change. The Bureau may elect, at some future time, to exchange these public lands for private lands within this desert wildlife management area located within the Mojave National Preserve (Bureau 2002c).) All desert tortoise habitat within the desert wildlife management areas would be considered as Category I; outside of the desert wildlife management areas, it would be considered as Category III. (The Bureau adopted categories of desert tortoise habitat to assist in its management of the species; more information on this concept is located in the Status of the Species section of this biological opinion.) Approximately 30,010 acres of Class M lands in this planning area would be changed to Class L.

The Bureau's general management strategy contains several prominent components. First, the Bureau proposes to enter into a consultation that would address the effects on the desert tortoise of all projects that would result in a surface disturbance of 100 acres or less. Projects that would result in more than 100 acres of disturbance, require the preparation of an environmental impact statement, or require the amendment of the California Desert Conservation Area Plan would necessitate a separate consultation. As discussed in the Consultation History section of this

document, the Service has notified the Bureau that we did not consider this strategy to provide adequate project-specific review. The agencies will continue to discuss this issue after issuance of this biological opinion.

Cumulative ground disturbance would be limited to one percent of the public lands in each of the proposed desert wildlife management areas. Appendix F of the draft environmental impact statement for the Northen and Eastern Mojave planning area describes the rationale for this approach and how this limit would be monitored and managed. The cumulative total of the amount of disturbed lands would be reduced by the acreage of any restored lands that meet specific criteria.

The Bureau would adopt management prescriptions and mitigation measures to reduce the effects of proposed projects on the desert tortoise. These prescriptions and measures would include: reclaiming habitat that is lost or disturbed by new projects; using specific design features to minimize the effects of projects on the desert tortoise; attempting to use seasonal restrictions to protect desert tortoises; using disturbed areas to the degree possible for new facilities; and requiring a plan of operation for all mining activities involving surface disturbance of perennial vegetation, use of vehicles off of designated open roads and trails, or use of mechanized earthmoving equipment or explosives. The Bureau would also continue to require project proponents to compensate for loss or disturbance of habitat; the compensation ratio for all projects within Category I habitat would be five to one. Appendix A of the draft environmental impact statement describes these measures in greater detail.

The final component of the general management strategy is the implementation of a management program for the common raven (*Corvus corax*). This program would include research, alteration of habitat of common ravens, and removal of specific common ravens. New facilities or operations would be reviewed to determine whether they had potential to increase the number of common ravens; if the review indicates that such a potential exists, the Bureau would require the project or operation to be modified to reduce or eliminate the opportunity for common ravens to increase in number. Appendix A of the draft environmental impact statement contains the detailed management plan for common ravens.

To manage vehicles within desert wildlife management areas, the Bureau proposes to designate routes of travel. Routes not approved for vehicle access would, in most instances, be obliterated, barricaded, signed, or marked, as appropriate; the technique used would depend on the specific circumstances. Parking and camping would be allowed within 100 feet of the centerline of routes. Where navigable washes are designated as open or limited routes, parking and camping would be allowed only within the banks of the wash. Signing and interpretive kiosks would be installed.

The Bureau would use regional standards of public land health and guidelines for grazing to manage livestock grazing. The standards express the level of physical and biological condition or degree of function required for healthy, sustainable public lands; the guidelines for grazing

management are the types of activities and practices determined to be appropriate to ensure that the standards can be met or that substantial progress can be made towards meeting them. Activities would be managed in accordance with the regional standards by ensuring that soils, native species, riparian, wetland, and stream function, and water quality are in proper functioning condition. The standards for soils and native species are particularly appropriate for the desert tortoise. Soils should exhibit infiltration and permeability rates that are appropriate to soil type, climate, geology, and past uses. The condition of the soils is indicated by:

the cover and ground cover of the plant communities;
the diversity of plant species with a variety of root depths;
the presence of litter, organic matter, and soil crusts; and
rates of wind and water erosion; and soil permeability, nutrient cycling, and water infiltration.

All indicators should be appropriate for the local environment.

The standards also call for healthy, productive, and diverse habitats for native species. Indicators for the health of native species include:

the presence of photosynthetic and ecological processes;
plant vigor, nutrient cycle, and energy flow in a manner that ensures maintenance of desirable plants and their reproduction and recruitment;
production of sufficient litter;
appropriate age class distribution of plants and animals;
distributions and cover of plant species and their habitats that allow for reproduction and recovery from localized catastrophic events;
an acceptable level of alien and noxious plants and animals;
evidence of appropriate natural disturbances; and
populations and habitats that are sufficiently distributed and healthy to prevent the need for listing and to promote the conservation and recovery of sensitive species.

The draft environmental impact statement contains more details regarding the regional standards.

The Bureau would also use elements of the California Desert Conservation Area Plan, allotment management plans, and terms and conditions from existing biological opinions to manage livestock grazing within the Northern and Eastern Mojave planning area. The Bureau proposes to allow voluntary relinquishment of grazing leases and related authorizations within desert wildlife management areas; upon such relinquishment, the allotments would be retired. Cattle would be removed from desert wildlife management areas when ephemeral forage production is less than 230 pounds per acre (air dry weight) from March 15 through June 15 (Bureau 2002c). Ephemeral cattle allotments would be terminated; ephemeral authorizations for ephemeral/perennial allotments would be terminated. Temporary non-renewable grazing would not be authorized. A final grazing strategy would be developed within a year and implemented within two years; it will provide details regarding the area of removal, natural movements by cattle, existing and potential improvements, and other constraints of cattle management. The potential effects on the desert tortoise of implementing the grazing strategy will be evaluated in future biological opinions; this strategy will not be discussed further in this biological opinion.

The Bureau would remove all burros from the Clark Mountain Herd Management Area, which include the proposed Shadow Valley Desert Wildlife Management Area (Morgan pers. comm.). The final component of the Bureau's general strategy for recovering the desert tortoise in the Northern and Eastern Mojave planning area is to acquire all private lands in desert wildlife management areas from willing sellers.

Appendix B of the draft environmental impact statement for the Northern and Eastern Mojave planning area contains the implementation plan for the actions proposed by the Bureau. Anticipated time frames for completing activities vary greatly. Some time frames are established by regulation. Other activities would occur annually; many activities, such as implementing the routes of travel designations, would require several years to complete.

Management Actions associated with the Proposed Northern and Eastern Colorado Bioregional Plan

A specific purpose of the Northern and Eastern Colorado bioregional plan is to amend or create land use plans and management prescriptions to recover the desert tortoise (Bureau and California Department of Fish and Game 2001). The goals and many of the management proposals of the Northern and Eastern Mojave and Northern and Eastern Colorado plans are similar; however, the environmental impact statements for the two plans take substantially different approaches in their organization. Specifically, in the Northern and Eastern Colorado plan, the Bureau identifies issues and then proposes one or more amendments to the California Desert Conservation Area Plan to address the issue. The following section provides general summaries of the aspects of the preferred alternative that are relevant to the desert tortoise.

Amendment 1 would be the adoption of regional standards of public land health and guidelines for grazing management. The standards and guidelines are the same for both the Northern and Eastern Colorado and Northern and Eastern Mojave plans.

Amendments 2, 3, and 4 directly relate to the recovery of the desert tortoise. Through Amendment 2, the Bureau proposes to create two desert wildlife management areas for the desert tortoise that would be managed as areas of critical environmental concern; approximately 1,694,920 acres would be included in these desert wildlife management areas. The locations and acreage of the desert wildlife management areas would be:

Desert Wildlife Management Areas	Acreage
Chemehuevi	874,843
Chuckwalla	820,077
Total	1,694,920

All desert tortoise habitat within the desert wildlife management areas would be considered as Category I; outside of the desert wildlife management areas, it would be considered as Category III. All Class M lands in the desert wildlife management areas would be changed to Class L.

Amendment 3 is directed at the manner in which livestock grazing is managed. The portion of the Lazy Daisy Allotment which supports the highest density of desert tortoises will be eliminated; the allotment would be reduced from 332,886 to 311,280 acres. The Bureau will terminate authorization of forage allocation and range improvements and eliminate the allotment designation in the California Desert Conservation Area Plan if the lessee voluntarily relinquishes all grazing use authorizations.

The terms and conditions of the biological opinion on cattle grazing (Service 1994b) will be added to the grazing element of the California Desert Conservation Area Plan as permanent requirements for cattle and sheep grazing. The terms and conditions will be implemented in both critical and non-critical habitat of the desert tortoise.

Authorization of ephemeral use will be terminated in the Lazy Daisy and Chemehuevi allotments. This amendment will result in the Lazy Daisy Allotment being managed as a "perennial only" allotment and in the termination of the Chemehuevi Allotment. Temporary non-renewable authorizations within desert wildlife management areas will be terminated on the Lazy Daisy Allotment.

Utilization of perennial plants on the Lazy Daisy Allotment may not exceed the values shown in the following table (Bureau 2002c).

Range Type	**Percent Use of Key Perennial Species**	
	Poor -Fair Range Condition or Growing Season	**Good - Excellent Range Condition or Dormant Season**
Mojave/Sonoran desert scrub	25	40
Salt desert shrubland	25	35
Semidesert grass and shrubland	30	40
Sagebrush grassland	30	40
Mountain shrubland	30	40
Pinyon-juniper woodland	30	40

A grazing strategy will be developed to address competition for forage between cattle and desert tortoises for any allotment that is partially or entirely within a desert wildlife management area. Specifically, when forage production is less than 230 pounds per acre, cattle will be substantially removed from the desert wildlife management area from March 15 through June 15 (Bureau 2002c). ('Substantial' removal means that most cattle will be removed but some individuals may wander across boundaries and others may be missed during round-ups. The differences in removal dates between the eastern and western portions of the desert reflects an effort on the part of the Bureau to maintain the same schedule as that of the Mojave National Preserve; this scheduling is necessary for ranchers who run cattle on both public and National Park Service lands.) The grazing strategy will be developed within a year and implemented within two years; it will provide details regarding the area of removal, natural movements by cattle, existing and potential improvements, and other constraints of cattle management. The Bureau would install fences, cattle guards, water troughs and reservoirs, wind mills, water storage tanks, pipelines, and corrals to assist in implementing this strategy. The potential effects on the desert tortoise of implementing the grazing strategy will be evaluated in future biological opinions; this strategy will not be discussed further in this biological opinion.

All existing cattle guards will be modified to prevent entrapment of desert tortoises. New cattle guards will be designed to prevent entrapment.

Amendment 4 would change the point, from the edge to the centerline of the road, from which the distance is measured that vehicles are allowed to travel off road to stop, camp, or park. The slight change will assist in providing consistency in enforcing off road stopping, camping, and parking. This change is not likely to adversely affect and may benefit the desert tortoise. We will not discuss this issue again in the biological opinion.

Amendments 5 through 9 are related to managing other sensitive species, including the desert bighorn (*Ovis canadensis nelsoni*). For example, the Bureau proposes to eliminate the Ford Dry Lake Allotment and reduce the area of the Rice Valley Allotment from 85,565 to 76,301 acres. Generally, the measures are intended to protect sensitive species from the effects of human activities; additionally, many of these species occupy habitats in which desert tortoises are scarce or absent. Consequently, we have determined that these amendments are not likely to adversely affect the desert tortoise or its critical habitat. With one exception, we will not discuss these amendments further in this biological opinion.

The Bureau proposes to continue to construct, improve, and maintain new and existing natural and artificial water sources and exclosures around them where required. The Bureau will consult with the Service on proposed projects that occur within habitat of the desert tortoise (Bureau 2002b).

Through Amendment 10, the Bureau would re-align the existing herd areas for burros in two sections. The Chemehuevi Herd Area and Herd Management Area would occupy approximately 147,630 acres east of Highway 95 and north of Highway 62; a current management level for

burros of 108 would be established in this area. The Chocolate/Mule Mountains Herd Area and Herd Management Area would occupy approximately 223,542 acres southeast of Highway 78; a current management level for burros of 108 would be established in this area. These current management levels would remain in effect until appropriate management levels are established through monitoring of the habitat and populations. Any water developments or exclosures needed to manage the new herd areas would be considered in future planning documents and consultations. The Bureau also proposes to eliminate the Picacho Herd Management Area for horses.

Through Amendment 11, the Bureau proposes changes to organized competitive vehicle events to protect sensitive resources. Specifically, the Bureau proposes to eliminate the Parker 400 competitive recreation corridor. This corridor is located in San Bernardino County, north of Route 62, and crosses important habitat of the desert tortoise. The elimination of this corridor is not likely to adversely affect and, in fact, would benefit the desert tortoise. We will not discuss this issue again in the biological opinion.

The Bureau also proposes to continue to allow competitive motorcycle and all-terrain vehicle events along the Johnson Valley to Parker route. The route begins in the Johnson Valley Off-highway Vehicle Management Area and then travels east to the north of the Marine Corps Air Ground Combat Center and through the Northern and Eastern Colorado planning area. The route avoids crossing any desert wildlife management areas in the Northern and Eastern Colorado planning area. Competitive events on this route would be permitted as described in the California Desert Conservation Area Plan, with several exceptions that are fully described in the draft environmental impact statement. Several measures that govern races in this corridor affect the desert tortoise within the Northern and Eastern Colorado planning area. The maximum number of participants in any one event is 500. The maximum width of the race corridor outside of the Johnson Valley Off-highway Vehicle Management Area is 200 feet (100 feet from the centerline of an existing route that establishes the corridor). When the route establishes the boundaries of a desert wildlife management area, wildlife habitat management area, or wilderness, the race corridor must not extend beyond 100 feet from the centerline of the existing route opposite these areas. Pit areas will be limited to locations identified in the Northern and Eastern Colorado plan. Cross-country portions of the corridor will not be available to casual use. All access to the route by race officials must be by the established corridor and other routes available to the casual user.

Amendment 12 would require that motorized vehicle access be managed in accordance with current guidelines for Class L lands, irrespective of the multiple-use class; Class C lands (wilderness) and areas designated "open" to vehicle use would not be managed in the same manner. All existing routes that have been inventoried and mapped, including navigable washes that have been individually identified, would be designated "open" for vehicle use. Exceptions are where such use has already been limited or prohibited through publication of a final notice in the *Federal Register*, specific biological parameters proposed through this plan are applied to minimize disturbance of wildlife and significant disruption of wildlife habitats by motorized

vehicle use, or restrictions on use are required to protect other resource values, to protect and promote the safety of all users of public lands, and to minimize conflicts among various users of public lands. All navigable washes not individually inventoried and mapped would be designated open, as a class, except in "washes closed zones." Designations could change depending upon the results of monitoring of use and impacts. This management would result in approximately 734 miles of open routes within the Chemehuevi Desert Wildlife Management Area, 960 miles within the Chuckwalla Desert Wildlife Management Area, and an additional 3,049 miles within the planning area outside of the desert wildlife management areas (Bureau 2002b).

Stopping, parking, and vehicle camping would be allowed within 100 feet of the centerline of routes within areas of critical environmental concern. Outside of these areas, such activities would be allowed within 300 feet of the centerline of routes.

Through Amendment 13, the Bureau proposes to change the manner in which distance is measured from a road for stopping, parking off a road, and camping. Currently, the Bureau measures the distance from the edge of the road. Under the new proposal, the Bureau would measure the distance from the centerline of the road. This administrative change may assist the Bureau in enforcing compliance with the distance from a road which vehicles may travel to stop, camp, or park. This administrative change will affect the desert tortoise; we will not discuss it further in this biological opinion.

Amendment 14 incorporates wilderness areas into the California Desert Conservation Area Plan. Remnant parcels will be assigned to the multiple-use class of the adjacent non-wilderness area, unless they are large enough to be evaluated on their individual merits; within desert wildlife management areas, remnants will always be assigned to Class L. Remnant parcels are those portions of public lands of the previous multiple-use class designations that extend beyond the boundaries of the wilderness areas created by Congress on Bureau lands in 1994. The incorporation of wilderness areas into the California Desert Conservation Area Plan is an administrative action and will not affect desert tortoises. The conversion of the multiple-use class of remnant parcels to Class L, the most protective class of lands except for wilderness, is not like to affect the desert tortoise or its critical habitat in any manner that will be not considered in other portions of this biological opinion. Consequently, we will not discuss Amendment 14 again in this document.

The Bureau has also proposed several other actions as part of the Northern and Eastern Colorado plan. The Bureau will actively seek to acquire non-federal lands or interests in lands within wilderness, desert wildlife management areas, and wildlife habitat management areas through purchase, donation, or exchange. In total, approximately 540,200 acres of private lands occur with the planning area that are suitable for acquisition based on their location within wilderness, desert wildlife management areas, and wildlife habitat management areas. The acquisition of lands, particularly within desert wildlife management areas, is likely to benefit the desert tortoise because these lands would then be subject to the provisions of sections 7(a)(1) and 7(a)(2) of the Act and be eligible for inclusion in any habitat restoration plans, if necessary.

The Bureau also proposes to dispose of public lands outside of wilderness, desert wildlife management areas, and wildlife habitat management areas that do not support known occurrences of rare plants, springs, bats, or other special status species and where the disposal will support the consolidation and location of private land. A goal of this disposal is to promote private development and increase the tax base for local governments.

The Bureau proposes to limit the amount of new disturbance within each desert wildlife management area to one percent of the federal land. When it does permit disturbance or loss of habitat, the Bureau would require permittees to compensate by acquiring 5 acres of desert tortoise habitat for each acre that is disturbed or lost; alternatively, funds equivalent to the amount necessary to purchase such lands may be used for restoration or enhancement of habitat. The peripheries of Desert Wildlife Management Areas will be fenced, signed, or patrolled to ensure that conflicts with adjacent land uses are controlled.

STATUS OF THE SPECIES

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the creosote, shadscale, and Joshua tree series of Mojave desert scrub, and the lower Colorado River Valley subdivision of Sonoran desert scrub. Optimal habitat has been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but are occasionally found in windblown sand or in rocky terrain (Luckenbach 1982). Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982, Schamberger and Turner 1986).

Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend most of the remainder of the year in burrows, escaping the extreme conditions of the desert. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein *et al.* (1987), and Service (1994c).

Food resources for desert tortoises are dependent on the availability and nutritional quality of annual and perennial vegetation, which is greatly influenced by climatic factors, such as the timing and amount of rainfall, temperatures, and wind (Beatley 1969, 1974, Congdon 1989, Karasov 1989, Polis 1991 in Avery 1998). In the Mojave Desert, these climatic factors are typically highly variable; this variability can limit the desert tortoise's food resources.

Desert tortoises will eat many species of plants. However, at any time, most of their diet often consists of a few species (Nagy and Medica 1986, Jennings 1993 in Avery 1998). Additionally, their preferences can changes during the course of a season (Avery 1998) and over several seasons (Esque 1994 in Avery 1998). Possible reasons for desert tortoises to alter their preferences may include changes in nutrient concentrations in plant species, the availability of plants, and the nutrient requirements of individual animals (Avery 1998). In Avery's (1998) study in the Ivanpah Valley, desert tortoises consumed primarily green annual plants in spring; cacti and herbaceous perennials were eaten once the winter annuals began to disappear. Medica *et al.* (1982 in Avery 1998) found that desert tortoises ate increased amounts of green perennial grass when winter annuals were sparse or unavailable; Avery (1998) found that desert tortoises rarely ate perennial grasses.

Desert tortoises can produce from one to three clutches of eggs per year. On rare occasions, clutches can contain up to 15 eggs; most clutches contain 3 to 7 eggs. Multi-decade studies of the Blanding's turtle (*Emydoidea blandingii*), which, like the desert tortoise, is long lived and matures late, indicate that approximately 70 percent of the young animals must survive each year until they reach adult size; after this time, annual survivorship exceeds 90 percent (Congdon *et al.* 1993). Research has indicated that 50 to 60 percent of young desert tortoises typically survive from year to year, even in the first and most vulnerable year of life. We do not have sufficient information on the demography of the desert tortoise to determine whether this rate is sufficient to maintain viable populations; however, it does indicate that maintaining favorable habitat conditions for small desert tortoises is crucial for the continued viability of the species.

Desert tortoises typically hatch from late August through early October. At the time of hatching, the desert tortoise has a substantial yolk sac; the yolk can sustain them through the fall and winter months until forage is available in the late winter or early spring. However, neonates will eat if food is available to them at the time of hatching; when food is available, they can reduce their reliance on the yolk sac to conserve this source of nutrition. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter, which are often shallowly excavated and run parallel to the surface of the ground.

Neonate desert tortoises emerge from their winter burrows as early as late January to take advantage of freshly germinating annual plants; if appropriate temperatures and rainfall are present, at least some plants will continue to germinate later in the spring. Freshly germinating plants and plant species that remain small throughout their phenological development are important to neonate desert tortoises because their size prohibits access to taller plants. As plants grow taller during the spring, some species become inaccessible to small desert tortoises.

Neonate and juvenile desert tortoises require approximately 12 to 16 percent protein content in their diet for proper growth. Desert tortoises, both juveniles and adults, seem to selectively forage for particular species of plants with favorable ratios of water, nitrogen (protein), and potassium. The potassium excretion potential model (Oftedal 2001) predicts that, at favorable ratios, the water and nitrogen allow desert tortoises to excrete high concentrations of potentially

toxic potassium, which is abundant in many desert plants. Oftedal (2001) also reports that variation in rainfall and temperatures cause the potassium excretion potential index to change annually and during the course of a plant's growing season. Therefore, the changing nutritive quality of plants, combined with their increase in size, further limits the forage available to small desert tortoises to sustain their survival and growth.

In summary, the ecological requirements and behavior of neonate and juvenile desert tortoises are substantially different than those of subadults and adults. Smaller desert tortoises use abandoned rodent burrows, which are typically more fragile than the larger ones constructed by adults. They are active earlier in the season. Finally, small desert tortoises rely on smaller annual plants with greater protein content to be able to gain access to food and to grow.

The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 *Federal Register* 32326). In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 *Federal Register* 12178). The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published February 8, 1994 (59 *Federal Register* 5820).

Critical habitat is designated by the Service to identify the key biological and physical needs of the species and key areas for recovery, and focuses conservation actions on those areas. Critical habitat is composed of specific geographic areas that contain the biological and physical attributes that are essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. These features are called the constituent elements of critical habitat. The specific constituent elements of desert tortoise critical habitat are: sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

The recovery plan for the desert tortoise is the basis and key strategy for recovery and delisting of the desert tortoise. The plan divides the range of the desert tortoise into six distinct population segments or recovery units and recommends the establishment of 14 desert wildlife management areas throughout the recovery units. Within each desert wildlife management area, the recovery plan recommends implementation of reserve level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of desert wildlife management areas should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, land management within all desert wildlife management areas should restrict human activities that negatively affect desert tortoises (Service 1994c).

Four recovery units identified in the recovery plan are located in California. Eight critical habitat units are also located in California. The recovery units in which the critical habitat units are found and their acreages are listed in the following table.

Recovery Unit	Critical Habitat Unit	Acreage
Western Mojave		
	Fremont-Kramer	518,000
	Superior-Cronese	766,900
	Ord-Rodman	253,200
	Pinto Mountain	171,700
Northern Colorado		
	Chemehuevi	937,400
Eastern Colorado		
	Chuckwalla	1,020,600
Eastern Mojave		
	Ivanpah Valley	632,400
	Piute-Eldorado	453,800

The desert tortoise was listed in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species.

ENVIRONMENTAL BASELINE

Four recovery units for the desert tortoise occur in the California Desert Conservation Area. The Western Mojave Recovery Unit extends from approximately Olancha and the northern Panamint Valley in the north south to the middle of Joshua Tree National Park; it also extends from the Sierra Nevada and Tehachapi Mountains in the west east to Death Valley and the eastern side of Joshua Tree National Park. The Eastern Mojave Recovery Unit lies east of Death Valley and extends from the Nevada border in the north south to Interstate 40; the Bureau considers the small portion of the Northeastern Mojave Recovery Unit that extends into Ivanpah

Valley as part of the Eastern Mojave Recovery Unit for its planning purposes. The Northern Colorado Recovery Unit extends from Interstate 40 south, almost to Interstate 10 and from the eastern portions of Joshua Tree National Park east to the Colorado River. The Eastern Colorado Recovery Unit extends from just north of Interstate 10 south to the Mexico border near Yuma, Arizona; the Salton Sink and Imperial Valley form the western edge of this recovery unit, which extends east to the Colorado River.

The following descriptions of the recovery units in California are from the recovery plan for the desert tortoise (Service 1994c) and the Bureau's biological assessment (Bureau 2001). The Western Mojave Recovery Unit is exceptionally heterogeneous and large with distinct climatic and vegetation characteristics in its western, central, and southern regions. The most pronounced difference between this and other recovery units is in timing of rainfall and the resulting vegetation. Most rainfall in the Western Mojave Recovery Unit occurs in fall and winter and produces winter annuals. Desert tortoises are active above ground primarily in the spring so they can consume annual plants that germinated in response to winter rains. In the western Mojave Desert, desert tortoises occur primarily in valleys and on bajadas and rolling hills in saltbush, creosote bush, and scrub steppe communities.

The region covered by the Eastern Mojave Recovery Unit receives both winter and summer rains. In response to the bimodal pattern of rainfall, production of annual plants occurs in spring and in late summer and early autumn; desert tortoises are often active during both periods if annual plants and perennial grasses are present.

Desert tortoises in the Northern Colorado Recovery Unit also experience two active periods because of winter and summer rains. They occasionally inhabit the broad, well-developed washes that are found in this region. The climate is somewhat warmer than in the other recovery units, with only 2 to 12 freezing days per year.

Desert tortoises in the Eastern Colorado Recovery Unit are active longer than elsewhere in California because of the mild winters and substantial summer precipitation. They are found in well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities; these communities tend to support a higher degree of plant diversity than those in the Western Mojave Recovery Unit.

During the summers of 1998 and 1999, biologists associated with the West Mojave Coordinated Management Plan surveyed over 1,200 transects over a large area of the western Mojave Desert. These transects failed to detect sign of desert tortoises in areas where desert tortoises were previously considered to be common. Although these data have not been fully analyzed and compared with previously existing information, they strongly suggest that the number of desert tortoises has declined substantially over large areas of the western Mojave Desert.

Between 1971 and 1980, 27 plots were established in California to study the desert tortoise; 15 of these plots were used by the Bureau to monitor desert tortoises on a long-term basis (Berry 1999). Generally, the plots were visited at roughly 4-year intervals to determine the numbers of desert tortoises they supported. Desert tortoises found on these plots during the spring surveys were registered; that is, they were marked so they could be identified individually during subsequent surveys.

At the Chemehuevi Valley and Wash plot, 257 and 235 desert tortoises were registered in 1988 and 1992, respectively (Berry 1999). During the 1999 spring survey, only 38 live desert tortoises were found. The shell and skeletal remains of at least 327 desert tortoises were collected; most, if not all, of these animals died between 1992 and 1999. The frequency of shell lesions and nutritional deficiencies appeared to be increasing and may be related to the mortalities. The Chemehuevi Valley and Wash plot is located within the Northern Colorado Recovery Unit and the Chemehuevi Critical Habitat Unit.

At the Goffs plot, 296, 220, and 249 desert tortoises were registered in 1980, 1990, and 1994, respectively (Berry 2000). In 2000, only 30 live desert tortoises were found. The shell and skeletal remains of approximately 393 desert tortoises were collected; most of these animals died between 1994 and 2000. Most of the desert tortoises exhibited signs of shell lesions; three salvaged desert tortoises showed abnormalities in the liver and other organs and signs of shell lesions. None of the three salvaged desert tortoises tested positive for the upper respiratory tract disease. However, this small sample size does allow conclusions about the population as a whole. The Goffs plot is located within the Eastern Mojave Recovery Unit and the Piute-Eldorado Critical Habitat Unit.

Large numbers of shells have also been observed in Ward Valley (Northern Colorado Recovery Unit, Chemehuevi Critical Habitat Unit) during the 1990s. During the 1980s, declines were observed on the Chuckwalla Bench and within the Chocolate Mountains Aerial Gunnery Range, both of which are located in the Eastern Colorado Recovery Unit and the Chuckwalla Critical Habitat Unit (Berry *et al.* 2001).

EFFECTS OF THE ACTION

We conducted our analysis in a stepwise fashion. We begin our analysis with a general description of how various anthropogenic activities could affect the desert tortoise and its habitats.

We then reviewed how the overall management direction provided by the California Desert Conservation Area Plan, as amended and modified, could affect the desert tortoise. The California Desert Conservation Area Plan provides program guidance to the Bureau for its activities within the California desert; the multiple-use classes and elements of the California Desert Conservation Area Plan direct how the Bureau balances resource conservation and use. The California Desert Conservation Area Plan also provides the fundamental authorization for

many ongoing activities, such as casual recreational use, that do not require site-specific analysis by the Bureau. We did not analyze the effects of any site-specific future actions. As the California Desert Conservation Area Plan notes, site-specific actions may be allowed after they are analyzed pursuant to the National Environmental Policy Act; the Bureau must also comply with section 7(a)(2) of the Act when it is considering these future actions.

Finally, the Bureau's proposed action includes certain modifications to the California Desert Conservation Area Plan, as amended. These modifications are the consultations on livestock grazing for the desert tortoise between the Service and Bureau, the Bureau's proposed interim measures, and the actions proposed in the draft Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans. In some cases, these modifications have altered the manner in which the California Desert Conservation Area Plan may have affected the desert tortoise. Where these modifications have eliminated the likelihood of adverse effects, we have noted this situation in the Description of the Proposed Action section of this biological opinion and will not repeat the analysis herein.

We considered other factors in our analysis of whether the Bureau's guidance and ongoing activities were likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat. Our consideration of the overall effects of the Bureau's program guidance on the desert tortoise includes, at least to some degree, an evaluation of how likely an action is to occur. For example, the pumping of groundwater from an area that does not contain groundwater is not likely to occur; therefore, even though the program guidance and multiple-use class may allow this activity, it would not occur.

Additionally, the Bureau would consult on each future action that it proposes to approve, undertake, or fund, pursuant to the requirements of section 7(a)(2) of the Act. The potential exists that, in this biological opinion, we may find that the Bureau's guidance is not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat. However, a specific action may be proposed in the future that could result in a finding of jeopardy or adverse modification of critical habitat. Such a circumstance could occur when permit applications contain project-specific details that cannot be evaluated at this programmatic level.

Effects of Human Activities on the Desert Tortoise

Numerous activities could occur as a result of the implementation of the guidelines and elements of the California Desert Conservation Area Plan. These activities can adversely affect the desert tortoise through loss of individuals and loss or disturbance of habitat.

Desert tortoises can be struck by vehicles that are driving on paved and unpaved roads and cross country (Boarman and Sazaki 1996) . Cross country travel could also result in the destruction of burrows; desert tortoises could either be trapped inside the burrows or find them unavailable when they are needed to escape predation or extreme weather conditions. In general, cross

country travel occurs less frequently than travel on roads but can cause substantial impacts because of the presence of burrows and the greater difficulty in detecting and avoiding desert tortoises. As in virtually every instance, hatchling desert tortoises are the most difficult individuals to detect.

Although desert tortoises are generally more easily observed on roads, vehicles can travel at increased speed that again reduces the ability of drivers to detect and avoid desert tortoises. Rises and turns in roads also decrease the ability of drivers to detect desert tortoises. The actual level of mortality that would occur along a specific road will be influenced by many variables and is difficult to predict; the level and type of use of the road by vehicles and the number of desert tortoises present during periods of heavy use are two of the primary factors that are difficult to predict. Mortality associated with vehicle strikes, both on and off roads, will be greatest in the spring and fall, in areas where desert tortoises are most common. Along heavily used roads, the number of desert tortoises is depressed for some distance from the edge of the road; this distance varies with the level of use of the road.

Desert tortoises would be at risk during the construction, operation, and maintenance phases of any projects that would employ large equipment. Animals can be crushed on the ground's surface, trapped in their burrows, and buried in overburden piles. During the construction of the Kern and Mojave pipelines, numerous desert tortoises were killed by vehicles traveling to and from the project sites on the rights-of-way; although this mortality was not directly caused by the heavy equipment at the construction sites, the right-of-way traffic was occurring in direct support of that activity.

Because of their small size, hatchlings and slightly larger desert tortoises could be trampled by foot traffic. Nests are also vulnerable, but their typical location, near the mouth of a burrow, likely protects them to some degree.

Desert tortoises have died as a result of other factors associated with human activities. They have fallen into trenches or adits that were excavated for various types of projects; improperly constructed cattle guards can also trap smaller individuals. Desert tortoises have become entangled in netting or wire. Desert tortoises may seek shelter in the shade of vehicles and be crushed when those vehicles are subsequently moved. Improper disposal of food wastes and trash often attract predators of the desert tortoise, especially common ravens. Pet dogs brought onto public lands by recreationists or workers associated with specific projects could disturb, injure, or kill desert tortoises. Desert tortoises have been found trapped in guzzlers and between the rails of a railroad track.

Some ill, dying, and recently dead desert tortoises have been found to contain elevated levels of potential toxicants, such as cadmium, chromium, mercury, nickel, and lead (Jacobson *et al.* 1991, Homer *et al.* unpublished data in Chaffee and Berry 1999). Chaffee and Berry (1999) compared concentrations of elements found in plants and soils and found elevated concentrations of cadmium, potassium, and zinc in all plants; other elements, such as chromium, nickel, and

selenium were enriched only in certain plants. They also found anomalous concentrations of arsenic, which could be toxic to desert tortoises in large quantities, near areas that have been mined for gold; arsenic occurs in some gold ores. Avery (1998) notes that concentrations of heavy metals, such as chromium, iron, copper, zinc, and aluminum, were higher in Mediterranean grass (*Schismus barbatus*) than in evening-primrose (*Camissonia boothii*), four o'clocks (*Mirabilis bigelovii*), or filaree (*Erodium cicutarium*). Avery (1998) found that Mediterranean grass had greater concentrations of chromium, iron, copper, zinc, and aluminum than the latter three species. He speculated that, because its fibrous roots are near the surface of the soil, it may accumulate heavy metals that are deposited from airborne pollution more readily than the other species, which have tap roots. Mediterranean grasses (*S. barbatus* and *arabicus*) are widely distributed, non-native plants that are common in disturbed soils and readily consumed by desert tortoises. To date, although these desert tortoises appear to have been exposed to elevated levels of potentially toxic elements, we do not know whether these elements may affect the species.

The use of pesticides could result in direct mortality of desert tortoises; we are unaware of specific studies regarding the effects of pesticides on the desert tortoise. Herbicides may reduce or eliminate the abundance of plants that the desert tortoise uses for forage or shelter; other pesticides could reduce the abundance of pollinators, which, in turn, could reduce the germination success of plant species that are important to the desert tortoise. Both the active ingredient and surfactants may be toxic to desert tortoises and species that are important for forage and shelter.

Through legitimate and authorized use of desert lands, people make contact with desert tortoises. This contact can lead to uninformed or malicious interactions that result in injury or mortality of desert tortoises. For example, unauthorized handling or restraint of a desert tortoise could induce physiological stress that reduces the animal's ability to withstand high temperatures. Desert tortoises are occasionally killed by gunshots. Some mortalities associated with gunshots may be accidental; however, most are likely intentional. Although this consultation addresses only legal actions that are implemented or authorized by the Bureau, the access provided by the Bureau's authorizations can increase the number of adverse interactions between desert tortoises and people.

The implementation of the guidelines and elements of the California Desert Conservation Area Plan can lead to ground-disturbing activities within habitat of the desert tortoise. These impacts include the direct removal of annual and perennial plants that the desert tortoise uses for food and cover. Disturbance of soils can accelerate the spread of invasive non-native plant species by destruction of soil crusts and cryptogams; these non-native species, in turn, can compete with the native plant species (Lovich and Bainbridge 1999) that the desert tortoise requires for nutrients and shelter. Non-native plants can also increase the ability of the desert to carry wild fires (Lovich and Bainbridge 1999). Neither desert tortoises nor the plant species upon which they depend are adapted to fire; consequently, fires could result in a substantial loss of desert tortoises and severely alter the plant community structure within their habitat.

Fragmentation of habitat and populations impairs the ability of the desert tortoise to survive and recover. Heavily used roads, even if they do not pose a physical barrier to desert tortoises, cause fragmentation because animals cannot cross them safely. Some roads, such as Highway 58, have been fenced to exclude desert tortoises and fitted with underpasses that allow animals to move from side to side; these roads may reduce mortality levels and allow passage of animals to the degree that the potential has increased for the desert tortoise to survive and recover in such areas (Boarman *et al.* 1998).

Unpaved roads that are used infrequently likely do not pose a threat of fragmentation. However, ongoing road maintenance can lower the bed of the road and raise berms to a degree that desert tortoises which enter the roadway cannot exit. These animals are subsequently threatened with predation, exposure to extreme temperatures, collection, and collision with vehicles.

Effects of Multiple-Use Classes, Guidelines, and Elements

In the following sections, we combined our evaluations of the guidelines for the relevant multiple-use classes and of the elements of the California Desert Conservation Area Plan. Where appropriate, we also evaluated the potential impacts of ongoing uses; note that this biological opinion does not analyze the potential effects of any future specific actions requiring approval, authorization, or implementation by the Bureau.

The Bureau's program guidance is designed to protect biological resources and other values to the greatest degree on Class C lands. Most Class C lands do not support substantial numbers of desert tortoises because these areas are usually steep, rocky, and high in elevation. However, substantial portions of the Chemehuevi and Shadow Valley Desert Wildlife Management Areas support desert tortoise habitat. Therefore, in regions where desert tortoise habitat overlaps Class C lands, the benefit of this type of management to the desert tortoise is substantial.

In contrast, biological resources are the least protected within Class I lands. Generally, desert tortoises are not abundant within Class I lands, because habitat on these lands has been subjected to extensive disturbance by human activity. Although human activity may be extensive within Class I areas, the long history of disturbance in these areas has, in general, decreased their value biologically; consequently, the program guidance with regard to these areas may not substantially affect the desert tortoise. Despite the existing situation, the overall status of the desert tortoise and the potential for Class I areas to be restored should be evaluated as part of any long-term planning process.

Class L and M lands likely contain most of the desert tortoise habitat within the California Desert Conservation Area. The guidance for Class L lands are more protective of biological resources, including listed species, than those for Class M lands, although the Bureau can authorize actions on Class L lands that adversely affect the desert tortoise and its habitat. The Bureau's proposals in the Northern and Eastern Colorado and Northern and Eastern Mojave plans, to change the multiple-use class of all Class M lands within desert wildlife management area to Class L would improve management direction to some degree.

Cultural and Paleontological Resources and Native American Values

We have combined these guidelines and elements because the Bureau's program guidance is generally similar for cultural and paleontological resources and Native American values. It calls for the preservation and protection of archaeological and paleontological values and sites of value to Native Americans that occur in both Class L and M lands. The Bureau may authorize some activities, such as the stabilization or protection of a site or research that may result in ground disturbance, use of vehicles on existing routes of travel, and walking through habitat of the desert tortoise, associated with these resources and values.

The use of vehicles on existing routes and walking through habitat could result in injury to or mortality of desert tortoises. Stabilization of a site or research that involves ground disturbance could result in the destruction of burrows and loss of vegetation; desert tortoises could also be killed or injured. However, the extent of the work that would likely be conducted under the program guidance for cultural and paleontological resources or Native American values would be minor because the sites are generally small, particularly in relation to the range of the desert tortoise in the California Desert Conservation Area. For this reason, we have concluded that the activities that may occur under this program guidance are unlikely to kill or injure many desert tortoises or cause substantial loss or disturbance of habitat, including critical habitat.

Electrical Generation Facilities

The guidelines and elements of the California Desert Conservation Area Plan allow the establishment of nuclear, fossil fuel, wind, solar, and geothermal facilities on Class M and I lands and of wind, solar, and geothermal facilities on Class L lands. The construction of a power plant would entail the use of large amounts of equipment and vehicles; desert tortoises would be at risk of being killed or injured at the work site and along any rights-of-way. The number of desert tortoises that would be at risk would depend greatly on the nature of construction activities and the location of the site.

The California Desert Conservation Area Plan notes that a typical power plant occupies 2,500 to 3,000 acres (Bureau 1999). Solar power plants, such as the existing facilities at Kramer Junction and Harper Dry Lake, cover large areas; the direct ground disturbance associated with wind farms may be substantially less, but the extensive system of roads to connect turbines and other facilities would also result in a great degree of habitat loss and fragmentation over large areas. The degree to which a specific power plant would cause loss or disturbance of habitat and fragmentation of populations would depend greatly on its location in relation to terrain and suitable habitat of the desert tortoise. For example, power plants located in previously disturbed areas, near major roads, and at sites that are marginally appropriate for desert tortoises may not cause substantial loss of important habitat. Conversely, a power plant that is constructed in optimal habitat in a narrow point of a otherwise broad valley could decrease the viability of the overall population because of the habitat loss and fragmentation.

Because of the Bureau's program guidance, power plants cannot be built in wilderness areas; where Class C lands support desert tortoises, such as in the Chemehuevi and Shadow Mountain Desert Wildlife Management Areas, this program guidance is beneficial to the species. The effect of the development of power plants within most Class I lands would be minimal because the number of desert tortoises in these areas has declined because of past and existing management. A possible exception is the northern portion of the Johnson Valley Off-highway Vehicle Management Area. Currently, this area has not been heavily used for recreation and may support good densities of desert tortoises. Class L lands are theoretically at less risk than Class M lands because only geothermal, wind, and solar power plants can be built within these areas.

The maintenance of power plants can result in injury or mortality to desert tortoises if heavy equipment is used in or adjacent to habitat. Maintenance of pipelines, such as those that could be associated with geothermal plants, can result in further injury or mortality to desert tortoises and additional ground disturbance; however, these effects are likely to be less than those associated with the original placement of the pipeline. The extensive road network associated with wind farms (and to a lesser degree, geothermal plants) would expose desert tortoises to an ongoing threat of vehicle strikes and possible habitat fragmentation by berms, if they are constructed incorrectly.

Given its extensive range, the likelihood that an energy-generating facility would be proposed within habitat of the desert tortoise appears to be reasonably high. Major electrical transmission, gas, and oil lines cross extensive portions of the species' habitat. The recent energy crisis demonstrated that the cost of power can vary greatly and provide incentive to build facilities when prices are high.

To summarize the discussion of the potential effects of this program guidance on the desert tortoise, the Bureau is likely to receive proposals to develop energy-generating facilities within habitat, including critical habitat, of the desert tortoise. The effects on the desert tortoise of an energy-generating facility would vary greatly, depending on several factors; in certain circumstances, power plants could have long-term and ongoing detrimental effects on local populations of desert tortoises and their habitat.

Transmission Facilities

The restriction of transmission facilities to designated corridors is beneficial to the desert tortoise because it tends to concentrate the effects of certain classes of human activities to specific areas. Although these areas may be more highly disturbed than surrounding lands, corridors would not seem to contribute to long-term fragmentation of habitat, provided that access roads are maintained properly, because human presence is intermittent and most habitat disturbance is temporary.

The actual construction of transmission facilities can result in substantial loss of desert tortoises and disturbance of their habitat. The extent of the disturbance depends largely on the type of

facility. For example, the effects of the installation and maintenance of fiber optic cables are typically minor in scale and short in duration; large pipelines cause long-term disturbance of thousands of acres of habitat and have resulted in the loss of dozens of desert tortoises. Electrical transmission lines also provide numerous sites for common ravens to nest and roost; lines that cross areas where natural or artificial nest and roost sites are rare or absent can substantially alter the distribution of common ravens in a region (Knight *et al.* 1999, Lovich and Bainbridge 1999) .

An important factor to consider in an analysis of the effects of transmission lines is that the effects are linear and spread, at times, over hundreds of miles. Generally, a linear disturbance is likely less damaging to the species as a whole; the losses of habitat and individuals are not concentrated in one area and local recovery of populations and habitat may proceed more quickly because of the edge effect of undisturbed habitat. However, an adverse aspect of linear projects is that they may speed the spread of non-native plant species. The recent and rapid spread of the non-native Sahara mustard (*Brassica tournefortii*) may have been aided by vehicle travel along both roads and transmission line corridors and the ongoing maintenance along these routes that promotes constant disturbance of soils. However, some degree of fragmentation of habitat may occur if associated roads provide access to otherwise inaccessible blocks of habitat and if subsequent human use in these areas precludes normal behavior of desert tortoises.

The maintenance of existing facilities, including access roads, can kill or injure desert tortoises and cause ground disturbance. Maintenance of underground facilities, particularly large pipelines, generally causes the greatest impact.

In general, the construction and maintenance of transmission facilities have the potential to cause the deaths of numerous desert tortoises and disturbance of large amounts of habitat. However, the Bureau's guidance that these facilities should be restricted to defined corridors is beneficial in that impacts can be localized.

We also note that the number of desert tortoises killed during construction of the Kern and Mojave pipelines indicates the great potential the construction of pipelines has to degrade the status of a population. We also note that the combined efforts of the Service, Bureau, and Federal Energy Regulatory Commission did little to reduce the source of mortality, which was occurring largely through disregard of the project's protective stipulations.

Distribution Facilities

The Bureau's guidance allows for the development of new distribution facilities in Class L, M, and I lands. Existing facilities within all multiple-use classes can be maintained and upgraded or improved in accordance with existing right-of-way grants.

These activities could result in the loss of desert tortoises and disturbance and loss of their habitat. In general, the effects would be similar to those described for transmission lines; however, because distribution facilities tend to be smaller than those used for transmission, the

degree of the effects from any single project are likely to be less. Distribution facilities may be allowed outside of existing rights-of-way, when these are not reasonably available. Facilities outside of existing rights-of-way would likely be particularly detrimental; in such cases, the roads used to provide access to the facilities during construction and maintenance could fragment habitat and allow additional potential for unauthorized use of areas inhabited by the desert tortoise.

Communication Sites

The guidelines allow for the maintenance and use, in accordance with right-of-way grants and applicable regulations, of existing facilities within all multiple-use classes. Access roads to these sites traverse habitat of the desert tortoise. Although at least some communication facilities are located outside of suitable habitat for the desert tortoise, maintenance and use of roads to gain access to the sites could result in loss of animals. Travel along these roads could also spread non-native species.

The guidelines allow the development of new sites within Class L, M, and I lands. Generally, each site would likely cause the loss of a small amount of habitat; construction could possibly occur without the loss of desert tortoises. If a new access road is needed, the most long-term and deleterious effects of the site may be the increased human intrusion into an area as a result of the road. However, the continuing proliferation of communication sites raises the potential that the activities allowed by this guideline could result in substantial degradation and loss of desert tortoises and their habitat over time. The Bureau's program guidance does not, at this time, contain any specific direction with regard to the management of communication sites.

Fire Management

The Bureau's guidance states that measures to suppress fires will be taken in accordance with specific fire management plans subject to such conditions as the authorized officer deems necessary. Fire management plans provide a framework that describes the use of motorized vehicle, aircraft, and fire retardant chemicals that could be used to combat fires.

The use of motorized vehicles within habitat of the desert tortoise would likely result in the crushing of animals, disturbance of annual and perennial plants that were not directly affected by fire, and disturbance of soils that may later facilitate the colonization of invasive, non-native species. The potential effects of chemical fire retardants on the desert tortoise have not been studied.

In prehistoric desert plant communities, the limited biomass and large distances between shrubs were factors that reduced the frequency of fire (Humphrey 1974, O'Leary and Minnich 1981, Minnich 1983, Brown and Minnich 1986 in Lovich and Bainbridge 1999). Non-native annual species have altered plant communities through the California desert. These non-native species, which often persist in a more woody form than many natives, have increased the ability of desert

communities to carry wild fire. Consequently, at least some desert plant communities are now more capable of carrying fires than they were previously.

The desert tortoise is not ecologically adapted to fire; they are killed by fires if trapped above ground. Neither is habitat of the desert tortoise adapted to fire (Lovich and Bainbridge 1999); fires can eliminate the shrubs on which desert tortoises depend for shelter and alter the composition of plant communities by reducing the abundance of native annuals and perennials and increasing that of non-native annual grasses. These non-native grasslands do not contain the necessary diversity of plant species to support viable populations of desert tortoises. The Bureau's California Desert District averaged 175 fires per year in the 10 years prior to 1992 (Lovich and Bainbridge 1999). The area affected by these fires annually ranged from 1,500 to 85,000 acres, with an average of approximately 27,000 acres per year. Although at least portions of the areas that burned were not habitat of the desert tortoise, fires have affected some areas of suitable habitat. Within the Northern and Eastern Colorado planning area, approximately 920 acres of critical habitat have burned (Crowe and Foreman 1997).

Consequently, fire suppression likely results in some low level of deleterious effect to the desert tortoise and its habitat. However, the suppression of wildfires in habitat of the desert tortoise should benefit the desert tortoise because it can slow or prevent the conversion of desert scrub communities into grasslands.

Vegetation Harvesting

The Bureau can allow, by permit on all lands except for Class C, the removal of native plants for commercial and non-commercial purposes and harvesting by mechanical means. These activities could affect the desert tortoise and its habitat through loss of individuals and disturbance of the plant communities upon which it depends, particularly if the harvesting method involves the use of machinery; fragmentation of habitat, if the harvesting is extensive and results in some conversion of habitat; and introduction of non-native species. If harvesting equipment is used in numerous locations, the potential for spreading non-native species could be substantial. The prohibition of mechanical and commercial harvesting within Class C lands is beneficial to the desert tortoise where these lands overlap substantial numbers of animals and where the management goal is to recover the species.

The severity of these effects would vary directly in relation to the scale and method of harvesting. The collection of a few samples of plants by hand while walking cross-country would have far less impact than the mechanical harvest of a large area. The only proposals, of which we are aware, to harvest plants within habitat of these species have involved the limited removal of portions of Lane Mountain milk-vetch plants for research; these activities were reviewed by both the Service and Bureau under their respective authorities. At this time, the removal of vegetation does not appear to be a substantial threat to the desert tortoise.

On Class M and I lands, mechanical control of vegetation may be allowed after consideration of possible impacts. This activity could affect the desert tortoise in ways similar to those described with regard to the harvesting of plants by mechanical means.

After site-specific planning, the Bureau's program direction allows the eradication of noxious weeds on Class L lands by chemical means and spot application of pesticides on Class M and I lands. The use of herbicides to destroy weeds could result in mortality of some native plants that desert tortoises use for forage and cover; we do not have specific information regarding the direct effects of herbicides on desert tortoises. However, the control of weeds and other pests within habitat of the desert tortoise can provide important benefits; consequently, the overall program direction with regard to the use of pesticides on Class L, M, and I lands is positive. The Bureau's program guidance prohibits the use of pesticides in wilderness; this direction eliminates a potentially useful tool for restoration efforts.

The Bureau's program direction allows enclosures within Class L, M, and I lands. The potential exists that desert tortoises may be trampled during installation and maintenance of enclosures; some ground disturbance would also likely occur. Enclosures can be useful in protecting sensitive resources and can assist in conducting research that may provide information important for the recovery of the desert tortoise.

The Bureau's program direction allows prescribed burning within Class L, M, and I lands after development of a site-specific management plan. The desert tortoise and its habitat are not adapted to fire; fire is not a necessary ecological factor within the habitats in which it occurs. Consequently, fires could have severe detrimental effects on the species and the community structure of their habitats. At this time, the use of prescribed burning within desert tortoise habitat is not appropriate. Given that the Bureau is not likely to conduct prescribed burns within the habitat of the desert tortoise, this program direction poses a low degree of threat.

Land-tenure Adjustment

The sale or disposal of Class M lands that supports desert tortoises and their habitat would decrease the level of protection that these individuals and their habitat are afforded by the Endangered Species Act. Absent federal ownership, the requirement to consult, pursuant to section 7(a)(2) of the Act, covers a more narrow degree of activities; that is, a federal agency no longer has ultimate control over the land use.

We are aware, however, that desert tortoises continue to occur in low numbers on isolated parcels of Bureau land that are adjacent to development centers; we also recognize the difficulty in managing these parcels, their overall low biological value in terms of the long-term conservation of wildlife, and the high value these parcels can sometimes have during exchanges. In short, the Bureau can exchange these lands of low biological value near existing development for more remote lands of greater ecological consequence and, in so doing, consolidate the land ownership pattern. Additionally, because the exchanges are conducted for the fair market value, the Bureau

often receives a net increase in its land base. Consequently, we support the use of selected parcels of Class M lands to consolidate the public land base upon which the desert tortoise must be recovered.

Livestock Grazing

Livestock grazing affects desert tortoises and their habitat in numerous ways. Desert tortoises can be killed or injured during the construction, maintenance, and use of range improvements, including roads. Predators, such as common ravens, can be attracted to livestock waters, carcasses of livestock, and some range improvements; these habitat alterations could increase the number of predators, which could, in turn, exacerbate predation rates on desert tortoises.

Trampling by livestock can injure or kill desert tortoises, either above ground or while they are in their burrows. Avery and Neibergs (1997) found that more burrows of desert tortoises were partially or completely destroyed in areas that were grazed by cattle than in a fenced area. Within the enclosure, desert tortoises remained in their burrows all night significantly more than animals located outside the enclosure, which would be expected because more burrows were damaged outside of the enclosure. The increased time spent outside of their burrows likely exposes desert tortoises to greater risk of predation and to environmental extremes. Neonate and juvenile desert tortoises use rodent burrows for shelter; because rodent burrows are often shallowly excavated and run parallel to the surface of the ground, they are more vulnerable to trampling by livestock than burrows of sub-adult and adult desert tortoises. The propensity for rodents to place their burrows near and under shrubs may offer some degree of protection.

Livestock grazing decreases the amount of plant cover and biomass (Lovich and Bainbridge 1999). It can also change the species composition of plant communities over large areas (Lovich and Bainbridge 1999). Humphrey (1958, 1987 in Boarman 1999) noted that livestock was implicated in the conversion of grass-dominated communities to shrub lands; however, other factors such as fire suppression, rodents and other herbivores, and competition probably influenced the conversion. (Note that this review primarily evaluated native grasslands of Arizona, New Mexico, and Texas; the Mojave and Colorado Deserts in California likely did not support extensive grasslands in historic times.) Other authors note that grazing reduces the amount of herbaceous species and increases that of woody species (Roundy and Jordan 1988, Vaughan 1982, 1984 in Service 1994b) and that non-native species, such as Mediterranean grass and cheatgrass (*Bromus tectorum*), benefit from grazing (Berry and Nicholson 1984, Kie 1990 in Service 1994b).

Avery (1998) found that a grazed area had significantly larger creosote bushes (*Larrea tridentata*), more dormant or dead burrobushes *(Ambrosia dumosa*), fewer and smaller individuals of galleta grass (*Hilaria rigida*), more individuals of cheesebush (*Hymenoclea salsola*, an indicator of disturbance), and a lower diversity of winter annuals when compared to an ungrazed area. Conversely, the ungrazed area contained more individuals of the desert dandelion (*Malacothrix glabrata*), a forage plant preferred by desert tortoises. The ungrazed and

grazed areas did not differ in biomass, cover, density and species richness of annual plants. Boarman (1999) notes that, because the ungrazed area had been fenced to exclude cattle for only 12 years, the effects of previous grazing may still be present. Desert habitats that have been invaded by Mediterranean grass (*Schismus* spp.), bromegrass (*Bromus* spp.), and Sahara mustard are prone to wildfire; the effects of fire on desert tortoises and their habitat are discussed elsewhere in this biological opinion. Changes in species composition could be unfavorable to desert tortoises if palatable and nutritious plants are replaced by those that do not provide desert tortoises with adequate nutrition.

Livestock grazing can damage soil crusts (Lovich and Bainbridge 1999). Disturbance to soil crusts may increase erosion, which could result in further damage to plants in surrounding areas. The disturbance of soil crusts provides favorable conditions for the growth and proliferation of non-native species, such as Mediterranean grass and Sahara mustard. The loss of cryptogamic crusts, which are composed of nitrogen-fixing lichens and fungi, may reduce the ability of substrates to support native annual plants; the disturbance of crusts also likely reduces the amount of favorable germination sites for seeds of native annual plants and the moisture-holding capacity of the soils. In combination, these changes favor the replacement of native annual plants with shrubs and non-native annual species.

Non-native grasses have spread to the deserts and other arid areas of North America and reduced the relative abundance of native species (Mack 1981, D'Antonio and Vitousek 1992, Rundel and Gibson 1996 in Avery 1998); livestock grazing has, at least, contributed to their spread. Regardless of whether they are native or introduced, annual desert grasses contain less crude protein, calcium, sodium, and water than desert forbs (Oftedal *et al.* 1993, McArthur *et al.* 1994 in Avery 1998). Avery (1998) found that desert tortoises eating Mediterranean grass *ad libitum* exhibited a negative nitrogen balance. Generally, turtles consuming a diet low in protein (*i.e.*, where the nitrogen concentration in forage is low) experience reduced growth rates (Gibbons 1967, 1970, Parmenter 1980, Vogt and Guzman 1988, Avery *et al.* 1993 in Avery 1998) and lower egg production (White 1993; Henen 1993, 1997 in Avery 1998). Because desert tortoises are more vulnerable to predation when they are smaller, reducing their rate of growth may eventually result in fewer individuals reaching breeding age. Additionally, decreases in the number of eggs would reduce eventual recruitment into the adult population. If growth rates and egg production are lowered over wide areas for long periods of time, a decline in the population would be likely. Finally, Avery (1998) noted that Mediterranean grass had high concentrations of heavy metals; we are uncertain how these elements affect the desert tortoise.

As discussed in the Status of the Species section of this biological opinion, neonate desert tortoises consume germinating annual plants. These small plants would be trampled by livestock and, depending on the number and distribution of cattle, could be eliminated from the forage base in a local area.

Avery (1998) noted that desert tortoises spent more time foraging for desert dandelions in grazed than ungrazed areas because the number of desert dandelions in grazed areas had been reduced

by cattle. This situation occurred in the Ivanpah Valley during the late spring. Desert tortoises are more vulnerable to predators, weather conditions, and, at least to some degree, human-associated mortality when they leave their burrows. Consequently, if desert tortoises are required to spend more time foraging and away from their burrows because of livestock grazing, they would be at greater risk. When food is abundant, such as during the early spring of the year in which Avery conducted his study, direct competition for food does not seem to occur between desert tortoises and cattle.

The Bureau has proposed to remove livestock from habitat of the desert tortoise in the Ord Mountain, Cronese Lake, Harper Lake, Cady Mountain, Rattlesnake Canyon, Rudnick Common, and Walker Pass allotments from March 15 through June 15 and from September 7 through November 7. The Bureau has also proposed no cattle grazing year-round in habitat of the desert tortoise in the Hansen Common and Tunawee Common allotments. Removing livestock from these areas at these times should eliminate the potential for competition for forage between desert tortoises and cattle and reduce the amount of time during which cattle could potentially trample desert tortoises and their burrows. Oftedal (2001) found that native forage has less nutritional value for desert tortoises during drought years; for this reason, the Bureau's proposal would be particularly beneficial during years of overall poor forage and as the nutritive quality of forage plants drops later in the spring. However, disturbance to soils and cryptogamic crusts and other effects of grazing would continue during other portions of the year when cattle would be present. Additionally, cattle would be present during the late winter and early spring when neonate desert tortoises would be active and attempting to forage on germinating annuals. These allotments are located in the Western Mojave Recovery Unit. The Ord Mountain, Cronese Lake, and Harper Lake allotments are located at least partially within critical habitat and therefore support key populations of the desert tortoise; the other allotments are generally located at the edges of the range of the desert tortoise in this region, where habitat conditions are not optimal for the species. In both cases, the elimination of competition at key times may allow desert tortoises to persist in these areas.

The Bureau has proposed numerous measures to attempt to reduce the impact of livestock grazing on desert tortoises and their habitat in the Northern and Eastern Colorado and Northern and Eastern Mojave planning areas. Retirement of an allotment if the permittee relinquishes grazing leases and related authorizations within desert wildlife management areas would provide substantial conservation benefits to the desert tortoise. This proposal, while it is not associated with any specific action at this time, would result in the removal of livestock from areas that are important for the recovery of the desert tortoise.

The Bureau proposes to maintain the Pilot Knob and Whitewater allotments in rest until the West Mojave Coordinated Management Plan and Coachella Valley bioregional plan, respectively, are signed. These measures will benefit the desert tortoise by allowing recovery of habitat in these allotments and eliminating, at least temporarily, sources of direct mortality and injury associated with livestock grazing.

The Bureau would remove cattle from desert wildlife management areas within the Northern and Eastern Mojave and Northern and Eastern Colorado planning areas when the amount of annual plants drops below 230 pounds per acre from March 15 through June 15. The effects of this action would be similar to those discussed for the Western Mojave Recovery Unit.

Prohibiting the granting of ephemeral and temporary non-renewable authorizations within desert wildlife management areas should assist desert tortoises in making optimal use of forage in years when annual plants are abundant. Years of above-average rainfall and abundant forage may allow young desert tortoises to grow more rapidly and all individuals to improve their overall health status.

On the Lazy Daisy Allotment, which is within the Northern and Eastern Colorado planning area, the Bureau proposes to use lower utilization rates during the growing season and when range is in poor or fair condition; rates would be higher during the dormant season and when range is in good to excellent condition. The lowest utilization rates of 25 percent would be used in Mojave and Sonoran desert scrub and salt desert scrub communities. Desert tortoises are most likely to be abundant in these communities and active during the growing season. The proposed utilization rates should assist the Bureau in monitoring the condition of habitats to some degree; the generally low rates should ensure that overgrazing of perennial vegetation in allotment is minimized. However, as noted previously in this document, the effects of grazing accrue through the year; while these utilization rates will assist the Bureau in monitoring the level of grazing, impacts to desert tortoises and its habitats will likely continue under this regime.

The elimination of approximately 20,000 acres of the Lazy Daisy Allotment will benefit desert tortoises because all impacts of grazing would be removed from this area. We understand that this area, which supports the greatest density of desert tortoises on the allotment, does not currently sustain much use by cattle; however, its removal from the allotment would preclude the development of facilities, such as waters, that could shift cattle use into the area..

Within the Northern and Eastern Colorado planning area, all existing cattle guards will be modified to prevent desert tortoises from being trapped and new cattle guards will be designed to prevent entrapment. This measure is likely to reduce the mortality of desert tortoises, particularly smaller individuals that can fall through the bars of the cattle guards.

As noted previously in this biological opinion, foraging strategies of the desert tortoise are influenced by seasonal and annual weather conditions, the nutritive content of forage, and other factors. Variable weather patterns in the California desert ensure that food supplies will also be highly variable. Long-term interference with the desert tortoise's ability to obtain appropriate and sufficient nutrients, such as could occur with widespread grazing, would eventually cause declines in populations. Animals in a weakened state because of poor nutrition may be more susceptible to diseases, such as the upper respiratory tract disease, and environmental contaminants, such as heavy metals that accumulate in forage plants; the reproductive capacity of these animals would also likely be diminished.

We do not have information that conclusively links livestock grazing to the recent declines in the numbers of desert tortoises in California. Until recently, the eastern Mojave Desert supported the highest densities of desert tortoises and was also the region most heavily used by livestock. However, when populations of a long-lived animal, such as the desert tortoise, decline so precipitously, continued loss of individuals in any age group and further degradation of habitat are deleterious to the population's viability. The effects of grazing may function in combination with other factors in the environment to lower the fitness of desert tortoises.

Any analysis of whether an action is likely to jeopardize the continued existence of a listed species or adversely modify its critical habitat must consider the scale of the impact in relation to the critical habitat unit, recovery unit, or range of the species, as appropriate. Because the recovery plan (Service 1994c) suggests that delisting of the desert tortoise could occur by recovery unit, we have used recovery units as the basis for our evaluation.

Desert wildlife management areas have not been proposed to date within the Western Mojave Recovery Unit. Within this unit, the 518,000-acre Fremont-Kramer Critical Habitat Unit would not be grazed by cattle; domestic sheep may graze limited areas within this critical habitat unit where definable boundaries for grazing have been established along roads. Approximately 16,480 acres of the Harper Dry Lake Allotment overlap the 766,900-acre Superior-Cronese Critical Habitat Unit; this portion of the allotment will not be grazed from March 1 through June 15 and from September 7 through November 7 as a result of an interim measure proposed by the Bureau. The Ord-Rodman Critical Habitat Unit covers 253,200 acres and overlaps 102,141 acres of the Ord Mountain Allotment. Approximately 41,650 acres of this critical habitat unit will not be grazed from March 1 through June 15 and from September 7 through November 7 as the result of an interim measure; additionally, desert tortoise habitat to the east of the allotment will not be grazed as part of an agreement developed between the permittee and the Bureau. The Pinto Mountain Critical Habitat Unit, which covers 171,700 acres, will not be grazed. In total, approximately 58,130 acres of critical habitat would be grazed except in the spring and fall periods noted previously in this paragraph; the Western Mojave Recovery Unit contains 1,709,800 acres of critical habitat for the desert tortoise. Consequently, 3.4 percent of the critical habitat in the recovery unit could be grazed under the Bureau's interim management program. The Bureau has also implemented additional closures in the spring and fall to protect desert tortoises in habitats located at the edges of its range in the Western Mojave Recovery Unit. The current management precludes grazing on most critical habitat in the recovery unit and, as such, substantially reduces the level of impact of ongoing livestock grazing on the desert tortoise and its habitat.

In the plan for Northern and Eastern Colorado bioregion, the Bureau has proposed to reduce the size of the Lazy Daisy Allotment to 311,280 acres; of this area, 235,492 acres are within the Chemehuevi Desert Wildlife Management Area. The Chemehuevi Critical Habitat Unit and the proposed Chemehuevi Desert Wildlife Management Area include 937,400 and 874,843 acres, respectively. Consequently, approximately 27 percent of the desert wildlife management area would overlap with the allotment. The current proposal eliminates the Chemehuevi Allotment,

which had not been grazed in many years, and approximately 20,000 acres of the Lazy Daisy Allotment. The Bureau has also proposed to eliminate temporary non-renewable authorizations, limit grazing to specific rates of utilization, and remove cattle from the desert wildlife management area in the spring if the amount of annual plants falls below 230 pounds per acre; this proposal would allocate more forage to desert tortoises during the spring. In summary, the actions proposed for the Northern Colorado Recovery Unit would reduce the effects of cattle grazing on the desert tortoise.

Within the Northern and Eastern Colorado planning area, the Bureau would eliminate the Ford Dry Lake Allotment and reduce the area of the Rice Valley Allotment from 85,565 to 76,301 acres. The Bureau is eliminating the western portion of the Rice Valley Allotment, which supports low densities of desert tortoises; this action will benefit the desert tortoise to some degree. Grazing the remainder of the Rice Valley Allotment will not affect desert tortoises in a substantial manner because much of the habitat is stabilized and vegetated dune that is used by sheep lightly approximately once every 6 years (Foreman pers. com.).

Within the Eastern Colorado Recovery Unit, the Chuckwalla Critical Habitat Unit and the proposed Chuckwalla Desert Wildlife Management Area include 1,020,600 and 820,077 acres, respectively. This recovery unit does not contain any grazing allotments within critical habitat or the proposed desert wildlife management area.

All of the Bureau's proposed desert wildlife management areas within the Eastern Mojave Recovery Unit abut the Mojave National Preserve, which the National Park Service manages as a desert wildlife management area. The proposed Piute-Fenner Desert Wildlife Management Area would occupy 173,850 acres on the southeastern edge of the Mojave National Preserve; this area is part of the 453,800-acre Piute-Eldorado Critical Habitat Unit, which also extends into Nevada. The Piute Valley Allotment has an ephemeral preference; because the Bureau has proposed to eliminate ephemeral preferences within desert wildlife management areas, grazing will no longer be authorized. This allotment has not been grazed for years. The Ivanpah Valley Critical Habitat Unit covers 632,400 acres of lands administered by the Bureau and National Park Service. The proposed Ivanpah Valley and Shadow Valley Desert Wildlife Management Areas occupy 36,780 and 101,355 acres, respectively. The Valley Wells Allotment includes 223,007 acres and completely overlaps the proposed Shadow Valley Desert Wildlife Management Area. The Valley View, Kessler Springs, and Jean Lake allotments occupy 37,280 acres and overlap the Ivanpah Valley Desert Wildlife Management Area. The Bureau has proposed the same protective measures for these four allotments as it has for the Lazy Daisy Allotment; these measures would reduce the effects of cattle grazing on the desert tortoise on the approximately 10 percent of the critical habitat unit that is managed by the Bureau.

Given the restrictions placed on livestock grazing and the relatively small portion of critical habitat and proposed desert wildlife management areas that would be directly affected, livestock grazing is not likely to result in a substantial level of direct mortality or injury of desert tortoises or to degrade habitat in a manner that would preclude its use by desert tortoises. Because of the

measures that the Bureau has proposed to eliminate competition between desert tortoises and cattle for forage, cattle should not consume annual plants to the extent that sub-adult and adult desert tortoises starve; neonate and juvenile desert tortoises may be at greater risk, because they may not be as able as larger individuals to seek out food resources over distances. However, as we have stated previously in this biological opinion, the unexplained decline in the numbers of desert tortoises in many areas of the California desert could be related to numerous factors, including changes in the structure and composition of plant communities and the nutritive quality of forage species.

Mineral Exploration and Development

The Bureau's guidelines allow the exploration for and development of minerals on Class L, M, and I lands. If these activities are conducted under the casual use category, as described in the California Desert Conservation Area Plan and the Description of the Proposed Action section of this biological opinion, miners or prospectors are not required to send the Bureau a notice or plan of operation that describes the mining-related actions prior to their implementation. However, the mining regulations state that "(o)perators may use motorized vehicles for casual use activities provided the use is consistent with the regulations governing such use..., off-road vehicle use designations contained in (Bureau)-land-use plans, and the terms of temporary closures ordered by (the Bureau)" (43 CFR 3809.5(1)); the California Desert Conservation Area Plan is the land-use plan which established that vehicles were confined to existing roads within Class L and M lands. Consequently, under the casual use provisions as defined for the California Desert Conservation Area, operators may not use vehicles off of established roads.

Desert tortoises could be crushed by the foot traffic of operators or equipment during exploration. Ground disturbance may also occur as a result of exploration and subsequently lead to an invasion of non-native plants. The guidelines require that disturbances created during casual use be restored. Restoration attempts often fail in the harsh climate of the desert. However, because the disturbance allowed under casual use is minimal, the required restoration may be attainable. A possible exception would be invasion by non-native plants, in part because this effect would likely not be seen for months after the casual use and restoration occurred.

Without off-road vehicle use, the amount and size of other equipment that may be employed during casual use is likely to be limited. For this reason, the amount of disturbance to the desert tortoise and its habitat that may occur as a result of casual use under the mining guidance of the California Desert Conservation Area Plan is likely to be limited.

Certain areas on the western portion of Coolgardie Mesa, within habitat of the desert tortoise, are popular with mining clubs. The claims in this area are held by groups that allow members to mine within the claim. This activity has resulted in the development of extensive surface disturbance. Although desert tortoises are not known to have been killed or injured by this activity, the excavations left by the clubs would indicate that the level of activity is substantial and hazardous to the desert tortoise.

A plan of operation, approved by the Bureau, is required before the initiation of exploration or mining activities that would have impacts greater than would be expected under the casual use or notice required categories. A plan of operation is also required for any bulk sampling in which the operator will remove 1,000 tons or more of presumed ore for testing. Activities associated with plans of operation could result in the loss of desert tortoises, loss of its habitat, ground disturbance, and the introduction or spread of non-native plant species. The Bureau will require restoration of lands disturbed during the mining activities conducted under plans of operations. However, restoration efforts may not be successful in re-establishing the same quality and type of habitat that existed prior to the mining activity. Large areas are more difficult to restore; however, large mining companies have devoted extensive funding and resources to at least some restoration efforts (*e.g.*, Viceroy Mine in the eastern Mojave Desert near Lanfair Valley).

The mining laws allow individuals and corporations to apply for patents on public lands that have valid existing rights. Once these lands are removed from federal ownership, desert tortoises located on the patented lands would receive less protection under the authorities of the Act, as discussed previously in this biological opinion. However, on October 1, 1994, Congress placed a moratorium on the acceptance of new mineral patent applications. The moratorium remains in effect with the passage of the Interior Appropriations Act HR 2217 (section 309), signed by the President on November 5, 2001. For this reason, patenting of public lands is not likely to adversely affect the desert tortoise at this time. However, should Congress not renew the moratorium at some point in the future, the potential exists that the desert tortoise could be adversely affected. Additional consultation, pursuant to section 7(a)(2) of the Act, may not be required because the patenting of land is not a discretionary action on the part of the Bureau.

Preliminary work indicates that desert tortoises near hard rock mines may contain elevated levels of metals. We do not understand the full implications of this research to date or the pathway by which the metals entered the desert tortoise. The metals could have been ingested by desert tortoises as dust that was carried by wind from the mine site. Alternatively, the soils and plants in a heavily mineralized area may contain more metals. If the metals are emanating from mines and are found to affect desert tortoises negatively, the impacts of specific mines would need to be revisited.

Extraction of geothermal, oil, and gas reserves may take place within Class L, M, and I lands. Several areas within the California Desert Conservation Area Plan have been designated as potential or known geothermal resource areas (map 15 in Bureau 1999). In the event that suitable geothermal resources were present within habitat of the desert tortoise, the development of infrastructure for geothermal facilities could result in substantial ground disturbance, occupation, and loss of habitat. To date, geothermal development in the California Desert Conservation Area Plan has been limited to the East Mesa area of Imperial County and the Coso region at the Naval Air Weapons Station, China Lake; desert tortoises do not occur in the former area and the latter area is managed by the U.S. Navy. Consequently, the likelihood of geothermal development in areas occupied by the desert tortoise seems to be low.

The Bureau may refuse to approve a plan of operations until the plan encompasses the Bureau's mitigation and compensation requirements. The mitigation required by the Bureau could reduce the level of the adverse effects of a mining operation; compensation could potentially offset a portion of the residual impacts.

The mining laws and regulations require avoidance of unnecessary and undue degradation and reclamation of disturbed areas. If the Service found that a proposed plan of operations was likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat, the Bureau, with the authorities at 43 CFR 3809.411(d)(3)(iii), "may disapprove of or withhold a plan of operations if the proposed operations 'would result in unnecessary or undue degradation of public lands'" (Bureau 2002a). Unnecessary or undue degradation is defined as "conditions, activities, or practices that, among other things, 'fail to comply with ... other Federal or State laws related to environmental protection..." (Bureau 2002a). The Bureau also noted that a biological opinion from the Service concluding that a plan of operations would likely jeopardize the continued existence of a species "would certainly indicate a failure to comply with the standards of the Endangered Species Act, and would, therefore, constitute unnecessary and undue degradation (Bureau 2002a)"

Under the current baseline conditions for the desert tortoise and its critical habitat, consultation on a small mine, pursuant to section 7(a)(2) of the Act, may not result in a determination of jeopardy or adverse modification. Therefore, although the Bureau would require the operator to reduce effects and compensate, the likely outcome of such a mining operation would be loss of a small number of desert tortoises and the long-term or permanent removal of habitat. If an operator proposed a mine that would have effects rising to the level of jeopardy or adverse modification of critical habitat, the Bureau has the regulatory authority to disapprove the proposal.

In summary, the California Desert Conservation Area Plan, the Northern and Eastern Colorado Plan and the Northern and Eastern Mojave Plan do not contain specific program guidance that would preclude mining in areas occupied by the desert tortoise. However, the Bureau's unnecessary and undue degradation standard provides some assurance that mining activity is unlikely to substantially degrade the baseline for the desert tortoise. Additionally, the Bureau has proposed, through the Northern and Eastern Colorado and Northern and Eastern Mojave plans, to limit new surface disturbance to one percent of its lands within each desert wildlife management area. This proposal, in conjunction with the Bureau's unnecessary and undue degradation standard and the low likelihood that large scale mines would be developed in numerous locations throughout the desert, should ensure that the program direction for mining activities does not substantially degrade the ability of the desert tortoise to survive and recover in the California desert or of its critical habitat to support these processes.

Motorized-vehicle Access and Transportation

Under the Bureau's existing guidance, vehicles would be allowed within Class C areas on a very infrequent basis. Where desert tortoises occur in Class C areas, such as in the proposed Shadow

Valley and Chemehuevi Desert Wildlife Management Areas, this program guidance will reduce the number of animals that are killed and injured by vehicles.

Under the Bureau's existing guidance, new roads and ways may be developed within Class L, M, and I lands. The development of new roads and ways could result in the loss of desert tortoises and fragmentation and loss of its habitat. All new roads increase the likelihood of invasion by non-native plant species and increase the level of access by people into habitat of the desert tortoise.

The Bureau's guidance allows the use of motorized vehicles on existing routes of travel until designation of routes is accomplished. The effects of vehicles using the existing routes of travel on the desert tortoise has already been discussed in this biological opinion. Vehicle use is likely to result in at least some mortalities of and injuries to desert tortoises; the extent of the loss is related to the condition of the road, the time of the year, the abundance of desert tortoises, and the awareness of the driver. Even the most careful drivers may occasionally strike a desert tortoise.

The extent of mortality of desert tortoises will increase as the density of roads increases. At some point, vehicle use on roads (and other activities that accompany vehicle use) would likely reduce the number of desert tortoises to a point where the level of mortality also decreases, simply because fewer desert tortoises live in the region.

The Bureau has proposed to reduce the number of existing open routes throughout the California Desert Conservation Area; route networks are proposed in the plans for the Northern and Eastern Colorado and Northern and Eastern Mojave bioregions and interim measures are in effect in the planning area of the West Mojave Coordinated Management Plan. In the Northern and Eastern Colorado plan, the Bureau proposes to close navigable washes as a class within the two desert wildlife management areas; however, the mileage of the washes to be closed is not available. Under the preferred alternative for the Northern and Eastern Colorado plan, 788 and 960 miles of routes would remain available for travel within the Chemehuevi and Chuckwalla Desert Wildlife Management Areas, respectively. In the Northern and Eastern Mojave plan, the Bureau proposes to designate 7,490 miles of open routes and 549 miles of limited routes within desert wildlife management areas; 521 miles of routes would be designated as closed. The process of route designation in this planning area is not complete. Future route designations in the planning area would follow the same process that has been used to date.

As the Bureau notes in Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans, the goal of the route networks is to allow access to most regions within the planning area to an extent that does not jeopardize the conservation and recovery of threatened and endangered species. Because desert tortoises can be killed or injured by vehicles and access routes introduce other direct and indirect effects on the species and its habitat, an access network that provides for large expanses of undisturbed habitat for the desert tortoise would seem to provide the best chance for recovery. The proposed reductions in the amount of open routes are

likely to provide some level of benefit to the desert tortoise. However, neither the Bureau or the Service have definitive information on how differing route networks affect the desert tortoise; obviously, roadless areas would have the least adverse effect on desert tortoises and their habitat. The extent that the changes in the access network affect the desert tortoise will be difficult to measure because of the slow reproductive rate of the species and other factors, such as disease, drought, and predation, that may be affecting the number of individuals in a region.

The Bureau's guidance allows cars and trucks to drive and park up to 300 feet from a route of travel in most of the California Desert Conservation Area; within desert wildlife management areas in the Northern and Eastern Colorado and Northern and Eastern Mojave planning areas, this distance will be reduced to 100 feet from the centerline of a route. Such off-road travel can crush desert tortoises, degrade habitat (particularly when vehicles need to be extracted from deep sand, damp areas, or rocky terrain), and cause the spread of non-native plant species. Neither we nor the Bureau can provide any quantitative information on how frequently desert users leave routes of travel for these distances to camp, stop, and park outside of existing disturbed areas. In at least some areas that are occupied by the desert tortoise, the density of vegetation would likely prevent most desert users from leaving the routes of travel.

The presence of routes of travel through or near the habitats of listed species presents an ongoing level of threat to these species from illegal vehicle use. Although the section 7 process is not intended to review illegal activities, unauthorized off-road use occurs at least partially as a result of authorized activities. We are aware of areas where unauthorized off-road vehicle use seems to be a common occurrence, as recreationists use legal routes to gain access and previously disturbed sites to stage and camp; these areas then serve as the center of a network of unauthorized routes.

Within Class L, M, and I lands, railroads and trams may be allowed. Under certain conditions, temporary landing strips may be allowed in Class L lands and airports and landing strips may be allowed within Class M and I lands. Railroads, temporary landing strips, and airports, if developed, could result in loss and fragmentation of habitat, loss of desert tortoises, and the spread of non-native species.

Recreation

The nature and intensity of recreational use allowed by the Bureau's program guidance increases from Class C through Class I lands. As an example, motorized vehicles are essentially prohibited in Class C areas but can travel anywhere within Class I areas that are designated as open.

The degree of threat posed to desert tortoises by recreation increases with the speed, weight, and numbers of recreational units. For example, a small group of hikers poses much less threat to the desert tortoise and its habitat than a race involving numerous all-terrain vehicles. However, the Bureau's program guidance generally allows the latter use only in Class I areas; the habitat values of these areas have been degraded by previous activity and impacts to the desert tortoise are now likely to be minimal.

In the Northern and Eastern Colorado planning area, the Bureau has proposed to maintain a corridor for competitive events along the Johnson Valley to Parker route. The western portion of the route does not cross or border any desert wildlife management areas and thus avoids areas with substantial numbers of desert tortoises. Along the eastern portion of the route, where it crosses Highway 95, the corridor is located along the southern border of the Chemehuevi Desert Wildlife Management Area. Riders may travel up to 100 feet from the center line of the established road on the side away from the desert wildlife management area; this off-road travel is likely to kill or injure desert tortoises and disturb habitat; it could also accelerate the spread of invasive species. Some potential also exists that recreationists would cause degradation of habitat in the area surrounding the end of the race, which also borders the desert wildlife management area. The proximity of an off-road event to the desert wildlife management area poses, at a minimum, an indirect threat to the stability of the area. Desert tortoises travel beyond the boundaries of reserve areas; invasive plants may have more ready access to reserves if habitat adjacent to these areas is disturbed. Given the precariousness of the desert tortoise in large areas of the California desert and the likelihood that declines will continue to spread at least for some time, the loss of even a few individuals could impede recovery of the species.

Unauthorized activities, particularly off-road vehicle use, have degraded desert tortoise habitat. The access provided by the Bureau for legitimate uses, such as recreation, facilitates some degree of unauthorized use. In addition to unauthorized roads and trails, areas that are frequently used for loading and unloading vehicles can be severely degraded.

Recreational use of the desert may benefit the desert tortoise in an indirect manner. Many people view the California desert as a unique place to enjoy nature and solitude; the enjoyment of this special place may promote actions on their part to assist in volunteer projects to restore habitats, clean up trash, report problems to the Bureau, and educate other users. The Bureau's own educational programs also strive for these goals.

Wildlife Species and Habitats

The basic guidance provided for wildlife management is likely to benefit the desert tortoise and its habitat; the Bureau's wildlife program is intended to enhance the quality of habitat and control pests and predators as needed. As specific projects are implemented, the potential exists that desert tortoises could be killed or injured by vehicular, foot traffic, or heavy equipment, as discussed for other types of actions in this biological opinion. We have already discussed the potential effects that chemical or mechanical manipulation may have on the desert tortoise. Desert tortoises can be killed in guzzlers if the ramps to the water are not properly constructed.

Baseline monitoring could adversely affect the desert tortoise if animals are crushed by workers traversing occupied habitat; minor ground disturbance and the spread of non-native plant species may also occur during monitoring. However, in general, the level of activity associated with monitoring would likely result in minor impacts; additionally, the information gained during such monitoring could be useful in management of the desert tortoise.

The control of predators and re-introduction or introduction of established exotic species is allowed on Class L, M, and I lands. Such manipulations of wildlife populations could have indirect effects on the desert tortoise and its habitat. For example, the control of predators could potentially cause an increase in the number of rapidly reproducing herbivorous species, which could then compete with desert tortoises for food.

The likelihood that the Bureau would approve the introduction of established exotic species into areas that are important for the recovery of the desert tortoise appears to be low. Additionally, we are unaware of any extensive control of predators on public lands in the California Desert Conservation Area Plan. Consequently, the Bureau's program guidance for wildlife may have a net beneficial effect on the desert tortoise.

Wilderness

Although many wilderness areas have been designated in steep, mountainous terrain that does not provide habitat for substantial numbers of desert tortoises, several wilderness areas contain important habitat for this species. As the Bureau (2002b) noted, 38 and 30 percent of the Chemehuevi and Shadow Valley Desert Wildlife Management Areas, respectively, have been designated as wilderness. The Bureau's guidance with regard to wilderness should ensure the level of activities that may occur in these areas will remain at a low intensity and result in minimal adverse effects to the desert tortoise and its habitat. In regions where they overlap, the management guidelines for wilderness will benefit the desert tortoise to a substantial degree, both by the limited amount of habitat-disturbing activities that would be likely to occur and by contributing to the integrity of the desert wildlife management areas.

Wild Horses and Burros

The Bureau's program guidance for wild horses and burros calls for the maintenance of healthy, stable herds that are subject to controls to protect sensitive resources. Generally, the effects of wild horses and burros on the desert tortoise are similar to those of cattle. Desert tortoises and their burrows can be crushed; vegetation needed for forage and shelter can be consumed and otherwise damaged. To the best of our knowledge, horses do not occur within areas that are considered important to the long-term survival of the desert tortoise.

Desert tortoises can also be killed or injured and their habitat disturbed when burros are removed from public lands. The extent of the impact would vary, depending on the method of removal that is used. For example, water trapping of burros would likely not affect desert tortoises to a great degree because the capture is passive. The capture of burros through horseback wrangling, helicopter-assisted roping and trapping, and net gunning could result in trampling of desert tortoises and some degradation of habitat because the burros would be attempting to escape and would likely not be as aware of desert tortoises or their burrows. We cannot predict how many desert tortoises would be killed or injured by horseback wrangling, helicopter-assisted roping and trapping, and net gunning because these activities occur when and where the burros are found.

Pre-round-up inventories of desert tortoises are not possible because they would delay the round-up and likely cause the burros to move into different areas.

The Bureau has proposed several measures to manage burros that are likely to benefit the desert tortoise. As an interim measure, the Bureau will place a high priority on the removal of burros from habitat of threatened or endangered species. In the Northern and Eastern Mojave plan, the Bureau has proposed to eliminate burros from the Clark Mountain Herd Management Area, which includes the proposed Shadow Valley Desert Wildlife Management Area. In the Northern and Eastern Colorado plan, the Bureau would eliminate the Piute Herd Area, reduce the size of the Chemehuevi Herd Management Area to avoid overlap with critical habitat of the desert tortoise, and restrict the Chocolate/Mule Mountains Herd Area and Herd Management Area to southeast of Highway 78 to avoid overlap with the Chuckwalla Desert Wildlife Management Area. The latter herd area would continue to overlap critical habitat of the desert tortoise southeast of Highway 78.

The removal of burros from the Shadow Valley, Chemehuevi, and most of the Chuckwalla recovery areas should substantially improve the ability of these areas to support the survival and recovery of the desert tortoise. Desert tortoises within the remaining proposed herd management areas would continue to be affected by burros. With the exception of the Chocolate/Mule Mountains Herd Area and Herd Management Area, which would overlap the portion of the Chuckwalla Critical Habitat Unit southeast of Highway 78, all herd management areas lie outside of critical habitat for the desert tortoise. The Bureau's proposal to monitor the current management levels of burros and to adjust them as necessary should ensure that the number of burros does not increase to the point that habitat within the herd management areas is degraded.

Natural and Artificial Waters and Exclosures

The Bureau constructs and maintains artificial waters and exclosures to enhance wildlife populations, particularly those of game species. The construction and maintenance of these features could cause disturbance or loss of a minimal amount of habitat and pose some risk of mortality or injury to desert tortoises. Desert tortoises have, in the past, drowned or been trapped in certain types of watering devices, when the slope of the device to the water's surface was steep and slippery with algae; since this situation was detected, new waters have been built in a manner that should prevent such mortalities.

The potential exists that an enhanced water supply for wildlife could increase the density of predators and other herbivores to the extent that the predation rate on desert tortoises and use of their food resources increase. However, we have not observed that such increases in the numbers of other native species have affected the desert tortoise. Conversely, during periods of drought, some predators may target desert tortoises as the abundance of other prey species decreases; the presence of maintained waters during droughts may alleviate the effects of drought, at least on a local basis. Maintained waters may also assist the dispersal of common ravens. Maintained waters, if designed correctly, could provide a locally important source of water for desert tortoises.

Miscellaneous Activities

The Bureau will occasionally undertake, authorize, or fund activities that were not specifically addressed by a particular element or land use activity in the California Desert Conservation Area Plan; the Bureau can also amend the California Desert Conservation Area Plan to allow for an activity that had not been previously considered. For example, a new utility corridor could be proposed as part of a specific future project. We recognize the development of program-level guidance relevant to every potential activity that could occur in the California Desert Conservation Area is not feasible. However, actions approved without guidance that addresses the specific needs of the desert tortoise and its habitat could cumulatively lead to irreversible degradation of the species' condition.

Summary

The amended California Desert Conservation Area Plan provides general guidance to the Bureau for its management of activities within the California Desert Conservation Area. Some guidelines for the multiple-use classes and elements clearly promote the conservation of the desert tortoise and its habitat; for example, prohibiting development of nuclear and fossil fuel plants within Class C and L lands provides a level of protection. Other guidelines for the multiple-use classes and elements allow activities to occur that could have substantial adverse effects on desert tortoises; as an example, the guidelines allow the development of wind and solar plants within Class L lands. However, except for casual uses (*e.g.*, casual mining exploration, vehicle use on existing roads, hiking, vehicle camping along existing roads), activities and projects will receive site-specific environmental review and consultation with the Service, pursuant to section 7(a)(2) of the Act. Therefore, all activities and projects, except casual uses, may be denied, modified, or mitigated to reduce adverse effects to listed species.

This biological opinion also addresses the actions proposed in the bioregional plans for the Northern and Eastern Mojave and Northern and Eastern Colorado deserts. These plans were developed with the intention of implementing various aspects of the recovery plan for the desert tortoise. The following discussion summarizes important components of the bioregional plans and their effects on the desert tortoise and its critical habitat.

The Bureau's proposal to designate all lands within desert wildlife management areas as Class L should provide increased protection to the desert tortoise and its habitat over that currently provided by Class M guidance; however, the Bureau can authorize actions within Class L areas that could degrade habitat and kill desert tortoises. The proposal to limit the cumulative amount of ground disturbance to one percent should ensure that the vast majority of public lands within the desert wildlife management area is managed for the conservation of the desert tortoise.

The designation of routes in desert wildlife management areas, with an overall reduction in the amount of the road network, should benefit the desert tortoise. As we mentioned previously, determining the extent that the change in routes affects the desert tortoise may be difficult to

measure. The closure of all navigable washes within desert wildlife management areas in the Northern and Eastern Mojave planning area is likely to provide a substantial benefit because a source of potential mortality will be eliminated. The Bureau also proposes to close some of the washes in the Northern and Eastern Colorado planning area; however, some washes will remain open, posing at least some level of threat to the desert tortoise.

In the Northern and Eastern Mojave planning area, the desert tortoise will benefit from the Bureau's proposal to not authorize temporary non-renewable grazing use, to allow the voluntary relinquishment of grazing leases and related authorizations, and to terminate ephemeral allotments and ephemeral authorizations for ephemeral/perennial allotments. In the Northern and Eastern Colorado planning area, the Lazy Daisy Allotment will be reduced by approximately 20,000 acres; this portion of the allotment does not contain any water for cattle and is subsequently grazed infrequently. The remainder of the allotment can be voluntarily relinquished if the lessee so desires. All of these actions will result in decreased impacts to the desert tortoise from trampling by cattle and competition for forage. The decrease in habitat disturbance associated with cattle may slow the spread of non-native plant species and possibly allow for increased vigor and abundance of native species that are an important food source for the desert tortoise. The removal of burros from substantial areas of critical habitat will benefit the desert tortoise and its habitat in much the same manner.

The acquisition of private lands within desert wildlife management areas will remove at least some threats that desert tortoises may face on non-federal lands; this acquisition will also facilitate the Bureau's management. Programs to educate visitors about the desert tortoise and how they can assist in conserving the species will also promote recovery of the species.

Any consideration of the effects of an action on a species must consider the scale of those effects; that is, how much of the species' range would be compromised or enhanced by the proposed action. The range of the desert tortoise is vast; the recovery units themselves cover extensive areas. However, the scale of the California Desert Conservation Area Plan is also vast. Its goal is to provide for the use of public lands and resources in a manner that enhances, where possible, and does not diminish, on balance, the environmental, cultural, and aesthetic values of the desert and its productivity (Bureau 1999).

The immensity of the range of the desert tortoise assists in achieving this balance; although the Bureau has authorized many projects under the guidance of the California Desert Conservation Area Plan, large expanses of undisturbed habitat remain. As we noted in the Status of the Species section of this biological opinion, however, the number of desert tortoises has declined over large portions of the range. We cannot, at this time, determine the exact cause of this decline although upper respiratory tract disease is likely a factor; drought and human-induced perturbations are likely additional factors that contribute to the species' decline.

The California Desert Conservation Area Plan, as amended, and modified by interim measures and the proposed Northern and Eastern Mojave and Northern and Eastern Colorado plans

provides guidance, including the requirement to consider the needs of listed species, sufficient to ensure the survival and recovery of the desert tortoise in the Eastern Colorado, Northern Colorado, and Eastern Mojave Recovery Units. owever, recent declines in this region prompt concern, because the number of desert tortoises had remained relatively high and stable during the 1980s and 1990s when the number of desert tortoises in the western Mojave Desert was decreasing.

The interim measures proposed for the West Mojave Recovery Unit are protective of the desert tortoise. However, a long-term management program for this region of the California desert awaits the adoption and implementation of the West Mojave Coordinated Management Plan; the continued delay in implementing a comprehensive management program in this region will certainly delay, at best, the recovery of the desert tortoise. The ongoing decline of desert tortoises in this region exacerbates the difficulty in achieving recovery of the species.

In summary, the actions in the Northern and Eastern Colorado and Northern and Eastern Mojave bioregional plans were proposed with consideration of the Bureau's mandates to manage public lands and after careful evaluation of the current situation in these areas and input from the public and numerous agencies. These issues are also being discussed during the development of the West Mojave Coordinated Management Plan. However, the cause of the recent declines in the number of desert tortoises across California has not been identified. Consequently, the mechanisms needed to reverse these declines are also unknown. The potential exists that reversal of the decline of the desert tortoise may require substantial additional management.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We are unaware of any non-federal actions that are reasonably certain to affect the desert tortoise within the action area.

CONCLUSION

After reviewing its current status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that continued implementation of California Desert Conservation Area Plan, as modified by previous amendments, previous consultations on grazing, the proposed Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans, and the interim measures, is not likely to jeopardize the continued existence of the desert tortoise or to destroy or adversely modify its critical habitat.

We have reached these conclusions because the Bureau has proposed and, in some cases, implemented, measures to avoid or minimize adverse effects and to further the conservation of the desert tortoise. These measures include, but are not limited to, the creation of desert wildlife management areas, reduction in the amount of livestock grazing, removal of burros, and acquisition of private lands. Finally, every future discretionary action that the Bureau would undertake, authorize, or fund that may affect the desert tortoise is subject to the requirements of section 7(a)(2) of the Act. Program guidance in the California Desert Conservation Area Plan clearly states that the Bureau would comply with the Act; this compliance includes following the guidance provided by all biological opinions provided by the Service.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the Bureau or made binding conditions of any authorization provided to permittees. The Bureau has a continuing duty to regulate the activities covered by this incidental take statement. If the Bureau fails to assume and implement the terms and conditions of the incidental take statement or to make them enforceable terms of permit or grant documents, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Bureau must report the progress of its action and their impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The California Desert Conservation Area Plan and the Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans describe numerous programs under which the Bureau will need to make specific decisions with regard to future actions. Although we have evaluated the general nature of the effects of these actions, both negative and positive, on listed species, we cannot assess the potential effects of specific actions because information on the location, timing, nature, and other aspects of the actions are not known at this time. Consequently, we cannot provide an exemption from the prohibitions against take, as described in section 9 of the Act, for the incidental take that may result from these actions.

Given this limitation, this biological opinion provides an exemption from the prohibitions against take for the incidental take of desert tortoises that may result from management of burros, direct mortality or injury by livestock (but not including new range developments or harm, as defined in the first paragraph of this section), entrapment in managed waters and guzzlers, and casual use associated with recreation and mining authorized or implemented by the Bureau within the California Desert Conservation Area. Many of the actions that will not require further consultation are likely to occur in disturbed areas (*e.g.*, at least some camping off roads) or will not, by their nature, cause removal of habitat (*e.g.*, removal of burros, hiking). We anticipate that grazing, management of burros, entrapment in managed waters and guzzlers, and casual use associated with recreation and mining are likely to result in relatively few mortalities of or injuries to desert tortoises. We cannot anticipate the precise numbers of desert tortoises that may be killed or injured because of the large size of the action area, the patchy distribution of desert tortoises within the California Desert Conservation Area, and the unpredictability of when these activities will cause injury of or mortality to desert tortoises.

To ensure that the measures proposed by the Bureau are effective and are being properly implemented, the Bureau shall contact the Service immediately if a desert tortoise is killed or injured. At that time, the Service and the Bureau shall review the circumstances surrounding the incident to determine whether additional protective measures are required. Grazing, the removal of burros, the use of managed waters and guzzlers, and casual use associated with recreation and mining may continue pending the outcome of the review, provided that the Bureau's proposed protective measures and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented.

If more than five desert tortoises are found dead or injured in any 12-month period as a result of any specific activity or circumstance, the Bureau shall contact the Service to determine whether formal consultation should be re-initiated on that aspect of the California Desert Conservation Area Plan. This threshold is intended to determine whether certain activities or circumstances (*e.g.*, desert tortoises being trapped in cattle guards or killed along one portion of a road) may be affecting desert tortoises more substantially than we anticipated. The threshold would not be used in situations that we would reasonably expect to occur and that have been considered by the Bureau and Service during this consultation (*e.g.*, desert tortoises being consumed by common ravens).

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the desert tortoise during activities related to grazing, management of burros, and casual use associated with recreation and mining:

1. The Bureau shall issue annual authorizations for livestock grazing only if the permittee is in full compliance with the terms and conditions of the previous biological opinions on grazing, as modified by the Bureau's proposed action.

2. The Bureau shall ensure that only qualified personnel are allowed to handle desert tortoises, conduct clearance surveys, and monitor for compliance with the protective measures proposed by the Bureau and the terms and conditions of this biological opinion.

3. The Bureau shall avoid and minimize take of desert tortoises during removal of burros.

4. The Bureau shall provide information on the desert tortoise to anyone requesting information on casual use associated with recreation and mining.

5. The Bureau shall determine the level of desert tortoise mortality associated with wildlife guzzlers and other managed waters and take measures to minimize this mortality.

The Service's evaluation of the effects of the proposed action includes consideration of the measures developed by the Bureau and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects on the desert tortoise of grazing, management of burros, and casual use associated with recreation and mining. We also considered the management of grazing that occurs under the Service's previous biological opinions, as modified by Bureau proposals described in this biological opinion. Any subsequent changes in the minimization measures proposed by the Bureau or in the conditions under which cattle grazing currently occurs may constitute a modification of the proposed action and may warrant re-initiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by the Bureau as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau must comply with or ensure that any permittee complies with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

In the following terms and conditions, an authorized biologist is a biologist who can demonstrate to the Service that he or she has substantial field experience and training to handle and relocate desert tortoises, reconstruct burrows, and relocate eggs; an authorized biologist can also demonstrate that he or she possesses the skills described for an approved biologist. An approved biologist is an individual who can demonstrate, through training and field experience, that he or she can detect the presence of desert tortoises through observations of animals, sign, scat, and burrows. An approved biologist shall also have the ability and skill to monitor projects for compliance as described in the Bureau's protective measures and the terms and conditions of this biological opinion.

1. The following terms and conditions implement reasonable and prudent measure 1:

    a. The Bureau shall prepare an annual report to be delivered to the Service by April 15 that addresses the previous grazing year ending February 28. The report shall provide, for each allotment in desert tortoise habitat, a brief summary of: the level of utilization of perennial plants; the actual amount of grazing use (*i.e.*, animal units months); trend data on plant communities in grazed areas; management actions and grazing decisions taken to adjust grazing use; management actions taken to address conflicts with the desert tortoise; the results of construction and replacement of range facilities; and the circumstances regarding any desert tortoises known to have been injured and killed due to livestock grazing. In addition, any public land health determinations made for grazing allotments shall be attached to the annual report.

    b. In the cattle allotments in the West Mojave Recovery Unit, if the measures contained in the previously issued biological opinion (1-8-94-F-17, attached), as modified by the proposed action described in this biological opinion, have not been fully implemented, the Bureau shall bring the allotment into legal compliance within one month. Alternatively, the Bureau shall suspend the permit and remove grazing from the affected area until the allotment is in compliance.

    c. If an allotment fails to meet the public land health standards based on current livestock use in habitat of the desert tortoise, the Bureau shall remove grazing from the affected areas until the public land health standards are met. This grazing decision shall be reviewed by the Service through, at a minimum, informal consultation.

2. The following terms and conditions implement reasonable and prudent measure 2:

    a. Only biologists authorized by the Service under the auspices of this biological opinion shall handle desert tortoises.

    b. All handling of desert tortoises and their eggs, relocation of desert tortoises, and excavation of burrows shall be conducted by an authorized biologist in accordance with recommended protocol (Desert Tortoise Council 1999).

    c. Only biologists approved or authorized by the Service under the auspices of this biological opinion shall conduct pre-project clearance surveys for the desert tortoise or monitor project activities for compliance with the proposed protective measures.

    d. The Bureau shall submit the names(s) and credentials of the proposed biologist(s) to the Service for review and approval at least 30 days prior to the onset of activities. No activities shall begin until a biologist is approved by the Service.

3. The following term and condition implements reasonable and prudent measure 3:

   When burros are being removed from within desert tortoise habitat, the Bureau shall have authorized or approved biologists present, as appropriate, to ensure desert tortoises are moved from harm's way or avoided, if necessary. These protective measures for the desert tortoise shall be implemented when the removal of burros is likely to result in concentrated activity by horses, burros, or workers or ground disturbance.

4. The following term and condition implements reasonable and prudent measure 4:

   The Bureau shall provide information on the desert tortoise, its status, the protection it receives under the Endangered Species Act, and the actions that can be taken to avoid killing or injuring desert tortoises when working or recreating in the desert to anyone requesting information on casual use associated with recreation and mining.

5. The following terms and conditions implement reasonable and prudent measure 5:

   a. Within 2 years of issuance of this biological opinion, the Bureau shall inventory all guzzlers located within desert tortoise habitat and assess their potential to trap desert tortoises. The assessment of the potential to trap desert tortoises shall be based on the design of the guzzler and the abundance of desert tortoises within the area of the guzzler.

   b. Within 3 years of the issuance of this biological opinion, the Bureau shall retrofit all guzzlers that have been identified as having the potential to trap desert tortoises.

   c. The Bureau shall retrofit all other guzzlers within desert tortoise habitat within 5 years of the issuance of this biological opinion.

   d. If a desert tortoise is found trapped in any managed water or guzzler, the water or guzzler shall be retrofitted within four weeks. If the water or guzzler cannot be retrofitted within that time frame, it shall be fenced to preclude entry by desert tortoises.

REPORTING REQUIREMENTS

By January 31 of each year this biological opinion is in effect, the Bureau shall provide a report to the Service that provides details on each desert tortoise that is found dead or injured. The information shall include the location of each mortality, the circumstances of the incident, and any actions undertaken to prevent similar instances from occurring in the future. The annual report shall also describe activities that the Bureau implemented (*e.g.*, the amount of road maintained, habitat restored, *etc.*) within habitat of the desert tortoise. The annual reports shall

also evaluate the range conditions that are specified in the previously issued biological opinions for grazing in the California Desert Conservation Area.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The California Desert Conservation Area Plan provides the Bureau with management direction for the entire range of the desert tortoise in California and thereby has a profound effect on its survival and recovery. However, as it is written, the California Desert Conservation Area Plan is structured to a great degree to rely on section 7(a)(2) consultation to avoid jeopardy or adverse modification of critical habitat, rather than to establish a program that promotes recovery of listed species in conformance with section 7(a)(1) of the Act. The Northern and Eastern Mojave and Northern and Eastern Colorado bioregional plans provide more emphasis on the conservation of the desert tortoise while allowing for use of the desert. To address the extent that these plans implement the recommendations in the recovery plan, we have excerpted the management recommendations provided in the recovery plan (in bold, in the following text) and compared them with the measures proposed in the Northern and Eastern Colorado and Northern and Eastern Mojave plans.

Establish at least one desert wildlife management area of at least 1,000 square miles in each recovery unit. In the Northern and Eastern Colorado plan, the preferred alternative includes the 1,367-square mile Chemehuevi Desert Wildlife Management Area within the Northern Colorado Recovery Unit; 1,275 miles of the desert wildlife management area are managed by the Bureau. The preferred alternative also includes the 1,281 square mile Chuckwalla Desert Wildlife Management Area in the Eastern Colorado Recovery Unit; 727 square miles are managed by the Bureau and 293 square miles are within the Chuckwalla Mountains Aerial Gunnery Range and managed by the U.S. Marine Corps.

In the Northern and Eastern Mojave plan, the preferred alternative includes the 272-square mile Piute-Fenner and the 158-square mile Shadow Valley desert wildlife management areas within the Eastern Mojave Recovery Unit. Within the Northeastern Recovery Unit, an Ivanpah Desert Wildlife Management Area of approximately 57 square miles has been proposed. Although these Desert Wildlife Management Areas are smaller than the size recommended in the recovery plan, they are connected to the Mojave National Preserve which is managed in the manner of a desert wildlife management area.

Connect functional habitat within recovery units wherever enough extant desert tortoise habitat exists. Within the Northern and Eastern Mojave planning area, the desert wildlife management areas proposed by the Bureau connect across the Mojave National Preserve, which

is managed by the National Park Service. Consequently, we consider these desert wildlife management areas to be connected adequately.

Within the Northern and Eastern Colorado planning area, the Chuckwalla Desert Wildlife Management Area proposed by the Bureau is directly connected to the southern portion of Joshua Tree National Park. As a result of discussions with the Service, the Bureau has proposed to extend a wildlife habitat management area located north of Interstate 10 to the north-central portion of the Chuckwalla Desert Wildlife Management Area. The extended and other wildlife habitat management areas and wilderness areas would provide a connection, where suitable habitat is present, to the Chemehuevi Desert Wildlife Management Area. Consequently, we consider these desert wildlife management areas to be connected adequately.

Additionally, the Piute-Fenner Desert Wildlife Management Area in the Eastern Mojave Recovery Unit abuts the Chemehuevi Desert Wildlife Management Area in the Northern Colorado Recovery Unit over a considerable distance along Interstate 40. This connectivity should be enhanced when fencing is constructed. In all of the circumstances discussed above, connections among populations of desert tortoises should persist among both desert wildlife management areas and their recovery units.

All vehicle activity off of designated roads. The bioregional plans allow vehicles to travel up to 100 feet from the centerline of designated roads to stop, park, and camp; the current guidelines in the California Desert Conservation Area Plan allow for vehicles to travel up to 300 feet from the edge of roads. Although the proposed measures are more protective than the current guidelines, they would continue to place desert tortoises at risk of injury or mortality and result in some degree of habitat degradation. We recommend that the distance vehicles be allowed to travel from designated roads be reduced to 15 feet; this distance in consistent with guidelines being implemented in on Bureau lands in Nevada. If previously disturbed areas are available that extend beyond 15 feet from the road's centerline, vehicles may use these sites.

Riders participating in the Johnson Valley to Parker race should be required to stay on the existing road where the race corridor borders of the southern portion of the Chemehuevi Desert Wildlife Management Area. By eliminating off-road travel in this area, the likelihood that desert tortoises would be killed or injured would be reduced. Additionally, restricting riders to the established road would reduce habitat disturbance adjacent to the desert wildlife management area and possibly reduce the likelihood of invasion by exotic species.

All competitive and organized events on designated roads. No competitive events are proposed for the desert wildlife management areas. Organized, non-competitive events on designated routes of travel are allowed. Our experience with organized, non-competitive events, such as dual sport rides, in the western Mojave Desert is that disturbance of habitat is minimal (if it occurs at all); we are unaware of any injuries or mortalities of desert tortoises that have occurred during these events. We acknowledge that some level of mortality or injury may be undetected. However, given that the events occur on existing roads and are usually conducted

when most desert tortoises are inactive, we anticipate that impacts are minimal. Allowing low-impact uses likely indicates to recreationists that at least some activities can co-exist with listed species. As a result, conservation programs may receive support from users of the desert.

Habitat destructive military maneuvers. The Bureau has not proposed any such activities on its lands.

Clearing for agriculture, landfills, and any other surface disturbance that diminishes the capacity of the land to support desert tortoises, other wildlife, and native vegetation. The current guidelines prohibit agriculture and landfills within Class C and L lands. All lands within desert wildlife management areas will be designated as Class L. Therefore, agriculture and landfills would be prohibited by the Bureau's existing guidelines. We recognize that prohibiting all surface disturbance is not feasible. As an example, this recommendation would preclude even routine maintenance of existing pipelines. The Bureau's mandate requires the management of its lands in a manner that conserves biological resources while allowing for sustained use. The proposal to allow at most one percent of the existing undisturbed habitat to be lost or disturbed should be highly protective of the desert tortoise and its habitat. The one percent proposal for maximum allowable ground disturbance stems from information gathered in the western Mojave Desert; approximately one percent of the areas that are likely to be proposed as desert wildlife management areas has been disturbed or lost to date. Given the protective measures proposed for the desert wildlife management areas in the Northern and Eastern Colorado and Northern and Eastern Mojave plans, we anticipate that the vast portions of the desert wildlife management areas will remain available for conservation of the desert tortoise.

Domestic livestock grazing. Although the number and size of allotments has decreased since issuance of the recovery plan, the preferred alternative in the bioregional plans includes several cattle allotments. Livestock grazing within desert wildlife management areas will continue to degrade, to some degree, habitat of the desert tortoise. We support the Bureau's selection of a preferred alternative that allows for the relinquishment of the ranchers' permits and subsequent retirement of the allotments. We recommend that the Bureau maintain communication with the ranchers to ensure that allotments are retired at the earliest possible opportunity.

Wild horse and burro grazing. All burros and wild horses would be removed from desert wildlife management areas.

Vegetation harvest, except by permit; collection of biological specimens, except by permit. The current guidelines allow vegetation harvesting, including collection of biological specimens (plants), by permit only within Class L lands. All lands within desert wildlife management areas will be designated as Class L. Therefore, the proposed plans are consistent with the recovery plan with regard to plants.

Dumping and littering. These activities are illegal. As such, the Bureau cannot permit them.

Deposition of captive or displaced desert tortoises or other animals, except under authorized translocation research projects. The Bureau does not propose any such activities.

Uncontrolled dogs out of vehicles. The Bureau does not propose any measures with regard to dogs. Discussions with Bureau staff, including personnel from its law enforcement division, has led us to understand that the issue of uncontrolled dogs is difficult. Whether a dog is uncontrolled can be difficult to qualify; requiring all dogs to be on leases provides for clear regulation but is likely to be unnecessary in most cases and would reduce support for conservation efforts. We recommend that the Bureau's law enforcement staff coordinate with biologists to understand how dogs may adversely affect desert tortoises and consider the actions of dogs and their owners while in the field. We also recommend that the Bureau institute a program to remove feral dogs from the desert, in cooperation with county governments and military installations. In recent years, feral dogs have been observed interfering with desert tortoises on several occasions; they likely pose a much greater threat to desert tortoises than those of people recreating in the desert.

Discharge of firearms, except for hunting of big game or upland game birds from September through February. The Bureau did not propose any measures to address discharge of firearms associated with hunting or general shooting in the planning areas (Foreman pers. comm.). Information from long-term study plots in the two planning areas indicates that few desert tortoises died from gunshot wounds. Additionally, the Bureau does not regulate hunting. The responsibility for setting hunting seasons lies with the California Department of Fish and Game; within the Mojave National Preserve, the California Department of Fish and Game opposed any change in the established hunting season. Data are not available on either the level of hunting that occurs in this region of the desert or the number of desert tortoises that are killed as a result of hunting. Given the data collected on the study plots, we concur with the Bureau that the discharge of firearms does not seem to threatened desert tortoises within the two planning areas at this time.

Restrict establishment of new roads in desert wildlife management areas. New roads may be established as part of proposed actions; they would receive full analysis during the environmental review of these projects. In general, the extent of roads will be reduced under the preferred alternatives in both plans.

Fence or otherwise establish effective barriers to desert tortoises along heavily-traveled roads; install culverts that allow underpass of desert tortoises to alleviate habitat fragmentation. In the Northern and Eastern Mojave and Northern and Eastern Colorado plans, the California Department of Transportation is identified as the lead agency for fencing Interstates 10, 15, and 40 and for fencing and installing culverts under Highway 95; the time frames for completing this work are noted as 20 years for Interstates 10, 15, and 40 and when Highway 95 is widened to four lanes. The Service and Federal Highway Administration have completed formal consultation on the reach of Interstate 15 through critical habitat south of Mountain Pass; this portion of Interstate 15 will likely be fenced within the next year. Desert

tortoises will continue to be killed as they attempt to cross the other roads; consequently, delays in fencing the remaining roads will hinder recovery efforts in the planning areas.

Surface disturbance in desert wildlife management areas should be restored to pre-disturbance conditions. In the Northern and Eastern Mojave and Northern and Eastern Colorado plans, the Bureau proposes to track restoration of disturbance on a case-by-case basis. The imposition of a one percent limit on the allowable ground disturbance should encourage agencies to restore additional lands. The Bureau is pursuing the recovery plan's recommendations with regard to restoration; however, the success of restoration efforts in the desert depends on many factors and, even in the best situations, restoration to pre-disturbance conditions will require decades.

Sign and fence desert wildlife management areas as needed. Both bioregional plans propose these actions.

Establish environmental education programs and facilities. Both bioregional plans propose to develop education programs within 5 years. We support the concept but encourage the Bureau to attempt to try to complete the programs in less time. Public support of recovery efforts is an important aspect of their success; such support will likely be more forthcoming if comprehensive environmental education programs and facilities are widely available.

We also offer the following recommendations:

Abandoned Adits and Mines. The Bureau should inspect any abandoned mine or adit it discovers to determine whether desert tortoises could be trapped. Any such mines or adits should be filled or fenced to preclude entry by desert tortoises.

Aquatic invertebrates. Finally, we recommend that the Bureau conduct thorough inventories of all natural water sources before they are modified or enhanced for game species or for any other purpose. Many springs in the desert support unique assemblages of invertebrates that could be extirpated if the water source is altered. If such assemblages are found, modifications of the spring should be avoided or conducted in a manner that protects these assemblages.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the California Desert Conservation Area Plan, as amended, and proposed for modification. Reinitiation of formal consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and: (a) if the amount or extent of taking specified in the incidental take statement is

exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Ray Bransfield of our Ventura Fish and Wildlife Office at (805) 644-1766, George Walker of our Barstow Fish and Wildlife Office at (760) 255-8852, or Pete Sorensen of our Carlsbad Fish and Wildlife Office at (760) 431-9440.

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TABLE 1 MULTIPLE-USE CLASS GUIDELINES				
LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
1. AGRICULTURE (no effect)	Agricultural uses (excluding livestock grazing) are not allowed			
2. AIR QUALITY (no effect)	These areas will be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the Clean Air Act Amendments unless otherwise designated another class by the State of California as a result of recommendations developed by any air-quality management plan developed by the Bureau.			
3. WATER QUALITY (no effect)	These areas will be managed to maintain and enhance both surface and ground-water resources.	Areas in this class will be managed to provide for the protection and enhancement of surface and ground water resources, except for instances of short-term degradation caused by water development projects. Best management practice, developed by the Bureau during the planning process outlined in the Clean Water Act Section 208, and subsequently , will be used to avoid degradation and to comply with Executive Order 12088	Areas designated in this class will be managed to minimize degradation of water resources. Best management practices, developed by the Bureau during the planning process outlined in the Clean Water Act, Section 208, and subsequently, will be used to keep impacts on water quality minimal and to comply with Executive Order 12088	
4. CULTURAL AND PALEONTOLOGICAL RESOURCES	Archaeological and paleontological values will be preserved and protected. Procedures described in 36 CFR 800 will be observed where applicable. A Memorandum of Agreement has been signed by the Bureau, the California State Historic Preservation Officer, and for cultural resources the President's Advisory Council on Historic Preservation to protect cultural resources.			
5. NATIVE AMERICAN VALUES	Native American cultural and religious values will be preserved where relevant and protected where applicable. Native American group(s) will be consulted. Memorandums of agreement and understandings have been signed between the Bureau and the Native American Heritage Commission pertaining to Native American concerns and cultural resources.			
6. ELECTRICAL GENERATION FACILITIES	Electric generation plants are not allowed (no effect)	Electric generation plants may be allowed. (See wind/solar/ geothermal, below)	All types of electrical generation plants may be allowed in accordance with State, Federal, and local laws.	
	(Same as Class L, M, and I)	Existing facilities may be maintained and upgraded or improved in accordance with special-use permits or by amendments to rights-of-way		
Nuclear and Fossil Fuel	Not allowed (no effect)		May be allowed in accordance with Federal, State and local laws.	

TABLE 1 MULTIPLE-USE CLASS GUIDELINES				
LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
ELECTRICAL GENERATION FACILITIES (CONT.)				
Wind/Solar	Not allowed (no effect)	May be allowed after requirements of the National Environmental Policy Act (NEPA) are met		
Geothermal	Not allowed (no effect)	May be allowed pursuant to licenses issued under 43 CFR Section 3250, *et seq*. NEPA requirements will be met.		
7a. TRANSMISSION FACILITIES	New transmission facilities for electricity, gas, water and telecommunication are not allowed and new licenses or rights-of-way for these purposes will not be granted, except as provided for in the Wilderness Act of 1964 ---16 USC 1133(d)(4) or as may be specified by Congress (no effect)	New gas, electric, and water transmission facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met.		
	Existing facilities may be maintained subject to a Wilderness Management Plan.	Existing facilities within designated corridors may be maintained and upgraded or improved in accordance with existing rights-of-way grants or by amendments to right-of-way grants. Existing facilities outside designated corridors may only be maintained but not upgraded or improved.		
7b. DISTRIBUTION FACILITIES	New licenses or rights-of-way for distribution facilities to serve private properties will not be granted. (no effect) Existing facilities may be maintained or improved but not expanded.	New distribution systems may be allowed and will be placed underground where feasible except where this would have a more detrimental effect on the environment than surface alignment. In addition, new distribution facilities will be placed within existing rights-of-way where they are reasonably available	New distribution facilities may be allowed and will be placed within existing rights-of-way where they are reasonably available. NEPA requirements will be met.	
	Maintenance and operation of existing sites and facilities may be allowed subject to a Wilderness Management Plan.	Existing facilities may be maintained and upgraded or improved in accordance with existing right-of-way grants		

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8. COMMUNICATION SITES	New communication sites are not allowed unless required for protection of wilderness values or visitors.	(Same as Class M and I)	New sites may be allowed. NEPA requirements will be met.	
	Maintenance and operation of existing sites and facilities may be allowed subject to a Wilderness Management Plan.	Existing facilities may be maintained and used in accordance with right-or-way grants and applicable regulations.		
9. FIRE MANAGEMENT	Fire suppression measures will be taken in accordance with specific wilderness fire management plans to be followed by the authorized officer, and may include use of motorized vehicles, aircraft, and fire retardant chemicals	Fire suppression measures will be taken in accordance with specific fire management plans subject to such conditions as the authorized officer deems necessary, such as use of motorized vehicle, aircraft, and fire retardant chemicals.		
10. VEGETATION HARVESTING Native Plants	Removal of vegetation, non-commercial, may be allowed by permit only after an environmental assessment or environmental impact statement is prepared and after development of necessary stipulations.	Removal of vegetation, commercial or non-commercial, may be allowed by permit only after NEPA requirements are met and after development of necessary stipulation.		
Harvesting by mechanical means	Not allowed (no effect)	Harvesting by mechanical means may be allowed by permit only.		
RARE, THREATENED, AND ENDANGERED SPECIES, STATE AND FEDERAL	All state and federally listed species will be fully protected.			
SENSITIVE PLANT SPECIES	Identified sensitive species will be given protection in management decisions consistent with wilderness values and Bureau policies	Identified sensitive species will be given protection in management decisions consistent with Bureau policies		

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LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
UNUSUAL PLANT ASSEMBLAGES	Identified unusual plant assemblages will be given protection in management decisions consistent with wilderness values and Bureau policies	Identified unusual plant assemblages will be considered when conducting all site-specific environmental impact analyzes to minimize impact. See also Wetland/Riparian Areas guidelines.		
VEGETATION MANIPULATION Mechanical Control	Mechanical control will not be allowed (no effect)		Mechanical control may be allowed, but only after consideration of possible impacts.	
Chemical Control	Aerial broadcasting application of chemical controls will not be allowed (no effect)			
	Spot application will not be allowed (no effect)	Noxious weed eradication may be allowed after site-specific planning. Types and uses of pesticides, in particular herbicides must conform to Federal, State and local regulations.	Spot application will be allowed after site-specific planning. Types and uses of pesticides, in particular herbicides, must conform to Federal, State, and local regulations (see Vegetation Element).	
Exclosures	Exclosures will not be allowed. (no effect)	Exclosures may be allowed		
Prescribed Burning	Prescribed burning will not be allowed (no effect)	Prescribe burning may be allowed after development of a site-specific management plan.		
11. LAND-TENURE ADJUSTMENT	Public land will not be sold (no effect)		Applies to Class M and Unclassified lands. Sale of public land may be allowed in accordance with the Federal Land Policy and Management Act and other applicable Federal laws and regulations. Sales in wilderness study areas will not be allowed until after Congressional action.	Public land will not be sold (no effect)

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12. LIVESTOCK GRAZING	Grazing will be allowed subject to limitations to preserve wilderness characteristics and the protection of sensitive resources, except that existing grazing will only be subject to the protection of sensitive resources.	Grazing will be allowed subject to the protection of sensitive resources.		
	Major support facilities, such as permanent corrals, loading chutes, and significant water developments, will not be allowed except for existing facilities pursuant to valid existing leases, licenses and permits. Maintenance of such facilities will be controlled to prevent unnecessary or undue degradation of wilderness values.	Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, may be allowed consistent with protection of sensitive resources	Support facilities such as corrals, loading chutes, water developments, and other facilities, permanent or temporary, will be allowed.	
	Manipulating of vegetation by chemical or mechanical means will not be allowed (no effect)	Manipulation of vegetation by chemical or mechanical means will not be allowed, except for site-specific needs. (See Vegetation Element.)	Manipulation of vegetation by chemical or mechanical means may be allowed and may be designed, developed, and managed for intensive livestock use.	

TABLE 1 MULTIPLE-USE CLASS GUIDELINES				
LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
13. MINERAL EXPLORATION AND DEVELOPMENT	These guidelines summarize the kinds of management likely to be used after formal designation of wilderness by Congress. Congressional enactment of wilderness will prescribe mining rules and possible cutoff dates for mineral entry. The information below indicates the possible restrictions after enactment. The following summarizes possible significant provisions of the Wilderness Act as it applies to mineral exploration and development after Congress officially designates the areas as wilderness. (For more detailed information see the G-E-M Element or the Wilderness Act of Sept. 3, 1964.) Minerals prospecting and Exploration: Prospecting and exploration for the purpose of gathering information about mineral resources is allowed, provided such activity is carried on in a manner compatible with the preservation of the wilder ness environment.	Leasable Minerals	Leasable Minerals	

TABLE 1 MULTIPLE-USE CLASS GUIDELINES				
LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C** **Controlled Use**	**MULTIPLE-USE CLASS L** **Limited Use**	**MULTIPLE-USE CLASS M** **Moderate Use**	**MULTIPLE-USE CLASS I** **Intensive Use**
MINERALS EXPLORATION AND DEVELOPMENT (CONT.)	Mineral development : All designated wilderness areas may be withdrawn from mineral entry at sometime subsequent to Congressional designation. Following withdrawal, no new mining claims may be located and no new permits, leases, or material sales contracts may be issued subject to deadlines established by Congress. Valid existing mining operations may continue pursuant to submission and approval of operational plans which will prevent unnecessary or undue degradation of wilderness qualities	Leasable Minerals Except as provided in Appendix 5.4, 516, DM 6, NEPA procedures titled "Categorical Exclusions", prior to approving any lease, notice, or application that was filed pursuant to 43 CFR 3045, 3100, 3200, 3500 and S.O. 3087, as amended, an environmental assessment will be prepared on the proposed action. Mitigation and reclamation measures will be required to protect and rehabilitate sensitive scenic, ecological, wildlife vegetative and cultural values.		
		Locatable Minerals Location of mining claims is nondiscretionary. Operations on mining claims are subject to the 43 CFR 3809 Regulations and applicable State and local law. NEPA requirements will be met. The Bureau will review plans of operations for potential impacts on sensitive resources identified on lands in this class. Mitigation, subject to technical and economic feasibility, will be required.		
			Saleable Minerals Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled "Categorical Exclusions", new material sales locations, including sand and gravel sites, will require an EA.	

TABLE 1 MULTIPLE-USE CLASS GUIDELINES				
LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
		Saleable Minerals Except as provided in Appendix 5.4, 516 DM 6, NEPA Procedures titled "Categorical Exclusions", new material sales locations, including sand and gravel sites, will require an environmental assessment. Continued use of existing areas of sand and gravel extractions is allowed subject to Bureau permits as specified in 43 CFR 3600		
14.MOTORIZED -VEHICLE ACCESS/TRANSPORTATION	Motorized-vehicle use is generally not allowed unless provided for in individual wilderness legislation and management plans or if necessary to serve valid existing rights, and for emergency use for public safety, or protection of wilderness values	New roads and ways may be developed under right-of-way grants or pursuant to regulations or approved plans of operation.	Motorized-vehicle use will be allowed on "existing" routes of travel unless closed or limited by the authorized officer. New routes may be allowed upon approval of the authorized officer.	Same as Class M. In addition, the vehicle open areas are available for unrestricted vehicle access except where private land, areas of critical environmental concern, and active mining areas are included (see Recreation Element)
		Vehicle use on some significant dunes and dry lakebeds is allowed (see Motorized Vehicle Access Element)		
		Periodic or seasonal closures or limitations of routes of travel may be required		
		Access will be provided for mineral exploration and development		
Railroads	No new railroads and trams will be allowed, Existing railroads and trams may be operated and maintained subject to non-impairment of wilderness values. (no effect)	Railroads and trams may be allowed to serve authorized uses if no other viable alternative is possible	Railroads and trams may be allowed	Railroads and trams may be allowed
Aircraft	Aircraft facilities are not allowed (no effect)	Temporary landing strips maybe be allowed by permit	Airports and landing strips may be allowed by lease subject to conformance with county or regional airport loans and approval by the Federal Aviation Administration and Department of Defense.	

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LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
15. RECREATION	This class is suitable for nonmechanical types of recreational experience which generally involve low to very low user densities. Recreational opportunities provided include, but are not limited to, the following characteristic activities: --backpacking --primitive, unimproved site camping --hiking --horseback riding --rockhounding --nature study and observation --photography and painting --rockclimbing --spelunking --hunting	This class is suitable for re-creation which generally involves low to moderate user densities. Recreation opportunities include those permitted in Class C: --land-sailing on dry lakes --non-competitive vehicle touring and events only on "approved" routes of travel All organized vehicle events, competitive or non, require a permit specifying the conditions of use. These conditions will include, but are not limited to: --approved routes --no pitting, start, finish or spectator areas	This class is suitable for a wide range of recreation activities which may involve moderate to high user densities. Recreational opportunities include those permitted in Class L. Competitive motorized vehicle events are limited to "existing" routes of travel and must be approved by the authorized officer. Pit, start, and finish areas must be designated by the authorized officer. All competitive events and organized events having 50 or more vehicles require permits.	This class is suitable for recreation activities which generally involve high user densities. A wide array of recreational opportunities will be found in this class. Off-road-vehicle play will be allowed where approved in open areas. Uses permitted are the same as Class M; in addition, motorized-vehicle play is allowed in areas designated "open." All aspects of competitive events will be permitted except where specific militations are stipulated by the authorized officer.
	Permanent or temporary facilities for resource protection and public health and safety may be allowed at the discretion of authorized officer or in accordance with approved wilderness plans.	Permanent or temporary facilities for resource protection and public health and safety are allowed.		
	Trails are open for non-vehicle use and new trails for non-motorized access may be allowed.			
16. WASTE DISPOSAL	Waste disposal sites will not be allowed. (no effect)	Hazardous waste disposal sites will not be allowed. New non-hazardous waste disposal sites will not be allowed (no effect)	Public lands managed by Bureau may not be used for hazardous or non-hazardous waste disposal. Where locations suitable for such disposal are found on Bureau managed lands, consideration will be given to transfer of such sites to other ownership for this use. This amendment applies to waste normally handled through land fills or other waste management facilities. It does not apply to mining waste, including tailings and/or chemical s used in processing ore. (no effect; transfer of land was discussed under land tenure)	

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LAND USE ACTIVITIES	**MULTIPLE-USE CLASS C Controlled Use**	**MULTIPLE-USE CLASS L Limited Use**	**MULTIPLE-USE CLASS M Moderate Use**	**MULTIPLE-USE CLASS I Intensive Use**
17. WILDLIFE SPECIES AND HABITAT Rare, Threatened, and Endangered Species (both State and Federal)	All State and federal listed species and their critical habitat will be fully protected.			
Sensitive Species	Identified sensitive species will be given protection in management decisions consistent with wilderness values and Bureau policies.	Identified species will be given protection in management decisions consistent with Bureau policies		
Predator and Pest Control	Predator and pes control will not be allowed except to alleviate public health hazards or to protect endangered species	Control of depredation wildlife and pests will be allowed in accordance with existing State and Federal laws.		
Habitat Manipulation	Projects to improve wildlife habitat may be allowed subject to environmental assessment.		Same as Classes C and L, except that chemical and mechanical vegetation manipulation may be allowed.	
Reintroduction or Introduction of Established Exotic Species	Reintroduction of native species is allowed.	Reintroduction or introduction of native species or established exotic species is allowed.		
18. WETLAND/RIPARIAN AREAS	Wetland/riparian areas will be considered in all proposed land-use actions. Steps will be taken to provide that these unique characteristics and ecological requirements are managed in accordance with Executive Order 11990, Protection of Wetlands (42 CFR 26951), legislative and Secretarial direction, and Bureau Manual 6740, "Wetland-Riparian Area Protection and Management" (10/1/79), as outlined in the Vegetation Element. (no effect)			
19. WILD HORSES AND BURROS	Populations of wild and fee-roaming horses and burros will be maintained in accordance with the with the Wild and Free-Roaming Horse and Burrow Act of 1971 but will be subject to controls to protect sensitive resources as provided for in management plans for wilderness areas. (See Wild Horse and Burro Element.)	Populations of wild and free-roaming horses and burros will be maintained in healthy, stable herds, in accordance with the Wild and Free-Roaming Horse and Burro Act of 1971 but will be subject to controls to protect sensitive resources. (See Wild Horse and Burro Element.)		