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6:25 PM

West Mojave Plan  
Bureau of Land Management  
22835 Calle San Juan De Los Lagos  
Moreno Valley, CA 92553

## COMMENTS ON THE WEST MOJAVE PLAN

I am sorry that these comments may be late in arriving at your office. However, I have spent many hours reviewing this plan and have found it lacking arriving at solution at protecting the California Desert Tortoise and at the same time allow multiple uses of the Plan Area by all interested parties.

I have done this at the request of the Jeeping Jeepers Jeep Club and the California Offroad Vehicle Association (CORVA). I am a member of both organizations.

As noted I am a registered Civil and Geotechnical Engineer with many years of experience in the use of land. My specialty is slope stability for grading and foundations for structures. I also have advanced degrees in surface and ground water hydrology and a minor in geology.

In addition I raised California Desert Tortoises from 1965 to 1995. I lost them due to the Upper Respiratory Disease. I spent a lot of time and effort to save my herd of over 40 tortoises. I consulted with the best authorities at that time.

I was one of the original members of the Desert Tortoise Council and have a collection of all Symposium Papers from that group up to 1995. I also was an active member in the California Turtle and Tortoise Club, Foothill Chapter. I also have a collection of all their research papers up to about 1995.

Attached are my comments to the first three chapters of the Plan along with recommendations to further protect the California Desert Tortoise. I hope you will recognize the great need to protect this lovable tortoise who is of no threat to anyone but under current natural Desert conditions is dying off.

Please review my comments.

Very truly yours,



Charles G. Sudduth, P.E.

CC: JJC, CORVA

# **WEMO Comments EXECUTIVE SUMMARY AND CHAPTER 1**

*Tortoise Group*

**Prepared by Chris Sproferoa**

**Comments added by Charles Sudduth  
Civil and Geotechnical Engineer**

## **EXECUTIVE SUMMARY**

### **Entire Executive Summary**

*The rest of the Executive Summary is a repeat of the rest of the chapters in the Plan. My comments in these chapters will also apply the pertinent parts of this Summary. It must be revised to be consistent with the entire plan as modified.*

## **CHAPTER ONE INTRODUCTION**

### **1.1 OVERVIEW Page 1-1**

*This paragraph lists the collaborators who participated in the Plan. However, Appendix A notes that several of these jurisdictions did not sign the 1992 memorandum of cooperation. They are as follows: Edwards Air Force Base, Naval Weapons Test Center at China Lake, Death Valley National Monument, National Training Center at Irwin, Marine Corp Air Ground Combat Center at Twentynine Palms, Joshua Tree National Monument, Kern County Board of Supervisors, Los Angeles County Board of Supervisors, City of Twentynine Palms and California City. These jurisdictions represent a very large area of the West Mojave Desert. Without their cooperation, how can this plan be effective?*

#### **1.1.1 Site Location and Description Pages 1-1 and 1-2**

*How can this plan be effective on private lands and in jurisdictions that refused to sign the 1992 "Memorandum of Cooperation?"*

#### **1.1.2 Environmental Impact Statement Pages 1-2 and 1-3**

*The first sentence of the first paragraph is subjective. No one knows how many members of the public were actually aware of the proposed plan. We do know that many jurisdictions did not sign the 1992 Memorandum. The paragraph should be more specific by noting the various interest groups that did participate in the public meetings. There is a possibility that several interest groups were not aware of this plan and its affect on them.*

*The third paragraph contains an indication that "Notice of Intent was published in the Federal Register. The Federal Register has a very limited readership. It cannot reach the few ordinary citizens that may be affected by this plan. The Federal Register is designed to be read by a few attorneys and government officials only. It cannot be used as the sole means of public notification.*

### **1.1.3 Program Environmental Impact Report**

**Pages 1-3 through 1-6**

*The environmental impact prepared by the County of San Bernardino and the City of Barstow under the California CEQA Act is not published in this document. Was this document circulated among all interested parties? Were the public comments ever incorporated into this document? The contents in this subsection may be tainted and lacks credibility as far as this plan is concerned.*

*Again, the notification of the preparation and review of this EIR was distributed to a very limited group. Therefore, the final report may also be tainted and lacks credibility because of the limited scope of distribution among the affected interests.*

*Appendix U of this report does not list a summary of the comments received on the NOP but lists the cultural Resources prepared by the Barstow Office of the BLM. It is a table of mines and other uses within San Bernardino County.*

*This section is inadequate as meeting the requirements of CEQA. This also applies to Sections 1.1.4 through 1.1.6*

### **1.2 PURPOSE AND NEED Pages 1-9 and 1-10**

Loss or degradation of species habitat along and beyond the urban interface can lead to the listing of plants and animals as threatened or endangered by the USFWS and/or the CDFG. USFWS has listed thirteen western Mojave species; CDFG has listed eleven; six are listed by both agencies (see Table 1-3). It was the listing of the desert tortoise by USFWS and CDFG in 1990 and 1989, respectively, that was the impetus for the preparation of the West Mojave Plan. Several dozen other plants and animals are at risk of listing in the next few decades, unless proactive conservation steps are taken.

*The West Mojave Plan is also needed to meet the expanding population of California. These lands now most unused will become vulnerable as the population expands. This plan must consider the greater needs of this expanding population while at the same time recommends measures to protect the existing native desert species that are currently and will be threatened or endangered. This report must utilize the ingenuity of Humans in providing sanctuary for the native species and to prevent species not native to the area from upsetting the current balance of nature.*

*Currently most of the vacant lands have been used for recreation uses of those who are living in cramped conditions with our urban and suburban communities along the coastal plains. Already there is a large increase of population expanding over Cajon Pass and Soledad Pass into the cities closest to these passes.*

### **1.3 RELATIONSHIP BETWEEN THE WEST MOJAVE PLAN AND THE EXPANSION OF FORT IRWIN** Page 1-10 and 1-11

*This expansion plan is very controversial. A major problem along with environmental degradation is the keep open of roads to private lands that cross the proposed expansion area. The military will have to work with the civilian population in recognizing the various interests that need access through the expansion and to conduct mining, recreation, etc. activities. This Plan fails to address the complicated issues of this expansion*

*This plan must consider the future in which these lands will have to serve many different interests and include the needs of the military and the protection of the native desert species.*

### **1.4. HISTORY OF THE PLANNING PROCESS** Beginning on Page 1-11

#### **1.4.1 Planning Issues Pages 1-11 and 1-12**

*This Section ignores the effect of population growth that will be necessary to accommodate future movements of humans and industry into the plan area. The population pressure will negate this plan if this plan does not make decisions to accommodate this population growth.*

#### **1.4.2 1992 Memorandum of Understanding Pages 1-12 and 1-13**

*This Section ignores my past comments that many important government jurisdictions did not adopt this 1992 Memorandum. This leaves many enforcement questions of this plan as these jurisdictions can overrule the BLM's enforcement within their jurisdictions and can obtain assistance from Congress if they so desire. This makes this plan ineffective in many areas.*

#### **1.4.4 Data Base Pages 1-14 and 1-15**

The West Mojave Plan is based upon the best science reasonably available. To meet this standard, data were reviewed to identify pertinent life history information, assess threats to covered species, and provide the most appropriate management prescriptions to address those threats. Where existing information was considered incomplete, species experts were consulted to fill in the data gaps. The planning team consulted 8 botanists, 13 ornithologists, 3 mammalogists, and 4 herpetologists to ensure that data for those taxa were the most complete and accurate information available. For the desert tortoise, this meant collecting and digitizing existing transect data and performing new surveys over approximately 3,615 square miles that had not been recently surveyed. Previous planning for Mohave ground squirrel conservation (Remple 1991, Clark 1993) and recent studies (Leitner and Leitner 1989, 1990, 1996a, 1996b; Leitner et al. 1995, 1997) were important for designing reserves and determining appropriate management prescriptions. New field surveys were conducted in the spring of 2001 for sensitive birds and plants.

Presence-absence tortoise survey data resulting from studies required by county and local government since the 1990 listing.

Dr. William Boarman prepared a survey of the threats adversely affecting the desert tortoise for the West Mojave planning effort. This was the peer-reviewed Threats to the Desert Tortoise: A Critical Review of the Scientific Literature (attached as Appendix J). Dr. Boarman's threats analysis was instrumental in identifying potential conservation measures to address each known threat adversely affecting the tortoise.

*As discussed above and at many BLM sponsored meetings the data on the endangered and threatened species is not easily found and many not meet the accuracy required by academia. However, using the available data on the Desert Tortoise, there are many observation and published accounts on the populations and destruction of this threatened species. Many confirmed observations have been ignored by the BLM. All of these observations have not been accepted by the BLM. This selective process appears to be politically motivated and has show adverse effects on the Desert Tortoise populations.*

*All interests attending these meetings are willing to compromise to save this lovable species. However, the BLM as it will be discussed later is using the wrong approaches in protecting this tortoise for apparent political purposes.*

#### **1.4.4 Data Base            Pages 1-14 and 1-15**

Following the assembly of the database, a "Biological Evaluation" was conducted in a series of meetings between March 1998 and June 2000. Participants included biologists from the West Mojave planning team, USFWS, CDFG and invited experts. Biologists evaluated the effectiveness of current management, identified management shortfalls, and suggested measures to address those shortfalls. Evaluation meetings were structured around the following seven questions:

How important is the planning area to the species as a whole?

Does the planning area contain essential habitat for the species to complete its life history?

Why was the species placed on the special status list? What is the concern?

Is current management adequate to protect the species?

Is the geographical size and location of conservation areas adequate to protect the species? If not, what additional areas need to be committed to assure protection of the species?

Is the management of proposed conservation areas adequate to protect the species? If not, what management improvements could be implemented to assure protection of the species within the target conservation areas?

Is management of lands outside conservation areas adequate to protect the species? If not, what management improvements could be implemented to assure protection of the species outside conservation areas?

An Evaluation Report addressing the Desert Tortoise, mammals, birds, fish, reptiles and amphibians was published on September 22, 1999 and distributed to the Supergroup. A Mohave ground squirrel Evaluation Report was completed and distributed on September 14, 2000. Finally, an Evaluation Report addressing rare plants was completed and distributed on October 15, 2001.

*I have reviewed the evaluation report addressing the Threats to the Desert Tortoise that is in your Appendix J. I have sent comments through CORVA, I find that this document has ignored much data and has slanted its data towards the no-occupation interests.*

#### **1.4.5 Biological Evaluation Pages 1-15 and 1-16**

*Every Plan and Environmental Impact Reports requires a mitigation plan to correct an adverse impact found in the study. The mitigation can be overruled by the governing body that the adverse impact must be accepted because of overriding public need. I do not think that this agency wants to impose this on the biology portion of this plan.*

*This plan is deficient in offering mitigating measures in protecting the Biology resources within the plan area. This includes protecting and constructing facilities that will provide food, water, and protection of this species and their range becomes limited due to development. There are many other factors causing the decline of this species that so far have been ignored in this Plan.*

#### **1.4.6 Task Groups Develop the Conservation Strategy Pages 1-16 and 1-17**

Numerous issues were too complex or controversial to resolve at a single task group meeting. In such cases, subcommittees composed of volunteers were asked to discuss the issue and return with a proposed solution at the following task group meeting. Task Group 1 formed over a dozen subcommittees that dealt with issues as diverse as the expensive tortoise fencing program, desert recreation, mitigation fees and compensation structure, and "best management practices" to apply as standard take-avoidance measures. To assist Task Group 2 and the route designation process, two subcommittees were formed: a field survey advisory group and a route designation technical committee. A subcommittee might meet once or, once established, be recalled on numerous occasions to address difficult issues. Over 50 subcommittee meetings were held in addition to task group meetings.

*This report fails to include any of the recommendations made at these task group meetings.*

#### **1.4.7 Public Review of the EIR/S Page 1-17**

*I have not been made aware of the EIR/S. Has there been adverse comments on the document? Has the recommendations in this document been incorporated in this Plan?*

### **1.5 NECESSARY DECISIONS AND APPROVALS Beginning on Page 1-17**

#### **1.5.1 Agency and Jurisdiction Decisions and Approval Pages 1-17 and 1-18**

*Cities and Counties within the Plan must adopt in their community plan any measures requiring land use that are in this plan or the plan will be invalid for private lands within their jurisdiction. Their plan must also conform to California Law. However, the State and Federal Government have no enforcement powers in these jurisdictions and the jurisdiction may refuse to adopt even California Law if they so chose. As noted many local jurisdictions are not a party to the 1992 Memorandum. It will difficult for these jurisdictions to adopt the land use portions and even the species protection within this plan 1.5.2 may be mute.*

*In California zoning requirements must be consistent with the community plan to be considered valid and not subject to litigation.*

### **1.5.3 Relationship to Other Regional Plans Pages 1-19 to 1-20**

**Northern and Eastern Mojave Plan (NEMO):** The BLM's NEMO plan addressed recovery of the desert tortoise and management of a few additional species of concern on public lands. NEMO addressed only BLM programs, and only the BLM's CDCA Plan was amended; private lands and other federal agencies were not affected. The NEMO planning area lies to the northeast of the western Mojave Desert, in the area that generally lies between Death Valley National Park and the Mojave National Preserve. The most important cross-boundary issues that affect both NEMO and West Mojave involve the management of a small Mojave ground squirrel population northeast of Trona, and ensuring that CDCA Plan Amendments are consistent. A Record of Decision for NEMO was signed in December 2002.

*This plan and the other plans appear to determine boundaries using existing political boundaries. However, the boundaries in adjacent plans are inconsistent with the range of plant and animals requiring protection. The most glaring error is between the Nevada Plan and the NEMO Plan. All plans must be consistent with adjacent plans in protecting threatened and endangered species.*

**Military Integrated Resource Management Plans (INRMPs):** Each of the five military bases located within the West Mojave planning area has prepared, or is preparing, an INRMP to guide the management of natural resources on each base. The INRMPs affect military lands only. The most important cross-boundary issues that affect both the West Mojave Plan and INRMPs follow: (1) For Edwards Air Force Base, management of the desert tortoise, Mohave ground squirrel, alkali mariposa lily, desert cymopterus and Barstow woolly sunflower; (2) for China Lake Naval Air Weapons Station, the management of the desert tortoise, Mohave ground squirrel, Townsend's big-eared bat, bighorn sheep, and Inyo California towhee; (3) for Fort Irwin, management of desert tortoise and the Lane Mountain milkvetch; (4) for the Marine Corps Air Ground Combat Center at Twentynine Palms, the management of the desert tortoise, California leaf-nosed bat, bighorn sheep, Mojave fringe-toed lizard and white-margined beardtongue; and (5) for the Marine Corps Logistics Base near Barstow, the management of the desert tortoise.

*The BLM must obtain the cooperation from the Military in establishing boundaries of the endangered and threatened species. As the Military was not a party to the 1992 Memorandum, political pressure may be required to obtain cooperation.*

# WEMO Comments

## CHAPTER 2

### *Tortoise Group*

Prepared by Chris Sproferoa

Comments added by Charles Sudduth  
Civil and Geotechnical Engineer

## CHAPTER TWO ALTERNATIVES

### 2.1 INTRODUCTION Beginning Page 2-1

#### 2.1.1 Overview Pages 2-1 through 2-8

*This section is a summary of the entire chapter on Alternatives. We will save our comments for the later detailed sections of this chapter.*

### 2.2 ALTERNATE A: PROPOSED ACTION: HABITAT CONSERVATION PLAN BEGINNING PAGE 2-8

*This Alternate is unacceptable for the future use of the Plan area. This Alternate ignores the future multiple use of the lands for multiple use discussed later in this chapter.*

#### 2.2.1.1.2 Desert Tortoise Component of HCA Page 2-12

*This Alternate ignores the real causes of the decline of the Desert Tortoise.*

#### 2.2.1.1.3 Mojave Ground Squirrel Component of HCA Pages 2-12 and 2-13

*This Alternate does not place any new restrictions of Los Angeles County.*

#### 2.2.1.2.8 Mojave River Wild and Scenic River Eligibility Determination Pages 2-27 and 2-28

*How can this be designated as a wild and scenic river where most of the flow is underground? It may be a scenic location and protected. This was not the intent of the act. The site should be protected as a recreation area or under some other code provision to protect the area as scenic.*

#### 2.2.1.2.8 Inyo County Land Disposal Tracts Page 2-28

*There have been many studies that prove that these land disposal tracts attract Crows, Magpie and Ravens. These birds prey and destroy all young Desert Tortoises and have a flight range of many miles. The land disposal tracts must not be permitted to provide food for these birds if the Desert Tortoise is to survive and multiply.*

**2.2.1.3 Allowable Ground Disturbance (AGD) Pages 2-28 through 2-30**

*This cannot be enforced. It is a wasted regulation. The provisions of Appendix I should be inserted as far as it covered the basic needs of the Desert Tortoise. In addition, ground disturbance must be limited to the inactive Desert Tortoise season when many of the restrictions can be lifted. A biologist then needs only to identify the location of the burrows of the hibernating Desert Tortoise. They should either be marked or the Tortoise relocated to another nearby suitable burrow.*

**2.2.2 Compensation Framework Beginning Page 2-31**

**2.2.2.1 Administrative Structure Page 2-31**

*The section does not address the government agencies that were not a party of the 1992 Memorandum. Will their representatives be allowed to be admitted to the Implementing Authority Governing Board?*

**2.2.2.2 Mitigation Fee Pages 2-32 through 2-36**

*How can the BLM impose a separate mitigation fee on private land? The BLM is not supposed to have any jurisdiction over private lands. Private Lands are subject to the jurisdiction of the County or City governments.*

**2.2.3 Incidental Take Permits. Beginning Page 2-40**

**2.2.3.1 Covered Activities and Terms of Permits. Pages 2-40 and 2-41**

*It is interesting that the BLM is not selling any land. They may have the right to recover it later. This is a basic terms of leases on Rancho Lands. However, by allowing a lease for 30 years, the lessee will have to pay State and County property Taxes as if they owned the land. Farmers are exempt for this provision and may obtain a lease in which they do not have to pay County or State Taxes.*

**2.2.3.3 Take Authorized by Incidental Take Permits. Pages 2-42 and 2-41**

*The permitting incidental take permits of the Desert Tortoise appears to be in conflict with other State and Federal Statutes. This section needs to be consistent with other Code provisions.*

**2.2.4 Species Conservation Measures Beginning Page 2-49**

**2.2.4.1 Species Conservation Measures Applicable throughout the HCA. Pages 2-50 Through 2-53**

*This report must include the effect of agriculture on the Desert Tortoise. Many of irrigated fields have food that the Desert Tortoise prefers over its sparse food supply. This report must include regulations to protect Desert Tortoises that graze in these irrigated fields. This includes limiting planting and harvesting of the fields during Desert Tortoise active season. A good example is Alfalfa. It is nutritious and the tortoises have protection among the alfalfa from predators and they burrow within the fields. Many are killed if the Alfalfa is cut during the active season. Alfalfa is a good substitute for replacing food supplies that were lost because of habitat development and can increase the density of the Tortoise within their protected habitat.*

*Existing highways within the Desert Tortoise Habit areas need to have protective fencing and crossover culverts as was done on Interstate 15. The report cannot assume that new paved roads will never be built. Again population increase pressures will force new road construction in the Plan area.*

*Additional Wildlife Water Sources are needed to replace sources taken by human development. For the Desert Tortoise, the water sources should provide nourishment for the Desert Tortoise food supply.*

**2.2.4.2. Desert Tortoise                      Beginning Page 2-54**

**2.2.4.2.1 Take Avoidance Measures.                      Pages 2-54 Through 2-56**

*Under Commercial Activities Appendix I should also be included. Also as previously mentioned, the BLM has no jurisdiction over private, State and County, city and local agency lands. They can only request cooperation and provide education to the users of the lands.*

*Throughout the entire section, Appendix I should apply.*

**2.2.4.2.2 Survey and Disposition Protocols                      Pages 2-57 Through 2-62**

*This report should recognize that Desert Tortoises are known to travel when possible long distances. They may wander off the protected habitat areas. It is also very difficult to tag and identify a specific Tortoise. Surveys should be limited to an analysis of the general population or when the study site is to be disturbed. Appendix I is presented in part but the entire Appendix I plus my comments should be included.*

**2.2.4.2.3 Proactive Tortoise Management Programs                      Pages 2-62 Through 2-70**

*The Disease problems facing the Desert Tortoise has not received adequate attention. We know that the Desert Tortoise has a very primitive immune system. It has been decimated diseases imported by non-native animals including birds. This primitive immune system is probably due to the*

*thousands of years of isolation form any new forms of life. Of all the items in Table 2-14 that make any sense is Research and Monitoring. Promoting a healthier food supply would also help improve the Desert Tortoise strength. However, even healthy captive tortoises have succumbed to the diseases that are wiping out the native populations.*

*Under Headstarting, the report fails to note the UCR research program of this time. As far as I know it was a complete failure because tortoises found better nourishment in planted areas by humans and then did not adapt well to consuming the sparse desert foliage.*

*Under Landfills, the limitation of them to the Desert Tortoise habitats may not be adequate. More research is needed. However, The Sheephole Study by the Needles office indicated that raptors known to prey on young Desert Tortoises have a range over at least 12 miles.*

*As far as I know Ravens, Magpies and Crows are not native to the desert or to mainland Southern California: They have multiplied due to irrigation of lawns, road kills and landfills. They prey on the young of all species. They have few know predators. More information is needed to bring these birds into balance with nature. The report's recommendations regarding the destruction of nests should be implemented throughout Southern California. Some Hawks may kill these birds. However, they may feed upon hatchlings and young Desert Tortoises.*

### **2.2.5 Public Land Livestock Grazing Program Beginning Page 2-106**

*The report fails to note the benefit of this Grazing Program in keep non-native and native brush under control and therefore prevent wildfires. The other features appear to be reasonable.*

#### **2.2.5.2 Cattle Grazing Outside Tortoise Habitat and the MGS Conservation Area Pages 2-113 to 2-114**

*This section must apply to areas in which the possibility of Desert Tortoises being present is not possible due to topography, geography and climate.*

#### **2.2.5.3 Cattle Grazing Within Tortoise Habitat and the MGS Conservation Area Page 2-114**

*As noted in the Appendix, livestock grazing should be limited beginning with the inactive Desert Tortoise season and ending after the first of the spring rains bring new growth. Grazing should be encouraged to remove excessive brush to prevent wildfires. Other conditions appear to be applicable.*

#### **2.2.5.5 Sheep Grazing Within All Allotments Pages 2-119 through 2-121**

*The conditions described above to protect the Desert Tortoise for Cattle grazing should also apply to Sheep.*

## **2.2.6 Public Land Motorized Vehicle Access Network Beginning Page 2-124**

### **2.2.6.1 Background Pages 2- 124 and 2-125**

The West Mojave Plan would designate routes on public lands managed by the BLM as open or closed to motorized vehicle access, or as open on a limited basis. This designation of motorized routes is a requirement of federal regulation, BLM policy and the BLM's CDCA Plan, and is one of the recommendations of the USFWS Desert Tortoise Recovery Plan. Two steps are involved in this process: (1) the designation of routes as open, closed or limited, and (2) amendment of the CDCA Plan to incorporate the network of open and limited routes as a component of the CDCA Plan.

*The criteria for designating routes have not been presented in this report and needs to be established to prevent unnecessary road closures.*

### **2.2.6.2 Criteria Pages 2- 126 through 2-128**

*In addition to the listed processes, the process must include the Desert Tortoises Active and Inactive Season. It should be noted that most recreation uses occur when the Desert Tortoise is inactive. Appendix I should be utilized in this section.*

*In the second paragraph of Page 1-128 the writer discusses "...routes with topography than those..." does not make sense. This phrase needs to be rewritten to define the writer's intention. The word, topography, also could include Desert Tortoise habitat or not include Desert Tortoise habitat.*

### **2.2.6.3 Route Designation Methodology Pages 2- 128 through 2-140**

*The entire section needs to be revised. Only those portions of roads within the Desert Tortoise Habitat should be initially surveyed and classified. Other roads not within the Desert Tortoise Habitat should be left alone. Appendix I notes that needed roads within the Desert Tortoise habitat should have a speed limit of 20 mph. However, I disagree partially with that recommendation. During the inactive season, there should be not speed limit on established roads. The BLM could reroute roads out of most dense Desert Tortoise habitats to protect them from motor vehicles.*

*Most of the listed subregions did not appear to be within the Desert Tortoise habitat. That is the author's responsibility to better define routes within the Desert Tortoise habitat.*

*Traveling off established roads within the Desert Tortoise habitat should be forbidden during the Desert Tortoise Active Season. It may under controlled circumstances permitted during the inactive season.*

*The BLM must designate experts in locating Desert Tortoise Burrows to survey any route or site where the ground is to be disturbed as discussed in Appendix I.*

**2.2.6.4 Take-Avoidance Measures Pages 2- 140 and 2-141**

*Most Desert Tortoise Habitats are located on relative flat topography that is of little interest to the recreation camper. Motorcycles may prefer such flat topography.. Most recreation occurs during the inactive season during which only the burrows need to be protected. The BLM must provide an extensive education program and to post areas of the Desert Tortoise habitats including their burrows. Organized off road races must be limited to routes during the inactive Desert Tortoise Season and survey made to mark burrows to protect the hibernating Desert Tortoises.*

*Some washes my have Desert Tortoise Burrows on the banks of the dry washes. The BLM must identify these sites and close traveling up the banks where the Desert Tortoise might be in danger. When I say BLM, I mean certified experts by BLM , must mark such burrows to avoid hurting the possible occupants*

**2.2.6.5 Competitive Event Corridors and Race Courses Page 2- 142**

*The listed corridors are inadequate to meet the recreation needs of our expanding population. More corridors must be established that do not do major harm to the fragile desert environment. As previously noted, the Desert Tortoise has an active season and inactive season. This season depends upon the radiation of the sun that the tortoise senses. Off road races should be limited to the Desert Tortoises' inactive season and the trails clearly marked by experts including the center of the route and the outer boundaries of the route. Within this area, certified experts must search for all occupied burrows and mark their locations. The routes in and out of washes must be checked carefully for occupied burrows.*

**2.2.6.6 El Paso Collaborative Access Planning Area Pages 2-142 and 2-143**

*This section fails to also mention that other interests have private property in the El Paso Mountains and that there is some mining activity present along with private land for cabins. Usually vehicles for recreation purposes use the mining and other access roads. The existing maps in the area have been proven to be very inaccurate. It will take time, labor and funding to continually update these maps. The plan must not be finalized until the entire plan area has more route surveys.*

*The report should also note that the permitted big game guzzlers are replacement for lost water sources due to human development within the groundwater basin and collecting surface water runoff. Many natural water sources are gone their water quality has deteriorated to such a point that most native species do not have adequate water supplies. Therefore, the lack of adequate food and water has adversely affected the survival of many native species. These artificial water sources are vital for the survival of many species because they replace lost water sources. More innovative*

*facilities may be required in the future to assure the survival of desired native species. This plan must be continually revised periodically to protect the desired native flora and fauna. The existing official maps must be updated for better accuracy as more land surveys are conducted.*

### **2.2.6.8 Implementation                      Pages 2-144 through 2-147**

*Most the steps noted in this section sound good and reasonable. However, the plan fails to note that interested parties privately maintain most of the open routes with little BLM participation. Government funding may be required to prevent destroying certain routes in canyons due to flash flooding and to provide facilities for camping and for maintaining signage.*

*The BLM needs to work with all interests in establishing cleanup programs and route maintenance such as a "Adopt a Trail program" and "Moose Anderson Days". Creative funding and labor assistance must be noted in this section.*

### **2.2.6.9 Modification of Route Network      Pages 2-147 and 2-148**

*As previously discussed the existing maps within the plan area are inadequate and routes incorrectly noted. The improvement of route locations and plotting on maps should not require an amendment of the CDCA. This is costly and time consuming. The local BLM office must be given the authority to add routes after a reasonable investigation is conducted to protect and enhance all interests requiring such change. The local native flora and fauna must be impacted as little as possible. Reasonable mitigation measures must be incorporated in any new route designation. The plan must recognize the increased population in California and recognize the need for expanded recreational facilities and supporting enterprises.*

### **2.2.7 Education Program                      Page 2-148**

*The failure of the BLM to obtain the acceptance and cooperation of all interests using the West Mohave Plan Area will result in so many violations that the plan will unenforceable. The result would be the destruction of the goals of this Plan.*

#### **2.2.7.1 Goals                                      Pages 2-148 and 2-149**

*The goals are vague and could mean anything. What is missing is funding these goals. The report must make recommendations regarding funding of the recommended programs. Without specific funding the goals are meaningless.*

*Goal 4 will require considerable funding and the report must recommend sources of funding including requesting funding from Congress.*

**2.2.7.2 Targets Page 2-149**

*Without proper funding, the BLM will be unable to reach its targets.*

**2.2.7.3 Delivery Pages 2-149 and 2-150**

*Again none of this delivery comes free. Some may volunteer to deliver the message. However, the report must request funding for Delivery.*

**2.2.7.4 Means Pages 2-150 through 2-152**

*This section sounds wonderful. However, there must be recommendations for obtaining a funding source and for volunteers to spread the message.*

**2.2.8 Monitoring Pages 2-153 through 2-157**

*Again funding for monitoring the recommended program is ignored. As an introductory section the specifics are not present and this may have to be revised when the follow subsections are revised.*

**2.2.8.1 Supplementary Discussion Page 2-157**

*If the Military were not signatures to the 1992 Memorandum, how can they be forced to comply with these requirements of this subsection? How will these studies be funded? This report must recommend priorities for use of available funds. The goal is to achieve the best use of the plan area that insures the most likely survival of desired native species.*

**2.2.8.2 Alkali Seeps, Springs and Meadows Pages 2-158 and 2-159**

*How will these surveys be funded? Also the survey should include investigating the changes in the conditions of these sites over the last 50 years or more due to human development.*

**2.2.8.3 Little San Bernardino Mountains Gilia Page 2-159**

*Again, the National Park Service was not a signature to 1992 Memorandum. Who and how are these studies to be funded? What is the priority of these studies?*

**2.2.8.4 Prairie Falcon Page 2-160**

*Is this a native species? How will this be funded? Is this predator a danger to the Desert Tortoise? If so, are the numbers increasing due more available food due to human activities?*

**2.2.8.5 Tortoise Distance Sampling Transects****Pages 2-160 through 2-166**

(M-98) A line distance sampling program (or other scientifically credible method, if distance sampling proves ineffective) would be implemented in the Fremont-Kramer, Superior- Cronese, Ord-Rodman, and Pinto Mountain DWMAs. To date, this is the only method that has been identified to determine tortoise densities and population trends on a regional basis. It has full endorsement of the Management Oversight Group, consisting of the resource managers responsible for lands and resource protection throughout the listed range of the desert tortoise (i. e., USFWS, BLM, National Park Service, Department of Defense, and state wildlife agencies).

Although there are five delisting criteria given in the Recovery Plan, the primary criterion for delisting tortoises in the West Mojave Recovery Unit, which corresponds to the Plan area, is as follows:

As determined by a scientifically credible monitoring plan, the population within the recovery unit must exhibit a statistically significant upward trend or remain stationary for at least 25 years (one desert tortoise generation).

Although there are limitations associated with the data gained through distance sampling, it remains the best available method to determine if the Recovery Plan criterion is being met or not.

Each of the four DWMAs identified in the western Mojave Desert was surveyed by distance sampling in 2001 and 2002. Current proposals by the USFWS are to survey each recovery unit every year for five years, every other year during the next five years, then every year for five years, and so on, for the duration of the Plan, which is given as 30 years. As such, distance sampling would occur in the western Mojave Desert during the following years: 2003, 2004, 2005, 2007, 2009, 2011, 2012, 2013, 2014, 2015, 2017, 2019, 2021, 2022, 2023, 2024, 2025, 2027, 2029, 2031, and 2033.

*Many researchers have speculated that the Desert Tortoise can roam as far as 100 km. under favorable topography and climate. The shapes of the shell make identification of specific adult tortoises very difficult and hatchlings and young adults nearly impossible. The State of California had an identification program for captive tortoises and it was terminated because of the difficulty of tagging them. Therefore, this expensive distance sampling program may not too practical in insuring the survival of the Desert Tortoise.*

*The only practical procedure for measuring Desert Tortoise recovery is establishing density sampling areas and providing a food supply that will produce a more permanent population that need not wander so far to survive.*

*Captive tortoises have lost their desire to wander very far once they have a good food supply that they like. They also tend to develop burrows or homes in which they develop a safe and satisfactory over night sleeping and hibernating during the cold inactive season. They develop many habits in which daily climate does not seem to be a factor. This has even been observed at Organ Pipe Cactus National Monument where resident tortoises have expanded their density because of the*

*nutritious lawn. This would be a good subject of a Masters Degree in which all areas with lawns within Desert Tortoise habitats should be surveyed as a means to expanding their numbers. The California City Alfalfa fields were known to attract a large Desert Tortoise Population.*

*Unfortunately while humans can do a lot to save this species, man has attracted predators that are destroying the gains made by providing a better food supply for this species. We now have more information on how destructive certain animals and birds can be to the young population. This will be discussed later.*

*Another negative factor that was imported by humans is the upper respiratory disease. There has been little or no research on a cure for this fatal AIDS like virus. This virus is said to have been brought into this area by the importation of Tortoises from other Countries, mainly South America. It has also affected songbirds and other reptiles. It has killed large captive Desert Tortoise populations. As noted in the report, there has been no funding to study this fatal disease. It has been recognized for over 20 years and is now epidemic among wild Desert Tortoise populations and other species. This should be a high priority project with adequate funding for it affects many animals with similar blood types.*

*I recommend that the studies of the factors that kill Desert Tortoise and other native population must have higher spend priorities than monitoring studies that tend to be inaccurate.*

## **2.2.9 Adaptive Management                      Pages 2-166 through 2-170**

*This Section ignores the Desert Tortoise and yet there are many types of potential adaptive management plans that could be implemented to save this population. I have and will discuss many ideas of such programs in my comments.*

### **2.2.9.1 Supplementary Discussion                      Pages 2-170 through 2-172**

*The Bighorn Sheep comments do not appear valid because if protected from hunting like in Death Valley National Park, they do lose their fear of humans. The size of the lambing areas could be reduced and possibly coexist with mining and other activities. Most believe the Puma is responsible for the population decline. Unfortunately the voters of California voted to ban Puma hunting. Research funding priorities must be established where the funds will do the most good to preserve this species.*

### **2.2.9.2 Alkali Wetland Plants                      Page 2-172**

*Add another Adaptive Management item stating as follows:*

*"Additional investigations need to be performed to determine if it is feasible to upgrade many wetlands to produce higher quality plants that will enhance the Desert ecosystems. Many alkali wetlands may be of recent origin and not part of the overall need of protecting the Desert*

*environment. Some wetlands plants may have little social value or benefit to the overall Desert ecosystems and would not be missed."*

**2.2.9.4 Raptors Page 2-173**

*Before any raptor protection program is funded or is established, the report must establish which raptors are native to the plan area and which ones are not. Also the report must establish if the population of each raptor is less than, equal to, greater than the need to keep nature in balance. A selective program must be funded according to priorities on each species of raptors.*

*The recommended programs must be justified on this basis and not in general as presented in this report.*

*The Mojave Ground Squirrel may be considered a pest because it burrows into slopes protecting engineered structures. When rains come, the burrows fill with water and saturate slopes. These slopes fail causing extensive damage that results in the significant loss of public health, safety, and welfare. Los Angeles County has had an eradication program designed to eliminate this rodent from hillside developments. This squirrel thrives on the plants and roots in developed areas.*

*Los Angeles County did not sign the 1992 Memorandum and is not obligated to enforce this plan.*

**2.3 ALTERNATE B: BLM ONLY Beginning 2-174**

**2.3.1 Overview Page 2-174**

*My comments in 2.2 Alternate A apply to Alternate B where applicable.*

**2.3.5 Species Conservation Measures Pages 2-175 and 2-176**

*The BLM should cooperate with local agencies in eradicating feral dogs from the entire plan area. They are not native to the area and they do considerable harm to all aspects of the ecosystems within the plan area.*

*The BLM should cooperate in the raven, crow and magpie eradication programs with other local agencies as these raptors are not native to the desert and also do considerable harm in developed areas as well as the Desert ecosystem.*

**2.3.6 Monitoring, Adaptive Management and Implementation Page 2-176**

*There is not reason for the BLM not to have a citizens advisory group whose advisory capacity is limited to BLM lands only. This group could also work to obtain cooperation from other jurisdiction in*

*controlling common problems. The BLM need the cooperation and good will from all interests and jurisdictional authorities within the plan area. This includes the National Park Service.*

**2.4 ALTERNATIVE C: TORTOISE RECOVERY PLAN****Beginning Page 2-177****2.4.1 Overview Page 2-177**

The Desert Tortoise (Mojave Population) Recovery Plan (Tortoise Recovery Plan) was adopted in 1994. Prepared for USFWS by a "Desert Tortoise Recovery Team," it presented a set of actions that the recovery team concluded were needed to recover tortoise populations. Although its recommendations are not binding on the agencies with jurisdictions over lands within desert tortoise habitat, the Recovery Plan's conservation strategy has served as a starting point in the process of developing conservation strategies for the West Mojave and other regional plans.

The USFWS is currently initiating a two-step review of the Recovery Plan. During 2003, a team assembled by USFWS will conduct an assessment of the plan in light of new information collected since 1994. If the assessment indicates that a revision of the Recovery Plan is warranted, that revision could occur during 2004.

The 1994 Tortoise Recovery Plan's strategy was relatively general (for example, the locations of recommended DWMA's were identified on regional maps but precise boundary identification was left to future planning). The interagency collaborative planning process that led to Alternative A used the Recovery Plan as a starting point, adding details and modifications based upon more recent data. Accordingly, Alternative C uses many of the more specific proposals of Alternative A to "flesh out" many of the relatively more general recommendations of the Tortoise Recovery Plan. Alternative C combines the tortoise conservation strategy suggested by the Tortoise Recovery Plan with the conservation program developed by Alternative A for the Mohave ground squirrel and other sensitive plants and animals. All aspects of this alternative's conservation strategy would be as described for Alternative A, except as specifically described below. These include Alternative A's motorized vehicle access network and education outreach program. The West Mojave Plan would be a habitat conservation plan, and incidental take permits would be sought from CDFG and USFWS by local jurisdictions (see foldout Map 2-16).

*However, it has become obvious that the Desert Tortoise Recovery Plan is not working. After many studies, we have a better knowledge of where the problem is and what research needs to be implemented. We even have an idea of what expenditure priorities are to be established. What detailed protective measures need to be taken?*

**2.4.2 Habitat Conservation Area Pages 2-177 and 2-178**

*Again, the Plan must include review of all sites likely to have Desert Tortoises. The DWMA should indicate where large concentrations of the Desert Tortoises are likely to be found. Measures must be take so that humans can coexist with the Desert Tortoise as discussed in Alternate A.*

#### **2.4.4 Species Conservation Measures Page 2-178**

*In addition the BLM should work joint powers and joint conservation agreement with adjacent jurisdictions within the plan area.*

##### **2.4.4.1 Desert Tortoise Take-Avoidance Measures Pages 2-178 and 2-179**

The following desert tortoise take-avoidance measures would be adopted:

- (AC-1) Surface disturbance within DWMA*s and other sites likely to have Desert Tortoises* would be restored to pre-disturbance conditions (defined as the topography, soils, and native vegetation that exist in adjacent undisturbed or relatively undisturbed areas), closing access to non-designated vehicle routes and including restoring non-designated roadbeds to their pre-disturbance state.
- (AC-2) All competitive and organized events (including dual sport) would be prohibited within DWMA*s.*
- (AC-3) Parking and camping would be allowed within DWMA*s* in designated areas. Outside of DWMA*s*, parking and camping would be allowed within 300 feet from the centerline of motorized vehicle routes designated open.
- (AC-4) Tortoise DWMA*s* may provide forms of recreation compatible with tortoise recovery, including minimum impact recreation (e.g. hiking, equestrian uses, bird watching, and photography).
- (AC-5) Between February and September, no shooting would be allowed in DWMA*s.*
- (AC-6) Mining would be allowed on a case by case basis, provided cumulative impacts do not significantly impact tortoise habitats or populations, and effects would be mitigated during operation and land restored to pre-disturbance condition. Requirements that surface disturbance within DWMA*s* be restored to pre-disturbance conditions would apply to open pit mines and hard rock quarries. Mineral withdrawals identified by Alternative A (Afton Canyon, acquired lands within the Carbonate Endemic Plants ACEC, Coolgardie Mesa and West Paradise Conservation Areas, and Rand Mountains) would be pursued.
- (AC-7) Vandalism should be halted, as should the collection and release of captive tortoises. Regular and frequent patrols by law enforcement personnel are essential
- (AC-8) Emergency measures would be developed to control unleashed dogs and dog packs.
- (AC-9) Initiate cleanup of surface toxic chemicals and unexploded ordinance. Identify and clean up unauthorized dumps in DWMA*s.* Reduce or eliminate use of authorized landfills

and sewage ponds in and near DWMA's by predators of the desert tortoise (e.g., ravens and coyotes). Allow no new landfills or sewage ponds within DWMA's.

*This is a utopian approach. All goals are desired but impossible without adequate funding and the support of the public and especially the special interests using the plan area.*

*AC-9 is inadequate because the predators of the Desert Tortoise can come a long distance to consume all new hatchlings and what juveniles that survived past years.*

*AC-8 is inadequate as previously discussed. Feral dog packs and domestic dogs without the presence of their owners do nearly all the destruction to the Desert Tortoise. Usually dogs in the presence of their owners are not a threat.*

*AC-7 is almost impossibility to control without education. Just look at the uncontrollable vandalism done in urban areas*

*AC-6 is ridiculous. If proper measures are taken to mitigate the protection of the Desert Tortoise, mining could be permitted. As previously noted, humans can do a lot to increase the Desert Tortoise populations. Mining operations could provide food, shelter, and protection for the Desert Tortoise outside of the disturbed area to be mined.*

*AC-4 should include controlled use of existing routes and trails. As previously noted and in Appendix I, such controls are feasible.*

*AC-2 is also fallacious. As previously noted and in Appendix I, detailed controls make desert racing feasible in any area that might have a Desert Tortoise.*

*DWMA's are artificial boundaries and do not necessarily reflect a line between the presence and no presence of Desert Tortoises. This report must recognize this fact and apply the rules and regulations accordingly.*

#### **2.4.4.2 Desert Tortoise Survey and Disposition Protocols Page 2-179**

*AC-11 must be justified. Maybe Desert Surveys can be justified and maybe not.*

*AC-13 is too restrictive. The word, "research" is too broad of a meaning. In any, no Desert Tortoise should be injured in the name of research. Also Desert Tortoises that can't be returned to the wild should be placed in adoptive homes. The California Turtle and Tortoise Club has had a very successful adoption program that would provide a good life for any Desert Tortoise. If there could be a male and female in the adoptive home, many years of hatchlings could be produced to satisfy the desires of adoptive homes.*

**2.4.4.3 Proactive Tortoise Management Programs Pages 2-179 and 2-180**

Under Desert Tortoise Fencing and Signing:

(AC-14) Fence or otherwise establish effective barriers to tortoises along heavily traveled roads. Install culverts that allow underpass of tortoises to alleviate habitat fragmentation. Construct desert tortoise barrier fencing and underpasses along Highway 395, parts of Highway 58, the Randsburg-Mojave Road, the Red Rock - Randsburg Road, the Red Rock - Garlock Road, the railroad north and adjacent to Highway 58, Highway 247, Interstate 15, Fort Irwin Road, Manix Trail, Superior Lake [Copper City] Road, and the northern boundary of the Superior-Cronese DWMA. Construct highway underpasses along Fort Irwin Road to allow desert tortoise movement and to facilitate genetic exchange.

(AC-15) Sign or fence DWMA boundaries adjacent to communities and settlements such as Barstow, the small settlements north of Barstow, Kramer Junction, California City, Cantil, Galileo Hill, Randsburg, Johannesburg, Atolia and Helendale, and other areas with conflicting uses.

*The report must consider that many of these communities have a nutritious food supply for the Desert Tortoise and that if conditions were met, The Desert Tortoise should have access to the good food supply. Negative aspects such as road kills and raptors must be mitigated.*

(AC-16) Fence the periphery of the Superior-Cronese DWMA as needed to enforce regulations and protect desert tortoises from human impacts. Along the boundary with the Fremont-Kramer DWMA, a double row of desert tortoise barrier fencing may be necessary to prevent the spread of URTD into the Superior-Cronese DWMA.

*Again the URTD must be eradicated through research and a vaccine developed to save this Desert Tortoise and other native birds from extinction*

(AC-17) Construct and maintain special fencing to protect desert tortoises from recreational vehicle use in the Johnson Valley Open Area and surrounding lands.

(AC-18) Sign boundaries of the Ord-Rodman DWMA in the vicinity of Barstow, Newberry Springs, Lucerne, Landers, and Lucerne Valley.

Land Acquisition: (AC-19) The goal of the plan would be to acquire all private lands in DWMA's. Maintenance of the local tax base would not be a goal of the DWMA land acquisition program. Outside of DWMA's, acquisition priorities set by Alternative A would be followed; land acquisition would be from willing sellers only, and the acquisition program would seek to maintain the stability of the local tax base.

Raven Management: (AC-20) Reduce populations of the common raven to lessen destruction on juvenile tortoises and ensure recruitment of juveniles into the subadult and adult populations.

*This is the most important priority for the protection of the entire species. Recent studies indicate that throughout Southern California these raptors have increased 10 fold in the last few years. They are a nuisance in all areas where humans exist. Now we find that they carry the West Nile Virus. Will this virus spread to the Desert Tortoise population? More research is needed as this is a very deadly disease for those with weak immune systems such as the Desert Tortoise.*

**Under Tortoise Translocation:**

(AC-21) Desert tortoises from adjacent lands should be experimentally trans-located into DWMA's, such as from the El Mirage Open Area into the Fremont-Kramer DWMA and from the Johnson and Stoddard Valley Open Areas into the Ord- Rodman DWMA, to increase the density of desert tortoises and salvage breeding stock.

*The word "salvage" is not a proper use. The goal is to diversify the breeding stock.*

Headstarting: (AC-22) Initiate a semi-wild breeding program to rebuild and restore tortoise populations. The DTNA would be an ideal place to begin this program.

*Again, this report ignores the UCR studies. This information must be used as a basis for further research. I understand that the results of reintroducing captive tortoises back into the wild were a complete failure. Other means must be done to make this program a success.*

**Under Administration:**

(AC-23) Each DWMA may require a reserve manager, additional staff, and law enforcement personnel; in some cases, the same staff may manage adjacent DWMA's. The formation of local advisory committees is encouraged. As funds become available, each DWMA or group of DWMA's should have an associated visitor center or set of interpretive sites and panels.

*This is just a utopian dream. It should give low priority in funding. We must save the species first.*

**2.4.4.4 ? Should begin on 2-180**

*All interested parties must remember to be aware of this Section that was not printed in this report.*

**2.4.5 Public Land Livestock Grazing Program Page 2-180**

*All livestock grazing programs on public lands that have Desert Tortoise populations must be regulated as previously discussed. The programs must protect the food supply for the Desert Tortoise and at the end of the Active Season of the Desert Tortoise, active grazing could remove excess brush that could cause a destructive fire*

**2.4.6 Public Land Motorized Vehicle Access Network Pages 2-180 and 2-181.**

This alternative is based on the assumption that tortoises thrive best where density of access routes is low, traffic is low and human access is limited. To achieve this:

- (AC-25) Alternative A's motorized vehicle access network would be adopted and implemented. Routes not designated open would be restored to their pre-disturbance condition. Limited speed travel would be allowed in tortoise DWMA's on designated signed roads. Implement closure of DWMA's to vehicular access with the exception of designated routes, including Federal, State and County maintained vehicle routes.

*See previous comments. We must develop safe multi-use regulations.*

- (AC-26) Restrict the establishment of new roads in DWMA's.

*I recommend the word, "Discourage" instead of "Restrict".*

- (AC-27) Implement emergency closures of dirt roads and routes as needed to reduce human access and disturbance in areas where human-caused mortality of tortoises is a problem.

*Closures of routes are an extreme case. As previously noted in Appendix I and my other comments, protective measures can be instituted and route use restricted during the Desert Tortoise active season.*

#### **2.4.7 Education Program**

**Page 2-181**

- (AC-28) Construct a visitor education center at the DTNA that would include facilities for research as well as a drop-off site for unwanted captive desert tortoises. Develop programs to promote use of unwanted captives for research and educational purposes.

*This is a repeat of earlier proposals and my comments are still valid.*

#### **2.4.8 Monitoring, Adaptive Management and Implementation Page 2-181**

Establish a research program and focus research on the following topics:

**Fremont-Kramer DWMA:** (AC-29) Desert tortoise diseases, including URTD; toxicosis; shell lesions; general health; nutritional status; food preferences and requirements; water balance and energy flow; predation by feral dogs and other mammalian predators; raven predation; habitat restoration; the effectiveness of desert tortoise-proof fencing and culverts in eliminating road kills; interactions of desert tortoises with urban barrier fencing; protective barriers between urban development and open desert; and effects of mining, domestic sheep and cattle grazing, noise/vibrations, and cumulative impacts on mortality and survivorship.

**Superior-Cronese DWMA: (AC-30)** Epidemiology of URTD and other diseases; physiological, ecological, nutritional, and behavioral requirements of hatchling and juvenile desert tortoises; nutritional qualities of preferred food plants; habitat restoration; and characteristics of undisturbed desert tortoise habitat. Continue using the latest medical techniques to assess the health of desert tortoises. Conduct epidemiological surveys to determine the distribution and frequency of desert tortoises with URTD and other diseases. These surveys would be used to help determine if fencing is necessary within the DWMA or between the Fremont-Kramer DWMA and the Superior-Cronese DWMA.

**Ord-Rodman DWMA: (AC-31)** Disease epidemiology; the effects of ravens and other predators on desert tortoise populations; and the effects of hunting of upland birds, big game, and furbearers on desert tortoises and their habitat.

*This program is not needed. There is already plenty research data that determines basic research needs in protecting the Desert Tortoise from the Upper Respiratory Disease and from specific predators that are not native to the area and are out of balance with the Desert Ecosystem. There are several native raptors that require studying as to their effect on the killing of hatchlings and young adults. These research programs must be of high priority. Mitigation recommendations including funding must be determined to protect these vulnerable Desert Tortoises.*

*Once this is mitigated adequately, other research programs may be justified to reduce the other hazards to the Desert Tortoise.*

**2.5 ALTERNATIVE D: ENHANCED ECOSYSTEM PROTECTION**  
**Page 2-182**

**Beginning**

*The comments that I have and will make will also apply to this Alternative D.*

**2.5.4 Species Conservation Measures Pages 2-182 through 2-186**

*In (AD-6) the requirements limiting camping distances adjacent to routes is excessive and does not consider the active and inactive seasons of the Desert Tortoise. I would recommend that no camping be allowed during the active season and that the regulations discussed previously be adopted under this Alternative.*

*In (AD-8) the requirements should be required throughout the Plan area where it is practical.*

*In (AD-9) New agriculture may be permitted if the agriculture will help increase Desert Tortoise populations. As previously noted competitive and dual-sport events should be permitted during the inactive season over routes that would not adversely affect the Desert Tortoise. They must be closely regulated.*

*In (AD-10) Controlled fire management practices should be permitted during inactive season before the new spring growth occurs. Such practices should include low temperature fires that would not*

*affect the Desert Tortoise in their burrows. If excess brush should develop, the Desert Tortoise population could be endangered.*

### **2.5.6 Public Land Motorized Vehicle Access Network Pages 2-186 to 2-188**

*This is a good place to make a comment that this Plan cannot be considered a permanent plan. This applies to Vehicle Access Networks, research priorities, etc. This Plan must be constantly reviewed and updated by revisions. This plan must consider available funding and establish program priorities. This is not done in this Plan.*

### **2.6 ALTERNATIVE E: ONE DWMA - ENHANCED RECREATION ACTIVITIES Beginning Page 2-188**

*The comments that I have and will make will also apply to this Alternative E. Again, the access to DWMA must be based on the season. This section provides little additional recreational areas to meet the increasing demand.*

### **2.7 ALTERNATIVE F: No DWMA - AGGRESSIVE DISEASE AND RAVEN MANAGEMENT Beginning Page 2-191**

*The comments that I have and will make will also apply to this Alternative F.*

#### **2.7.1 Overview Page 2-191**

*This the most cost effective Alternatives in this plan. The second most cost effective in the tortoise fencing and maintenance noted in previous plans.*

*This section is deficient as it defines no specific research programs in eradicating the known diseases that are killing the Desert Tortoise population. In addition we learn that the crow population succumbing to the West Nile Virus. What will this virus do to the Desert Tortoise and other endangered fauna?*

*A series of specific research programs must be established immediately and all available funds shall be devoted to this program to eradicate the Upper Respiratory Disease and the West Nile Virus..*

*A series of specific research programs must be established to replenish food supplies that were lost due to human developments in the habitat area.*

*A raven, crow, and magpie eradication program must be instituted to bring populations levels back to the 1940's as indicated by earlier studies.*

#### **2.7.2 Habitat Conservation Area Page 2-191**

*Again the plan fails to recognize the two seasons of the Desert Tortoise or even explains the Desert Tortoise's primitive metabolism system that requires different management techniques. The Desert Tortoise is not a reptile, bird, nor is it a mammal. It has different life patterns. Until this is understood by the planners, their Habitat Conservation Area is full flaws and ineffective.*

*There have been many early publications on this subject that require updating and implementation. T*

**2.8 ALTERNATIVE F: No ACTION**

**Beginning Page 2-193**

*No action in unacceptable. The decline of the Desert Tortoise began when humans began to settle in the plan area. The decline of the Desert Tortoise Population began over a long period of time. Humans love the Desert tortoise and with proper education, measures will be effective to save this lovable species through education, destructive practice elimination, and research.*

**2.9 ALTERNATIVES EVALUATED BUT ELIMINATED FROM DETAILED CONSIDERATION**

**Beginning Page 2-197**

*No Comment because the Alternatives did not reflect the needs of the Desert Tortoise and other endangered flora and fauna.*

**2.10 COMPARISON OF ALTERNATIVES**

**Beginning Page 2-199**

*This comparison did not detail the benefits to the endangered species and just remunerates the report's deficiencies. Alternate F appears to be the most effective alternative in protecting and expanding the numbers of Desert Tortoises. If this Alternative is combined with all known data, perhaps a detailed research plan in eradicating the diseases that have destroyed both the captive and the wild Desert Tortoise populations. Also we must make sure that the West Nile Virus does not reach the existing Desert Tortoise populations if they are found vulnerable to this deadly virus.. Eradicating the non-native and excessive populations of raptors is another essential program. This Alternative must recognize the human demands for use of the Desert. Programs that increase health, safety, welfare, and food supply for all endangered faunas must be implemented as soon as possible. This BLM report failed to go into detail on this subject. The rest of this Alternative F seems reasonable. This plan must be continually updated as more information is collected. .*

**WEMO Comments**  
**CHAPTER 3**  
*Tortoise Group*  
Prepared by Chris Sproferoa  
Comments added by Charles Sudduth  
Civil and Geotechnical Engineer

## **CHAPTER THREE AFFECTED ENVIRONMENT**

### **3.1 PLANNING AND REGULATORY FRAMEWORK    Beginning Page 3-1**

*This Section fails to mention that not all affected agencies signed the 1992 Memorandum and that other jurisdiction will also have to adopt the plans requirements as part of their Code and other legal agreement.*

#### **3.1.3 Local Jurisdictions        Pages 3-13 through 3-28**

*This section notes all the general plans of the local jurisdictions. However, in spite of the local plans, has academia done any research on Desert Tortoises who are living within these jurisdictions in the protection of humans? Many may have migrated into back or were illegally taken from their original habitat. A lot of information can be obtained on the lifestyle and nutritional needs of the Desert Tortoise.*

#### **3.1.4 Federal Endangered Species Act    Beginning Page 3-28**

##### **3.1.4.2 Listed Species    Page 3-29**

*The Desert Tortoise was listed as threatened on August 2, 1990. The recovery plan listed later apparently never has been put into effect. Twenty-four years have passed. Yet we see no evidence of this species recovery. This lack of recovery has been discussed by many including my comments in this review. This lack of action is a disgrace to the BLM and other agencies have jurisdiction over the DWMA.*

##### **3.1.4.3 Recovery Plans    Pages 3-29 through 3-31**

*The statement regarding the de-listing of the Desert Tortoise (June 28, 1994) from the threatened species list appears to be very inaccurate as it take 20 years for each generation to develop. Observations since that date have indicated and significant decline in the Desert Tortoise populations. This report must provide current information to justify its statement. Recent studies indicate that the forces eradicating the Desert Tortoise are still present and are becoming stronger.*

**3.1.4.4 Critical Habitat Page 3-31**

*Again this statement is a repeat of Chapter 2. It ignores that many jurisdictions did not sign the memorandum and consequently the BLM has no jurisdiction over these agencies. More detail is required in protecting and enhancing Desert Tortoise Critical Habitats.*

**3.1.5 California Endangered Species Act Beginning Page 3-36**

**3.1.5.2 Listed Species Page 3-36**

*The Desert Tortoise was listed as threatened on August 3, 1989, by the State of California. Some conservation work was done by some State agencies such as CalTrans who designed construction fencing along the Intestates and the registration of captive adult populations. Some research was done at the University of California at Riverside. However, in about 6 years all recovery programs were forgotten. Twenty-five years have passed. Yet we see no evidence of this species recovery due to the State's original ambitious programs.*

**3.2 AIR QUALITY, SOILS AND WATER Beginning Page 3-42**

**3.2.1 Climate and Air Quality Beginning Page 3-42**

**3.2.1.1 Climate Pages 3-42 through 3-44**

*The Section is deficient in that it fails to mention the extreme rainfall variations that occur within the Plan Area. This area is known to be within the Southwest Monsoon area. There are often periods of dry air but there are periods of very moist air. A lone thunderstorm can pass through and dump 2 to 3 inches of rain over a small area in a few minutes. Such extreme rainfall is rare and justifies the low annual rainfall totals noted in this section. However the runoff can be extreme causing extensive damage to the environment. In the rainfall record books, most storms lasting less than 20 minutes have set world rainfall intensity records in this plan area. Rainfall averages cannot be considered indicative of actual climatic rainfall conditions. Droughts are severe and cause difficult living conditions for our native species. These remaining species have adapted to these conditions and therefore, they lead ad precarious existence. Most depend upon springs and naturally high groundwater surfaces for survival. As previously noted, humans have adversely affected the original water supply within the plan area.*

**3.2.1.2 Air Quality Pages 3-44 through 3-54**

*The report fails to describe the changes in air quality within the plan area. It does note the various regulatory agencies that control various areas within the plan area.*

9:57 PM

*Further research is needed to determine the effect of particulate matter on the respiratory systems of the Desert Tortoise. We know that humans have developed projects that have increased the pollution or particulate matter in the area. Most native species have had a very pure air supply for thousands of years. The changes in the past 50 years may have an adverse affect on their health.*

### **3.2.2 Geology and Soils      Pages 3-54 through 3-58**

*This section ignores topography and climate. Desert Tortoises roving areas a limited to topography, soil conditions and topography. This must be taken into consideration as to providing adequate food supply within some limited areas.*

*The age and the formation of the rocks have little influence on the survival of our native species.*

### **3.2.3 Water      Pages 3-59 through 3-63**

*As previously discussed, the study area has seen a large drop in the ground water levels due to human use that have affected the survival of many desired species. This includes the bighorn Sheep and the Desert Tortoise. Capillary action has caused many springs to produce alkali waters that our native floras and faunas cannot tolerate. Other natural springs have dried up. This also has caused many native nutritious plants to disappear. This has reduced the food supply to our native species. Non native plants that are not so nutritious have taken over and squeezed out some or the remaining native plants. A program is needed to replace the lost water supplies both in quantity and quality and the foliage needed to feed our threatened and endangered species. This report fails to discuss those changes in the water supply to our native species that have occurred over the past fifty years. The protection of alkali plants may not be necessary if they are opportunistic and developed at the site due to the deterioration of the water quality.*

## **3.3 BIOLOGICAL RESOURCES    Beginning Page 3-63**

### **3.3.2 Desert Tortoise    Beginning Page 3-67**

#### **3.3.2.1 Regulatory Status      Pages 3-67 and 3-68**

*This entire section ignores the early days when lovers and owners of Desert Tortoises realized that the entire population was endangered and petitions the Fish and Wildlife service to do something about. This report ignores the early studies that were taken to prove that the Desert Tortoise population was an endangered species. Instead they had to settle on the terminology as being "Threatened".*

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*With the help of Desert Tortoise lovers, many learned to successively hatch and multiply their numbers successively in captivity where the Desert Tortoise had plenty of food and protection against predators. The Report ignores the early University of California at Riverside Studies in which attempts were made to return young captive tortoises back to the wild.*

*Later in the 1990's many captive Desert Tortoise Herds were wiped out by the upper respiratory infections. Many veterinarians, including Dr. Roscoff, worked hard to find a cure for this disease, which was related to Human Aids. The most advance AIDS medicines of that time were used to try to save as many of the captive population as possible. Our Governments ignored this health crisis and at that time thought that if the wild herds were isolated from humans, they would be protected from coming down with this disease. It was also learned that birds carried the virus and many birds living near infected herds also died. I was advised that I should not permit a Desert Tortoise in my back yard for at least 7 years and after there was a recovery of the song bird population in my area. Obvious the latest studies indicate that this disease is one of primary factors in the decline of the wild Desert Tortoise populations. This calls for a new approach to save the species.*

### **3.3.2.2 Tortoise Habitat Designations      Pages 3-68 through 3-71**

**USFWS Recovery Units and Desert Wildlife Management Areas:** The Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994b) established recovery goals and objectives for six "recovery units." The Western Mojave Recovery Unit is conterminous with the West Mojave planning area. The Recovery Plan stated that recovery units are "...essential to the long-term recovery, viability, and genetic diversity of the species." The Recovery Plan also recommended that Desert Wildlife Management Areas be established within each recovery unit. DWMA's were characterized as areas in which "...recovery actions will be implemented to provide for the long-term persistence of viable desert tortoise populations and the ecosystems upon which they depend."

The Recovery Plan recommended that DWMA's should: (a) be "...somewhere between 200 and 5,000 square miles..." with "...at least 1,000 square miles...recommended as the target size" (page 33); (b) have "...boundaries ... drawn to include the best examples of desert tortoise habitat in specific vegetation regions ... heterogeneous terrain, soil types, and vegetation within DWMA's will best provide protection for the entire ecosystem upon which healthy desert tortoise populations depend" (page 48); (c) contain "...the largest possible blocks of good tortoise habitat in an area, containing the most dense desert tortoise populations, should be included within DWMA boundaries" (page 48); and (d) consist of "...round or square patches of habitat are more likely to retain desert tortoise populations than elliptical or rectangular ones. Long, linear strips are least desirable" (page 49).

The Recovery Plan suggested that at least three of four potential DWMA's be established within the Western Mojave Recovery Unit. These particular DWMA's were recommended for the following reasons (USFWS 1994b, page F28):

The Western Mojave recovery unit is the largest and most heterogeneous of the recovery units in terms of climate, vegetation and topography. It includes three major vegetation types - the Western Mojave, Central Mojave, and Southern Mojave - each of which has significant and distinctive elements...Four DWMA's within the Western Mojave recovery unit represent the diversity. The Fremont-Kramer DWMA represents the Western Mojave region; the Superior-Cronese DWMA represents the Central Mojave region; and the Ord-Rodman DWMA represents the Southern Mojave region. The Joshua Tree DWMA [Pinto Mountain], the fourth within this recovery unit, contains Southern Mojave and Eastern Colorado elements. The tortoises have responded to this habitat heterogeneity with different food habits and behavior in each of these areas. Thus, three DWMA's are essential in this recovery unit to preserve the heterogeneity [emphasis added]. Secure, large reserves are especially critical because of the severe population declines and heavy human use in these areas.

It is important to note that the Recovery Plan is advisory; federal agencies are not required to adopt its suggestions. The Recovery Plan recommends the general areas where DWMA's should be located, but leaves the task of delineating the DWMA boundaries to the land management agencies, in coordination with USFWS, CDFG, local stakeholders, and other interested parties. The principle agency mechanism for implementing recovery plan tasks is through amendments to existing resource management plans (BLM) or through the development of broader bioregional plans in collaboration with local government.

**Relationships Among Tortoise Habitat Designations:** Public lands designated as critical habitat were generally the same as those earlier delineated by the CDCA Plan as crucial habitat, with the following exceptions. The northern half of Brisbane Valley, most of the Stoddard Valley Open Area, and two 50-square mile areas in Johnson Valley Open Area were considered crucial habitat but were not designated as critical habitat. Areas south of Fort Irwin and Edwards Air Force Base, and most of the area east of Highway 247, which are now critical habitat, were not identified as crucial habitat. Similarly, BLM lands designated as critical habitat generally corresponded to Category I and II tortoise habitats.

The Recovery Plan (USFWS 1994b, page 56) distinguished DWMA's and critical habitat, noting that critical habitat does not accomplish the same goals or have as dramatic an effect upon tortoise conservation as does a recovery plan because critical habitat does not apply management prescriptions to designated areas. However, designation of critical habitat does provide protection of desert tortoise habitat until such time as the Desert Tortoise Recovery Plan is implemented and DWMA management is employed.

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**Existing Areas of Relatively Higher Tortoise Densities:** The preceding discussion pertains to official designations by one or more of the federal or State agencies. Based on surveys between 1998 and 2002, regions were identified as having "above average" or "higher density" tortoise occurrence. Although not an official designation, the differentiation between "higher density" and "lower density" tortoise areas is an important one relative to the plan's effectiveness of minimizing and mitigating take.

*DWMAs as proposed in this section require too much valuable land. A better solution to protect the native populations must be established. Again, we must be concerned about birds carrying viruses that may devastate the wild population.*

*On Page 3-70, the suggestion that DWMAs should be based on geometric shapes is a ridiculous. The boundaries must be based on Topography, Climate and geography. A common term used in California Codes.*

*DWMAs are very necessary. However, the boundaries must be carefully chosen and sufficiently isolated to prevent the spread of these viruses. Of course, a vaccine or other cure would be more effective in saving the Desert Tortoise.*

### **3.3.2.3 Tortoise Life History      Pages 3-71 through 3-74**

*Again this section is very limited in it's data. Captive tortoises have shown very different characteristics. Males have been known to also fertilize the female's eggs in early spring in addition to the fall activity. Many males will start hibernating in late September. Again climate and food supply make such determinations. My experience has been that hatchlings and juveniles tend to hibernate about the same time as the adults.*

*Eating habits of the Desert Tortoise varies and they do try to find and appreciate the most nutritious available plants. They have been known to move into the Alfalfa field near California City with some disastrous results Again, the regulatory agencies and our scientists failed to do anything to protect the Desert Tortoise except to try to fence them our their good food area. The amateur Desert Tortoise observers tried to do something to utilize Alfalfa as a means to strengthen the wild populations and to allow them to consume that planted alfalfa, as long as it was not harvested during their active season.*

*This Section confirms that Desert Tortoises cannot survive on highly mineralized plants. The report fails to recognize that many plant sources became highly mineralized due to the lowering of the ground water levels and deprived the Desert Tortoise of it need food supply.*

*The report fails to note when Desert Tortoises lay their eggs. My experience has been that the female will dig a shallow hole in sunny area and lay approximately 7 eggs as noted in the report. Most humans that have male and female tortoise will have at least and 8-hour warning as to where the eggs are to be laid. The female starts early in the morning and usually drops her eggs*

*in the late afternoon. By nightfall, the hole has been covered so that the eggs are very difficult to locate except by observation of the egg laying. I have then dug up the eggs and placed them in a pan filled with sand in a chicken incubator with temperature set at 90° F. I also will have a cup filled with water to keep the air humid. This temperature must be on the high side as I was only able to hatch male tortoises. With good care, I was able to hatch most of the eggs and all my hatchlings survived. Few hatchlings will hatch naturally in the coastal plain. Although, some have been know to hatch naturally along the foothills in the Burbank area.*

*My experience has been that the eggs hatch during August. I have never known any to hatch in October. Many have let their hatchling keep warm all winter and do not let them hibernate the year. After the first year they are allowed to hibernate with the others.*

*Most captive tortoises usually come out of hibernation when the evening temperatures warm up. For them food in plentiful. However, most Desert Tortoise owners had no guide as to what was the proper food for the captive herds. Most use lettuce, but it was really not nourishing even though the Desert Tortoises receive a lot of need folic acid. Many used Romaine Leaves, which has more nutrition. Some used a mixture of Purina Puppy Chow and cereal. Later, veterinarians decided that the Puppy Chow had too much fatty products. The best food that was discovered was Alfalfa, St. Augustine Grass, Diacondra Grass, and Hibiscus Flowers and Rose petals. In the long run most Desert Tortoise were very good at finding the foods that liked and needed.*

*Most of the report's descriptions are accurate. Again food and climate determines the activity of the Desert Tortoise with the hatchlings and juveniles being the most vulnerable due poor diets and their small sizes.*

**3.3.2.4 Tortoise Populations      Beginning Page 3-74**

**3.3.2.4.1 Permanent Study Data      Pages 3-75 and 3-76**

*The data in this section is very old. However, it does present alarming decreases in the Desert Tortoise Population. Recent sightings indicate even more alarming decreases in the 7 years since the last population study was done.*

**3.3.2.4.2 Desert Tortoise Field Surveys      Pages 3-76 through 3-89**

*Most Cities have required " presence-absence" surveys on new developments. Most consultants are usually hired by the developer whose interest is the note the least potential number of tortoises and even none seen. So we must assume that either the Desert Tortoise has been removed from the sites or they have be forced away to other factors prior to development. This data is not reliable.*

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*The Sheephole Valley Study did present some very interesting information regarding Desert Tortoise densities versus the distance from paved highways. This study gave an indication of some human and predator effects on tortoise densities.*

*The ratio of Male vs. Female count is very interesting. However, we do know that during the egg fertilization and egg development, the sexes of the hatchlings are dependent upon many natural factors uncontrollable by humans such as temperature. The predominance of males indicates a great imbalance in reproducing this species. More research is needed to determine the reason for this imbalance. My experience that one male can fertilized several female egg clutches. Maybe, we can learn how to produce more female hatchlings that can survive to be adults and start reproducing more hatchlings. Please note my experience in producing all male hatchlings.*

*My experience was that my males would start hibernating at least two weeks before the females and younger tortoises. However usually within a 2 week period all would become active or would start hibernating. The sex made little difference.*

*The low count of sub-adult Desert Tortoises is alarming. Based on the number of eggs that usually hatch, there appears to an unacceptable high mortality rate of the younger Desert Tortoises. Remember a Female each year should produce 7+ hatchlings. The survival rate is unacceptable and the current protection plans are not providing adequate protection for the survival of this species. The Map 3-9 on Page 3-88 indicates an alarming low sub-adult population throughout the area.*

#### **3.3.2.4.3 Desert Tortoise Distribution Pages 3-89 through 3-93**

*The report fails to note if there was a significant captive Desert Tortoise population within developed areas within their natural habitat.*

#### **3.3.2.5 Threats to Tortoises: Mortality Factors      Beginning Page 3-93**

*My comments regarding Appendix J. were presented in my letter to CORVA dated July 19, 2003. My comments should also apply to this section. My comments in this section will be for emphasis or where the report does not follow information and recommendations in Appendix J. I concur that most of the threats to the Desert Tortoise is Human caused. However, there are direct causes and there are indirect causes in which Human by occupying the land brought conditions that caused a high mortality rate among Desert Tortoises. The report must recognize that the Desert Tortoise can survive with humans and that they often adopt many areas developed by humans. It should be the purpose of this report to establish a plan that with increase the numbers of Desert Tortoises under an ecosystem that benefits them in the greatest manner.*

#### **3.3.2.5.1 Direct and Indirect Anthropogenic. Mortality Factors Pages 3-93 through 3-100**

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**Direct Anthropogenic Mortality Factors: Pages 3-94 through 3-98**

*Many direct mortality factors can be limited to a small minority of fatalities. This can be done through education and special regulations during construction. In many cases, landscaping in urban setting will enhance the Desert Tortoise populations. Many Plants must be avoided as they are poisonous. These poisonous plants must be publicized and known by anyone who does landscaping.*

*The greatest threat is the Motor Vehicle and other moving construction equipment. Using this equipment makes it difficult to maintain equipment separation from Desert Tortoises meandering in isearch for food and a burrow for protection. In such cases, there many humans willing to adopt Desert Tortoises who are native to the area. Those that adopt them must be willing to provide adequate food supply within a small area, fencing to prevent wandering into streets or driveways, and a safe location for hibernation. It is best that those that adopt Desert Tortoises, receive both a male and female and that provisions be made for the female to lay her eggs is if necessary, the eggs must be place in an incubator. Some areas within the plan area will permit the hatching of babies naturally. However, hatchlings up to the age of 10 years must be protected from predators by being in an area with a screen over them. They also must have a shady spot for protection from the sun.*

*The local Turtle and Tortoise Chapters have led the fight for the protection of this lovable creature and should be of great assistance in protecting this species under captive and natural conditions.*

*In addition as noted in the Report specific disturbances in Table 3-16 can be mitigated if proper education programs to protect the Desert Tortoise and eradication of non-native flora and fauna programs to provide better living conditions that encourage better survival rates.*

*The rest of this section presents data that does not correlate with the decline of the Desert Tortoise Population. However, better care to eliminate specific known hazards for Desert Tortoises can be implemented through both volunteer and private programs.*

*The report was not specific as to the hazardous chemicals used on roads within the study area. The local road departments can provide this data and eliminate some of mentioned hazardous materials.*

*Highway berms make great sites for Tortoise Burrows. The same applies to increased greenery or plan vigor along our roadsides. Our scientists must come up with protective barriers to prevent such burrows or install fencing in area likely to attract Tortoise Burrows. This needs to be an important project by the BLM and the rest of our observing and scientific community. The greatest hazard is when a Desert Tortoise decides to cross a road. These hazards can be mitigated.*

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**Indirect Anthropogenic Mortality Factors: Pages 3-93 through 3-100**

Chapter 3 p.3-99

Ravens represent a direct impact to juvenile tortoise populations, but they are also an indirect impact (or symptom) of urbanization. Ravens are as common as they are because of increased opportunities provided by humans. Roads provide a ready source of raven food in the carcasses of small mammals and reptiles that result from vehicle collisions; increased nesting opportunities are provided by human structures; water is readily available at pastures, farmlands, sewage ponds, and wildlife guzzlers. Yet, ravens are often identified as "natural" predators of tortoises. In fact, ravens are subsidized predators, possibly preying on tortoises and other animals to get them through the summer and winter when resources are less plentiful (Boarman 1993) .

The denuded hillsides that result from OHV hill climbs are extremely susceptible to erosion (indirect mortality factor), particularly if mechanized vehicles continue to frequent the area (a direct mortality factor). Both forage and shrub cover, which are critical to tortoise nutrition and denning, respectively, are adversely affected. In time, tortoises may abandon the area or suffer ill side effects from poor nutrition (i.e., malnourished, suppressed immune systems, etc.) or reduced denning potential (i.e., resulting in more exposure to predators and additional vehicle impacts).

Indirect mortality factors may occur far into the future and are often unforeseen. For example, the direct impact of a water pipeline is immediately mitigated and compensated, tortoises are moved from harm's way with appropriate take permits, and the project is effectively complete, but the indirect effects are just beginning. Dozens of residents each year excavate their own ancillary pipeline trenches to connect into the main water line; these go unmonitored and tortoise protection is relegated to whoever is digging the trench. Such projects are the infrastructure that is intended to promote human population growth that will eventually eliminate animals from those regions. Mechanically denuded rights -of-way are often used for vehicle travel and may provide new access to tortoise populations that were not previously accessible to non-four-wheel drive vehicles. This was the case for extensive stretches of the Meade -Adelanto transmission line that was installed in 1995. Not only were 174 tortoises handled and 3 accidentally killed (LaRue 1996), but the line passed through areas where no previous utilities had passed, thereby opening new access to many areas.

*Indirect Mortality factors are many and this report fails included all of them. The report must prioritize the indirect by looking at the overall condition of the native population. The report must also include diseases that have been imported and have caused high mortality rates. This section makes it obvious that the DWMA's cannot be isolated from the rest of the world. Humans must have access to improve the ecosystem that will protect and enhance this Species and minimize indirect mortality factors. This can easily be done as reported in Appendix J.*

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*Gullies created by Hill Climbing with it's causing erosion and a long period of re-growth is a serious issue. The only place where such activities can occur without environmental damage are in sand dunes that are constantly changing their shape due to wind and in extremely hard ground will little vegetation. Some sandstone areas are very susceptible to erosion cause by the traction of the tires. Such areas need to be recognized and further damage avoided.*

**3.3.2.5.2 Natural Mortality Factors Page 3-100 through 110**

*There is no reason to permit Feral Dogs to roam throughout Southern California. They are problem in urban, suburban, and rural areas. The local jurisdictions have been lax in removing these predators that prey on many other pets as well as threatened species.*

*Coyotes and Kit Foxes are a difficult subject to make recommendations for the protection of Desert Tortoises. As native animals, have humans created an imbalance to their numbers by removing their predators from the scene. We know the Pumas, which have been protected from being hunted by referendum, have overpopulated our State and are become a nuisance. We must devise a procedure for protecting nests and hatchlings from these predators by either locating nests or reducing the number of these predators. I know that locating nests of the wild population can be difficult. We know so little about the balance of nature within the plan area.*

*Ravens, Crows and Magpies are not native to the Plan area but have multiplied due to the presence of human occupied areas and sites that support human living conditions. There have been many recommendations to establish programs to eradicate their nests to prevent their reproduction. This may be the highest priority program by the BLM and other interests. They are also nuisances in urban, suburban, and rural areas where they destroy songbirds. These predators love worms and grubs in well-watered lawns and where there is a lot of garbage and road kills. Also there is evidence that where there are fewer ravens, the Desert Population is less threatened. (See the Sheephole Valley Report) Another factor is a recently released report that these predators have multiplied 10 fold over the last ten years. There are many arguments for eradication of these species that have considerable public support.*

*The first and third paragraph of this discussion demonstrates that this is more an indirect mortality factor than a natural factor.*

*Drought is a natural factor facing all of us. However, Humans do have the ingenuity to construct facilities to reduce the effect of drought conditions in order to protect the propagation and survival of a threatened and endangered species.*

*Upper Respiratory Tortoise Disease has been known for a long time and has had a terrible effect on captive populations. The report fails to note how they were able to diagnose wild Desert Tortoises with this fatal disease. While the report's numbers were fairly low, it could be vicious destroyer of the wild population because it has been able to spread rapidly. More information is needed to determine a cure and how it is spread.*

**3.3.2.5.3 Older and Newer Die-off Areas Page 3-110 through 116**

*Appendix L contains very useful information regarding the mortality of Desert Tortoises. Most the carcasses with identifiable cause of death were due to mammal predators. However, this report downgrades the effect of the ravens, crows and magpie. This conflicts with other observation.*

*This Appendix seems to emphasize the off highway vehicles and as major cause of Die-Off. Establishing seasons when off highway vehicles could be used can minimize this cause. Several reports have been written to reduce off highway vehicle use and to establish low speed limits so that a Desert Tortoise could be spotted in the road. However, they ignore the active and inactive Desert Tortoise seasons and fail to discourage unpaved road use during the active season.*

**3.3.2.6 Tortoises and Off Highway Vehicles Beginning Page 3-116**

One of the most controversial resource management issues within the western Mojave Desert concerns the relationship between desert tortoises and off-highway motorized vehicles. This discussion will address both casual OHV use and competitive events and the effects that either may, or may not, have on tortoises and habitat.

**3.3.2.6.1 Dispersed Casual OHV Use Pages 3-116 and 3-117**

Off highway vehicles users visit the desert for many purposes. They explore the desert, hunt, and drive to campsites and trailheads for hiking or horseback riding, rockhounding and other activities. Commercial uses are also common, for mineral exploration, maintenance of existing facilities, and administrative or law enforcement purposes. This use occurs in a more dispersed manner than, for example, concentrated competitive events, and results in a low density but continuing presence of vehicles throughout the desert. The following discussion addresses effects that have occurred as a consequence of such dispersed, casual use of the planning area by off highway vehicles.

Boarman (2002) conducted a literature review of 56 references that addressed OHV based impacts on desert tortoises. His conclusion follows:

Although each study comparing tortoise densities inside and outside of [OHV] areas has limitations, they all lend evidence to reductions in tortoise population densities in heavy [OHV] use areas. The causes for these declines are less certain. Tortoises and their burrows are crushed by [OHVs], although it is difficult to evaluate the full impact this activity currently has on tortoise populations, partly because there are probably relatively few tortoises in most open use areas. [OHVs] damage and destroy vegetation. Density, cover, and biomass are all reduced

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inside versus outside of [OHV] use areas, particularly following multiple passes by vehicles. Split grass (*Schismus barbatus*), a weedy introduced grass, in particular appears to benefit from [OHV] activity. Very light, basically non-repeated, vehicle use probably has relatively little long-term impact. Soil becomes compacted by vehicles. The compaction increases with moisture content of the soil, weight of vehicle (particularly high weight to tire surface area ratio), and soil type. Cohesionless sand, such as in sand dunes and washes, [is] largely immune to compaction while moist soils are much more susceptible than dry ones. Compaction, lower infiltration rates, loss of plants and cryptogamic soils all contribute to increased wind and water erosion and fugitive dust, particularly when such areas are several meters in width. More research is needed to understand the effect light [OHV] use has on tortoise populations and habitat.

Boarman (2002) reported that tortoise densities have been reduced through (a) direct effects, including crushing of tortoises and burrows, and (b) indirect effects of (i) compaction of soil, (ii) destruction of cryptogamic soils, (iii) changes in vegetation, (iv) erosion and loss of soil, (v) light OHV use, and (vi) human access to tortoise habitat.

The USFWS (2002) indicated that the degree of threat posed to desert tortoises by recreation increases with the speed, weight, and numbers of recreational units involved. They indicated, for example, that a small group of hikers posed much less threat to the desert tortoise and its habitat than a race that involved numerous all-terrain vehicles.

**Positive Benefits of Motorized Vehicle Routes:** Haskell (2000) reported that roads provided benefits to society such as opportunities for recreation and natural resource extraction. The USFWS (2002) felt that recreational use of the desert might benefit the desert tortoise in an indirect manner. They concluded that many people viewed the California desert as a unique place to enjoy nature and solitude, and that the enjoyment of the desert could promote private citizens to assist in volunteer projects to restore habitats, clean up trash, report problems to the BLM, and educate other users. The BLM's existing educational programs were identified as striving for these goals (USFWS 2002).

*Again, this section fails to meet reality. Hikers have limited time and range that off highway vehicles can expand. The plan must accept this reality. However, most people prefer the desert during cooler weather when the Desert Tortoises are inactive. Such uses of the DWMA's could be regulated to minimize the Desert Tortoise casualties.*

*By using motorized routes, the loss or reduction of vegetation is minimized. The loss and the affect on vegetation was previously noted as a reason for limiting use of vehicles in the Plan Area.*

**3.3.2.6.2 Direct Impacts of OHVs on Desert Tortoise Populations Pages 3-117 through 3-122**

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As of 1980, the USFWS (2002) reported that OHV activities had affected approximately 25% of desert tortoise habitat in California. In 1986, Dodd (1986) concluded that nearly 70% of the remaining high-density tortoise populations in the California desert were subject to OHV impacts. In 1990, Chambers Group, Inc. (1990) found that 413 square miles (2.9%) of the planning area had been directly disturbed by OHVs, and that much of the disturbance had occurred in open areas or in unauthorized OHV-use areas.

Sign count data collected between 1998 and 2002 indicate that vehicle-based impacts are prevalent throughout tortoise habitats, including DWMMAs. Within the Fremont -Kramer and Superior-Cronese DWMMAs, cross-country travel was observed on 833 of 1,572 (53%) transects and roads were observed on 702 (45%) transects. There were 447 mi<sup>2</sup> with higher tortoise sign counts, 159 mi<sup>2</sup> (36%) of which overlapped with above-average vehicle-based impacts (see Map 3-14 for spatial distributions).

Although most of the above-average vehicle impacts are contained within BLM Open Areas, similar vehicle impact areas were observed from California City, north through the Rand Mountains, into Fremont Valley. In effect, this is a heavy OHV use area affecting both private lands around California City and about half of the region that is proposed for DWMA management. Beginning in the late 1970's and early 1980's, extending through 2002, data from permanent study plots indicate that tortoise densities decreased from about 72% to 93% in this region.

**Reduced Tortoise Numbers Attributed to OHV Impacts:** The literature suggests that OHV use has resulted in reduced tortoise numbers (National Ecology Research Center 1990, USFWS 1994b), including juveniles next to well-used dirt roads (USFWS 1994b). Berry (1996) found that tortoise populations decreased significantly with (a) increasing mileages of linear disturbances associated with roads, trails, routes, and tracks ( $P < 0.01$ ) and (b) increasing numbers of human visitors ( $P < 0.05$ ). She observed that stable or increasing tortoise populations had low mileages of linear disturbances and vehicle use, few human visitors, and relatively low percentages of introduced annual plants. For example, two of the 15 plots she surveyed in the northern Colorado Desert had stable or increasing populations and disturbance levels that were generally lower than elsewhere in the California deserts.

In 1994, the USFWS (1994b) concluded: (a) The density of paved and dirt roads, routes, trails, and ways in desert tortoise habitat has had a direct effect on mortality rates and losses of desert tortoises; (b) As mileage of roads, trails, and tracks increased on BLM study plots in California, desert tortoise populations declined at greater rates; (c) Even relatively low vehicle use had contributed to depressed desert tortoise densities in local areas; and, (d) the presence of routes of travel through or near the habitats of listed species presented an ongoing level of threat to those species from illegal vehicle use. In 2002, the USFWS (2002) concluded, "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."

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Data indicate that significant declines have occurred through much of the northern and northeastern portions of the Fremont-Kramer DWMA. URTD has been implicated, but sign count data reveal that it is also a region of very heavy vehicle impacts, and persistent sheep grazing is known to occur. These data also reveal that there are still higher density tortoise areas in the northern part of the Stoddard Valley Open Area and along the western boundary of the Johnson Valley Open Area.

One may interpret these data to indicate that OHV impacts have eliminated tortoise s between California City and Fremont Valley, or conversely that OHV impacts are negligible in open areas, as evidenced by persisting regions of higher tortoise densities. Both arguments have inherent weaknesses, as do the literature sources that refer to "reduced numbers" and "significant decreases" of tortoises caused by OHV impacts. Both arguments are weakened by the lack of baseline data from the 1950's, for example, to which current population levels can be compared. Recent sign count data provide a static look at relative tortoise densities and distribution. Except for where numerous freshly dead carcasses have been found, or declines have been documented on BLM study plots and other places, the current distribution suggests nothing about population trends.

**Tortoises and Burrows Crushed:** Vehicle collisions are responsible for tortoise injury and mortality on dirt roads (Berry 1996), including lightly traveled roads (USFWS 1994b). Given the prevalence of cross-country OHV travel (WMP 1998-2002 data), tortoises have also been crushed in areas adjacent to roads (see also USFWS 2002), and mortality has likely occurred both above- and below-ground (USFWS 1994b). Such cross-country travel has also resulted in loss (Jennings 1993) or damage (USFWS 1994b) of tortoise burrows.

**Relative Impacts Attributed To Trucks versus Motorcycles:** Data do not indicate if the tortoises (or carcasses) were crushed by motorcycles or trucks, but it was more likely by trucks, given the larger surface area affected by four large tires, and the following considerations. The location of tortoises and burrows likely affects the potential for them to be differentially crushed by trucks or motorcycles. Compared to trucks, motorcyclists are less likely to ride through and crush shrubs, so tortoises and burrows under shrubs are somewhat less vulnerable to this impact. The visibility from a motorcycle also makes it likely that cyclists can more readily see and avoid tortoises. Comparatively, operators of four-wheel drive trucks often crush shrubs, have limited visibility from inside the vehicle, and are probably more likely to crush tortoises and burrows than are cyclists.

Cross-country travel by both trucks and motorcycles results in degradation of habitat, which may result in poor forage quality and reduced burrowing potential. Motorcycles are significantly more maneuverable between shrubs, in mountainous areas above 20% slope, and many other places that are less accommodating to trucks. This maneuverability has resulted in more cross-country travel by motorcycles than by trucks, although there are exceptions in localized areas. The 27% increase of trails between 1979 and 1995 observed in the southern part of the Ord-Rodman

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DWMA was predominantly due to motorcycle traffic, and likely due to the proximity with Johnson Valley Open Area, which is immediately east. Therefore, although cyclists are less likely to crush tortoises than truck operators, they are more likely to leave roads, and are more likely to degrade habitats in areas with few roads, compared to trucks.

**Prevalence of Vehicle Crushing:** Sign count data indicate that vehicles crushed 28 (27%) of the 104 carcasses where the cause of death could be ascertained. These results are remarkably similar to those of distance sampling in the Fremont-Kramer and Superior-Cronese DWMA's, where vehicle crushing accounted for 32% (14 of 44) of all observed carcasses where cause of death was given.

Vehicle crushing has resulted in about a third of the tortoise deaths observed where cause could be determined, with only mammalian predation being more prevalent. Unlike catastrophic die-offs, where the cause of death is unknown, and mammalian predation, which is widespread and may not be controllable, vehicle impacts may be controlled. Route reductions, signing and fencing programs, restriction on competitive events in DWMA's, education program, and increased law enforcement are pragmatic ways of minimizing vehicle impacts.

**Adult Versus Subadult Tortoises Crushed:** The data suggest that adult tortoises are more likely to be crushed than subadult tortoises, although the lower detectability of smaller carcasses may, in part, account for the difference. Sign count data for the 28 crushed carcasses indicate that 23 (82%) were adults, 4 (14%) were subadults, and 1 (4%) was unknown. Similarly, distance-sampling data indicate that 12 of the 14 (86%) crushed carcasses were of adult tortoises, 1 (7%) was a subadult, and 1 (7%) was unknown.

**Aboveground Tortoise Activity in Response to Wet versus Dry Years:** Sign count and distance-sampling data indicated within a give year, tortoises are more likely to be aboveground

(i. e., active) in the spring and in burrows (i. e., inactive) in the summer -fall. The distance sampling data suggest that increased activity patterns occur on a regional scale, not just on a local scale. This may be the first evidence that increased tortoise activity patterns in response to rainfall occur on a population level instead of at the individual level.

These observations are significant for the following reasons:

- Heightened activity in wetter years may put more tortoises at risk to being crushed by vehicles, both on and adjacent to designated routes. This impact is more likely to occur in higher density areas where operators are more likely to encounter tortoises.
- Illegal activities that are facilitated by roads (i. e., poaching, pet collection, inter-regional translocations, intentional vandalism, etc.), may occur more frequently in wetter years, given that tortoises are substantially more visible aboveground than in burrows. Increased law enforcement in higher density areas during such conditions may minimize these impacts when and where they are most likely to occur.

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- Vehicles traveling in washes in wetter years may impact relatively more tortoises than in dry years. It has been suggested that vehicle travel in washes during drought periods would result in more impacts. This may not be true if tortoise activity in washes occurs at reduced levels (i.e., although tortoises in burrows would still be affected by vehicle travel in washes).

**OHV Impacts to Tortoises in Washes:** During his studies at the Desert Tortoise Natural Area in the early 1990's, Jennings (1993, 1997a, 1997b) found that tortoises systematically located preferred forage along the margins of small washes. They spent a considerable amount of time traveling along washes, and apparently used washes as navigational aids to relocate burrows. For example, more than 25 percent of all plants on which tortoises fed, and three of the ten most-preferred plants, were in the washes and washlets, even though washes comprised only 10.3% of the study area habitats (1997). Given this information, he concluded that OHV use may disorient tortoises (1993) and that tortoises will be forced to select other less preferred and possibly less-nutritious plant species (1997a).

Jennings (1997a) also found that tortoises generally spent more time traveling and foraging in hills, washes, and washlets than on the flats, and that hills and washes were favored in the planning area for use by OHV recreationists. Given this overlap, he concluded that tortoises are more likely to suffer direct mortality from vehicles than if they used the habitat randomly.

*This section revisits a subject that has been discussed for many years. It wanders from the subject and contributes very little to the subject. There are many areas in the Desert set aside for motor vehicles to leave designated routes. In DWMA's, travel should be only on designated routes unless there is a race in which a survey has determined a route that will not impact the Desert Tortoise population. Most of these activities should occur during inactive season. There are many differences in the size, shape and vegetation in any wash. We also know that most washes are subject to major flooding the completely changes the environment. The Desert ecosystem including the Desert Tortoise population, is constantly changing and therefore, the regulation of the use of off road vehicles must always be subject to change.*

### **3.3.2.6.3 Direct Impacts of OHVs on Desert Tortoise Habitat      Pages 3-122 and 3-123**

**Habitat Degradation:** Lovich and Bainbridge (1999) found that the wheel tracks of a full-size OHV vehicle operating in an undisturbed area could damage almost 1.25 acres (0.5 ha) with every 4 miles (6.44 km) traveled. Goodlett and Goodlett (1991) reported that impacts in the Rand Mountain area were highest close to open routes. Open routes may induce negative impacts for substantial distances; even at 500-feet from an open route, unauthorized tracks were observed at a rate of almost one per 20 linear foot.

Negative effects on the desert environment have been summarized (National Ecology Research Center 1990, USFWS 1994b). Impacts include damage to and loss of habitat (Jennings 1997a,

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USFWS 2002) and severe declines in biomass of plants and vertebrates (USFWS 1994b). Both annual and perennial plants are affected (Jennings 1997a, National Ecology Research Center 1990), which in turn affect forage quality, water availability, and thermoregulation (USFWS 1994b).

Vollmer et al. (1976) reported that cross-country OHV travel impaired annual plant productivity, retarded shrub regrowth, resulted in less plant cover and density, and conspicuously decreased shrub biomass. In comparing areas of different disturbance levels, Webb et al. (1983) concluded that light OHV use might not cause the severity of impact that occurs in some ghost towns, but OHV pit areas have more soil and vegetation disruption than naturally recovering ghost towns. Berry (1996) indicated that OHV use directly affects plants and animals by disrupting the distribution, composition, structure, diversity, and biomass of animal and plant communities; changing the watershed; and promoting desertification.

The USFWS (2002) concluded that unauthorized activities, particularly OHV use, have degraded desert tortoise habitat. The access provided by the BLM for legitimate uses, such as recreation, facilitates some degree of unauthorized use (USFWS 2002). In addition to unauthorized roads and trails, areas that are frequently used for loading and unloading vehicles can be severely degraded (USFWS 2002).

**Habitat Regeneration:** Vollmer *et al.* (1976), upon revisiting their study plot 18 months after the tests were conducted, found that little damage to shrubs was apparent from a distance, but that when viewed from nearby, tracks were clearly discernible. They concluded that truck tracks can persist at least 10 to 12 years depending on the substrate, and that shrub cover may be re-established within a couple of decades if there is no further damage. National Ecology Research Center (1990) estimated full-recovery time required to ameliorate severe OHV impacts should probably be estimated in terms of human life spans; and that hundreds or thousands of years may be necessary for disturbed areas to recover. Stowe (1988) found that many of the older, smaller trails that were identified 1977-78 appeared to be unused in 1988, and in some cases the vegetation appeared to be growing back over the edges of the trails.

**OHV Impacts to Wash Habitats:** Jennings (1993, 1997a) found that vehicles' driving in washes disturbed relatively rare species of plants that were restricted to washes. LaRue (1997) found catclaw acacia and desert willow mostly restricted to washes in the Ord Mountain area. Damage observed in the Ord Mountains included disturbed soil and terrain, crushed shrubs, and eroded margins of washes, which led to widening of the washes. He found that some routes in washes became impassable when banks and boulders were encountered, which necessitated turning around and resulted in new shrub damage.

**OHV Impacts to Soils:** OHV use has resulted in the following impacts to soils (see also National Ecology Research Center 1990): damage or destruction of soil crusts (24), soil erosion (Trombulak and Frissell 2000, USFWS 1994b), and interrupted run-off patterns (Trombulak and Frissell 2000). Vollmer et al. (1976) found that OHV use changed soil compaction and

permeability, and that disruption of soils may not be fully expressed until years after the original impact. Berry (1996) found alterations to and erosion (wind, water) of soil and soil crusts, and adverse effects to soil porosity, chemistry, moisture, and temperature. Lovich and Bainbridge (1999) observed that areas they considered least susceptible to water and wind erosion, following OHV use, were dunes, playas, and areas with abundant coarse surface material.

*We cannot deny that plants are disturbed when vehicles leave established routes. The Report should recommend rehabilitation programs for extremely disturbed areas. Erosion Control and plant restoration programs are needed in food producing areas for the Desert Tortoise. This includes installation of deep-water irrigation systems.*

*Loosing the soil has had both positive and negative impacts on the Desert Tortoise. As previously mentioned berms of loose soil make it easier to Desert tortoises to dig burrows and also with water, additional plant growth occurs.*

*Use of Vehicles driving off road must be regulated to minimize adverse impacts on the Desert Ecology. Programs must be establish to improve the flora and fauna for all desert in habitants to allow for losses due to past damage by Humans.*

**3.3.2.6.4 Indirect Impacts of OHVs on Desert Tortoises and Habitat Pages 3-124 and 3-125**

**Human Access:** Berry (1996) indicated that human access results in increased damage to plants, animals, and soils. This access results in exploitation, removal, unintentional or intentional disturbance, and harassment of wildlife. She also reported adverse effects on other visitors and increased deposition of garbage and refuse. Fire regimes are altered as a result of human-induced fires and the proliferation of alien or non-indigenous plants.

USFWS (1994b) indicated that the presence of routes facilitates the removal of desert tortoises (predation for food, collecting for pets, and commercial trade), vandalism, and release of captive desert tortoises. Dumping, numbers and locations of wild fires, harvest and vandalism of vegetation, and predation by dogs and ravens may increase proportionate to available access. Routes have been implicated in the proliferation of weeds, resulting in more wildfire (USFWS 2002, USFWS 1994b). Berry (1996) found that tortoise populations decreased with increasing percentages of introduced annual plants.

**Spread of Weeds:** Lovich (1992) concluded that, among other things, tortoise habitats have been negatively affected by construction of roads and utility corridors. Brooks (1998) and Frenkel (1970) concluded that dominance of alien annual plants is the highest where road densities are high, and that minimizing the number of paved and dirt roads and maintaining non-roaded wilderness areas may reduce the dominance of aliens.

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Trombulak and Frissell (2000) listed seven general effects of roads, including spread of exotic species, and indicated that roads are commonly identified as important correlates or indicators of loss of ecological health. They reported that roads provide dispersal of exotic species via three mechanisms: providing habitat by altering conditions, making invasion more likely by stressing or removing native species, and allowing easier movement by wild or human vectors. Hourdequin (2000) found that, whereas roads negatively affect some species, others may benefit; that many exotic plant species thrive along roadsides; that roads can act as corridors for the dispersal of plant seeds; and that roads may also provide habitat and movement corridors for opportunistic species such as weeds. Tracy (1995) showed that fires are mainly started along roads, and that a majority of those are along paved roads.

**Route Proliferation:** USFWS (1994b) identified route proliferation as a threat. LaRue (1997) reported that there had been a 27% increase in detectable routes between 1978 and 1989 in the Ord Mountain area. Much of it resulted from motorcycle use in the southern parts of the proposed Ord-Rodman DWMA, west of and including the Cinnamon Hills. The USFWS (2002) reported that recreationists used legal routes to gain access to popular staging and camping sites, and that impacts emanated out from such areas, impacting less disturbed habitats. Stow (1988) reported that light OHV activity escalated into heavier use and more impacts. Vollmer et al. (1976) expressed concern that once an area was heavily used, recreationists would abandon the area in search of new and intact environments.

**No OHV Impacts or Minimal Impacts Observed:** Vollmer *et al.* (1976) found no indication that driving interfered with rodent reproduction, side-blotched lizard reproduction, or animal population trends. Few shrubs were outright killed, and plant density and diversity remained essentially unaltered. They found creosote bush recovered if root crowns were not destroyed; damaged plants were scarcely distinguishable after 10 years. It was not clear that the density of annuals was reduced by vehicular traffic during their study.

**OHV Impacts Uncertain:** In 2002, the USFWS concluded that reductions in the amount of open routes are likely to provide some level of benefit to the desert tortoise. However, neither the BLM nor the USFWS had definitive information on how differing route networks may affect the desert tortoise; presumably, roadless areas would have the least adverse effect on desert tortoises and their habitat. Vollmer et al. (1976) found it difficult to gauge the impact of less intensive OHV-use areas. The extent that any changes in the access network affect the desert tortoise would 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. No quantitative information was available concerning how frequently desert users leave routes of travel 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 (USFWS 2002).

*Again the damage has been done! Now, how are we going to mitigate the damage? As reported in this report it will take years for the Desert to heal. We must accelerate this healing and we*

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*must also improve the desert ecology through technology developed by humans. The BLM has the responsibility to protect and allow increase use by adopting better management techniques.*

### **3.3.2.6.5 Off-Highway Vehicle Open Areas Pages 3-125 through 3-131**

**Relative Tortoise Occurrence in Open Areas:** Eight BLM open areas occur, including Johnson Valley, Stoddard Valley, El Mirage, Spangler Hills, Jawbone, Dove Springs, Rasor, and Olancha. Jawbone, Dove Springs, and Rasor are on the edge of the 2002 tortoise range, while Olancha is north of the known range. These areas were either not surveyed (Jawbone or Olancha) during sign count surveys, or no tortoise sign was observed during surveys at Rasor

(i. e., 26 of 35 mi<sup>2</sup>, 74%) and at Dove Springs (i.e., 3 of 6 mi<sup>2</sup>, 50%). Survey coverage was relatively good at Johnson Valley (231 of 294 mi. 2, 79%), Spangler Hills (i.e., 75 of 97 mi<sup>2</sup>, 77%), and Stoddard Valley (i.e., 63 of 85 mi<sup>2</sup>, 74%), and somewhat less representative of El Mirage (i.e., 16 of 40 mi<sup>2</sup>, 40%). Most of the following discussion is relative to Johnson Valley, Stoddard Valley, El Mirage, and Spangler Hills open areas (see Appendix L for more information).

**Higher Density Tortoise Areas:** Higher density sign count regions within open areas are shown in Map 3-14. There were four higher density tortoise areas in the Johnson Valley Open Area, comprising 32 mi<sup>2</sup>. Two of these (28 mi<sup>2</sup>) were contiguous to the Ord-Rodman DWMA. Higher density areas were also found throughout much of the northern part of the Stoddard Valley Open Area, and were contiguous to higher density areas east of Highway 247, in the Ord - Rodman DWMA. There were no higher density areas in El Mirage, although the survey effort was relatively light, and 5 mi<sup>2</sup> were found immediately northwest of Spangler Hills.

**Relative Tortoise Occurrence in Open Areas<sup>17</sup>:** Tortoise encounters were the highest in Stoddard Valley (i.e., 1 tortoise/10.5 linear miles of transects), intermediate in Johnson Valley (i. e., 1 tortoise/43.3 miles), and lowest in Spangler Hills (i.e., 1 tortoise/56.2 miles). El Mirage was relatively high (i.e., 1 tortoise/8.0 miles), but the sample size was sufficiently small that this was likely an artifact of the survey rather than a relative estimate of abundance. The data suggest the following descending order of tortoise abundance in the four open areas: Stoddard Valley > Johnson Valley > (El Mirage, suspected) > Spangler Hill s. Collectively, 22 live tortoises were observed over 520 linear miles of transects in these four open areas, for an encounter rate of 1 tortoise/23.6 miles of transects. For comparison, 154 live animals were observed on 2,293.5 miles of transects in three DWMAs (i.e., excluding Pinto Mountain), for an encounter rate of 1 tortoise/14.9 miles, or about 1.6 times higher than in open areas.

**Relative Occurrence of Carcasses in Open Areas:** Carcass encounters were the highest in Johnson Valley (i.e., 1 carcass/5.25 miles), intermediate at Stoddard Valley (i.e., 1 carcass/8.59 miles), and lowest in Spangler Hills (i.e., 1 carcass/12.5 miles). El Mirage was relatively high (i.e., 1 carcass/4.8 miles), but again, sample size was too small to be meaningful. The data

suggest the following descending order of carcass abundance in the four open areas: Johnson Valley > Stoddard Valley > (El Mirage, suspected) > Spangler Hills.

*Comparisons between Live Tortoises and Carcasses in Three Open Areas:* The inverse relationship described previously for DWMA's was not observed in the three open areas. Table 3-25 shows the encounter rates for both tortoises and carcasses.

Observations in three DWMA's (i.e., excluding Pinto Mountain) indicated an inverse linear relationship between live tortoises and carcasses; tortoises were more often encountered where fewer carcasses were found. Observations in the Stoddard Valley Open Area followed this pattern, but not for either Johnson Valley or Spangler Hills. Spangler Hills is relatively easily explained; very low encounter rates for both tortoises and carcasses suggests low densities of tortoises. Johnson Valley, however, appears to be an anomaly, as it was the only place where tortoises were difficult to find, but carcasses were relatively easy. Only 10 sign count tortoises were observed in the 294 mi<sup>2</sup> Johnson Valley open area. Five were in higher sign count areas and five were outside. None was found in the 22 mi. 2 higher density area southeast of the Ord-Rodman DWMA, where a recent die-off was detected. This may suggest that tortoises were once relatively more common than they are now (i.e., as evidenced by the prevalence of carcasses).

One measure is to divide the tortoise encounter rate by the carcass encounter rate. This ratio is 1.2 for Stoddard Valley, 2.5 for Spangler Hills, and 8.2 for Johnson Valley. The same ratio for the DWMA's is: 1.8 for Ord-Rodman, and 4.5 for Superior-Cronese and 7.0 for Fremont-Kramer. The lower ratios for Stoddard Valley, Ord-Rodman, and Spangler Hills (1.2, 1.8, and 2.5, respectively) coincide with regions of relatively more tortoise encounters compared to carcasses (excepting Spangler Hills, where both were less commonly found). This compares to the higher ratios for Superior-Cronese, Fremont-Kramer, and Johnson Valley (4.5, 7.0, and 8.2, respectively) where there were relatively fewer tortoise encounters compared to carcasses. Dr. Berry documented a 77% decline between 1980 and 1994 on the Johnson Valley study plot, which is within the open area. All other such declines have occurred in the Fremont-Kramer and Superior-Cronese DWMA's. The two study plots showing the smallest declines were Lucerne Valley (i.e., 30% decreases between 1980 and 1994) and Stoddard Valley (5% between 1981 and 1991). These data suggest that there may be a differential die-off in Johnson Valley that is more similar to Fremont-Kramer and Superior-Cronese DWMA's than in Stoddard Valley and Ord-Mountain areas.

**Relative Occurrence of Vehicle Impact Areas:** Map 3-14 shows the spatial distribution of three types of vehicle impact areas that occur within the planning area: BLM open areas, heavy OHV use areas, and residential areas. Rules of polygon establishment described elsewhere were used to delineate these regions<sup>18</sup>. Importantly, only above-average vehicle impact data collected during sign count surveys (1998-2002) were used in polygon establishment. Although these types of impacts occur throughout many portions of the planning area not encompassed in the polygons, the identified regions (and data discussed herein) reflect the most severe and

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intense levels of vehicle impacts on lands where human uses are most concentrated (i.e., on at least four contiguous square miles where every square mile had above - average impacts).

*Open areas* are designated by the BLM for vehicle free play, and occur in seven specific areas. *Residential* impact areas occur in three general regions: west and northwest of the community of Silver Lakes, north of Hinkley, and in the "Coyote Corner," southwest of Fort Irwin. *Heavy OHV Use* areas are as disturbed as designated open areas, but are not officially designated for this form of vehicle use. The impact area between California City and the Rand Mountains is not a BLM open area, but it is very large and, in places, as impacted as open areas. Interestingly, there is also a 14 mi<sup>2</sup> area (i.e. East Sierra in Table 3-26) seven to eight miles north of Dove Springs that has experienced above-average vehicle impacts, but it is not clear if this is an extension of Spangler Hills impacts from the east or Dove Springs/Jawbone Canyon impacts extending north (likely the latter). These two, and the Edwards Bowl area south of Edwards AFB, are herein referred to as heavy OHV use areas.

Vehicle-based recreation (open areas and heavy OHV use areas) was responsible for a total of 804 mi<sup>2</sup> (81% of 988 mi<sup>2</sup>) of above-average impacts. This was further segregated into 591 mi<sup>2</sup> associated with open areas. Of this, 353 mi<sup>2</sup> (60%) occurred within open areas, and 238 mi<sup>2</sup> (40%) occurred on lands adjacent to open areas (Map 3-14). This is a key finding, as it clearly shows that vehicle impacts are not restricted to designated open areas; 40% of observable above-average impacts are adjacent to open areas, including DWMA's. One should not forget that there were additional above-average square miles and below average impact areas spread throughout the planning area. Only above-average impacts are discussed in this section. Both inside and adjacent to open areas, Johnson Valley, Spangler Hills, and Stoddard Valley (given in descending order of the size of the affected area) cumulatively affected 546 mi<sup>2</sup>, or about 92% of the 591 mi<sup>2</sup> impacted. Areas affected included Johnson Valley at 296 mi<sup>2</sup> (54% of 546 mi<sup>2</sup> attributed to all open areas), Spangler Hills (131 mi<sup>2</sup> or 24%), and Stoddard Valley (119 mi<sup>2</sup> or 22%) open areas.

The three heavy OHV use areas occupied 213 mi<sup>2</sup>, most of this (168 of 213 mi<sup>2</sup>, or 79%) was associated with the large area around California City, in the Rand Mountains, and adjacent areas. There were also 31 mi<sup>2</sup> of impacts in the Edwards Bowl area, and 14 mi<sup>2</sup> in the East Sierra, about seven miles north of the nearest open area. These are significant findings, indicating that in addition to the spill over effect of open areas given above, there are other areas that are being treated as if they were open areas. Cumulatively, the 213 mi<sup>2</sup> corresponds to about 21% of the total impact area (988 mi<sup>2</sup>).

As described above, there were also three residential areas of above-average impacts affecting approximately 107 mi<sup>2</sup>. These were about equal in size, including 39 mi<sup>2</sup> in the Coyote Corner area, 37 mi<sup>2</sup> in the Silver Lakes area, and 31 mi<sup>2</sup> north of Hinkley, including some overlap into higher concentration tortoise areas. Residential area impacts were responsible for about 11% (107 of 988 mi<sup>2</sup>) of all above-average areas. There were also 13 smaller polygons of up to eight

miles that, cumulatively, have impacted about 77 mi. 2 in the surveyed area, or about 8%. These smaller impact areas are shown among the others on Map 3-14).

*Characteristics of Vehicle Impact Areas:* The types and intensity of impacts associated with each region are listed in Appendix L. Table 3-27 reports the cumulative totals for trails, tracks, litter, dumps, target shooting, hunting, and camping among open areas, heavy OHV use areas, and residential areas. Data were collected between 1998 and 2001, and those given in the above table include the 911 mi<sup>2</sup> of the 988 mi<sup>2</sup> (92%) impacted, excluding the 77 mi<sup>2</sup> encompassed in 13 smaller regions. Key findings and implications are bulleted below relative to the region of comparison:

*Open Areas.* Importantly, the data presented for open areas include those observed impacts that are inside (60% of 591 mi<sup>2</sup>) and outside (40%) designated areas. Trails (19/mi<sup>2</sup>), tracks (144/mi<sup>2</sup>), litter (38/mi<sup>2</sup>), and camping (2/mi<sup>2</sup>) were more common in open areas than either heavy OHV use areas or residential areas. Tracks were about three time more prevalent than in heavy OHV use areas (144/mi<sup>2</sup> compared to 48.3 mi<sup>2</sup>), and five time more prevalent than in residential areas (29.4/mi<sup>2</sup>). Litter was similar in open areas (37.9/mi<sup>2</sup>) and heavy OHV use areas (24.8 mi<sup>2</sup>), but significantly lower in residential areas (3.9/mi<sup>2</sup>, or 10 less common than in open areas). This is a key finding relative to raven management, suggesting that the BLM needs to implement a proactive education program in the open areas to minimize the amount of litter (and presumably attractiveness to ravens) available to ravens and other predators (including feral dogs) that threaten tortoises.

As shown in Appendix L, Johnson Valley exceeded the following average impacts given in parenthesis in the previous sentence: trails (22/mi<sup>2</sup>), tracks (180/mi<sup>2</sup>), litter (41/mi<sup>2</sup>), target practice (17.4 compared to 16.2/mi<sup>2</sup>), and camping (3.1 versus 2.4/mi<sup>2</sup>). Johnson Valley was the only open area to exceed the average number of tracks among the five open areas.

*Heavy OHV Use Areas:* Impacts in these three regions were intermediate to open areas (where more impacts were observed) and residential areas (where there were relatively fewer impacts). Both target shooting (6.7/mi<sup>2</sup> compared to 13.9/mi<sup>2</sup> on average) and hunting (1.6/mi<sup>2</sup> compared to the average of 2.0) were relatively lower in heavy OHV use areas than in open areas

(16. 2/mi<sup>2</sup> shooting, 2.1/mi<sup>2</sup> for hunting) and residential areas (18.2/mi<sup>2</sup> shooting, 2.4/mi<sup>2</sup> hunting). Heavy OHV areas were also slightly lower in terms of camping (1.5/mi<sup>2</sup> compared to average of 2.2/mi<sup>2</sup>) than in open areas (highest at 2.4/mi<sup>2</sup>) and residential areas (1.6/mi<sup>2</sup>). Among the three heavy OHV use areas, California City into the Rand Mountains is the most impacted in terms of trails (8.0/mi<sup>2</sup> compared to Edwards Bowl, the next highest heavy OHV use area was highest in terms of litter (47.6/mi<sup>2</sup> compared to California City/Rand Mountains at 21.1/mi<sup>2</sup>) and target practice (7.8/mi<sup>2</sup> compared to 6.5/mi<sup>2</sup> at California City).

*Residential Areas.* Importantly, all three residential vehicle impact areas are inside DWMA's, and cumulatively affect 107 mi<sup>2</sup>. They are all about the same size (i.e., 35 mi<sup>2</sup>). There is also a

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spatial importance among the three areas; impacts from Silver Lakes are mostly affect the DWMA from the east, whereas Hinkley is partially within the DWMA, and Coyote Corner is fully within the DWMA.

Seven dumps were observed on 107 mi<sup>2</sup> surveyed, and were unique to this impact area, having not been recorded in either open areas or heavy OHV use areas. This is a significant finding relative to raven management, suggesting that dump clean up activities should be focused in these areas, all of which are within DWMA's.

Interestingly, both target shooting (18/mi<sup>2</sup> compared to 16/mi<sup>2</sup> in open areas) and hunting (2.4/mi<sup>2</sup> compared to 2.1/mi<sup>2</sup> in open areas) had the highest incidence of occurrence in residential areas. Again, on BLM-managed lands, this may help direct law enforcement to focal problem areas, which correspond to west of Silver Lakes in the Fremont -Kramer DWMA, north of Hinkley and in the Coyote Corner, both of which are within the Superior -Cronese DWMA. Of the three residential areas, Hinkley was the highest for trails (5.1/m<sup>2</sup> compared to 3.6/mi<sup>2</sup> in Coyote Corner) and litter (104/mi<sup>2</sup> compared to 53/mi<sup>2</sup> in Coyote Corner). Coyote Corner was significantly higher in track counts (57/mi<sup>2</sup> compared to 15/mi<sup>2</sup> in Hinkley) and target shooting (37/mi<sup>2</sup> compared to 6/mi<sup>2</sup> west of Silver Lakes). Coyote Corner was also noteworthy for the amount of dumping, where 6 of 7 incidences (86%) were observed; the remaining dump was seen west of Silver Lakes, although dumping is far more common there, particularly just north of Shadow Mountain Road (LaRue, pers. obs.).

*The data presented in this section may be reasonable. Open Areas with operators racing throughout the open vehicle areas that are adjacent to Desert Tortoise habitats can be disastrous for the survival of this tortoise. Protective measures are needed to separate the vehicle activities from the Desert Tortoise Habitat. Fencing or steep slopes appear to be the only solution to keep the Desert Tortoises from wandering into the open vehicle area. Signs and Strict enforcement of those who stray from the open area into the Desert Tortoise Area must adopted. During the inactive season, some controlled vehicle activities may be permitted in this area once the burrows are located.*

### **3.3.2.6.6 Organized Competitive OHV Events**

**Page3-131 through 3-133.**

**OHV Speed Events:** Unless otherwise noted, most of the following impact discussion for the Barstow-to-Vegas race was given in the Desert Tortoise (Mojave Population) Recovery Plan USFWS (1994b) and Burge's 1986 observations of the Frontier 500 Race. Burge (1986) found that the types of maneuvers that contributed to old and recent disturbances included circling in place, turning out, passing, backing up, parking, continuous paralleling of the road for a half mile or more, hill climbing, short coursing (short cutting), road widening, and leaving or joining the course from across open desert.

Competitive events have resulted in old routes being widened (1986, USFWS 1994b) and new routes being formed (Burge 1986, USFWS 1994b). Burge (1986) reported that the Frontier 500

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Race resulted in stretches of existing roads that were widened 50 to 90 feet on each side. Burge (1986) and the USFWS (1994b) also identified straying from the designated course as a problem with both races. USFWS (1994b) reported that, during the Barstow-to-Vegas Race, motorcycles and other vehicles strayed beyond the designated course by an average of 30 feet, and caused damage or loss of hundreds of acres of desert tortoise habitat in the eastern Mojave Desert. Burge (1986) found that race-related tracks showed a 103% increase compared to prerace track counts, and that 38% of discrete tracks, and hundreds of overlapping tracks, extended beyond the allowable course width of 100 feet.

Burge (1986) found that damaged shrubs were evident in every recent OHV track created by the Frontier 500 Race, and that 1,170 shrubs were crushed and uprooted along one transect surveyed after the event. Vollmer et al. (1976) reported that, in the course of one day, a motorcycle race in Kern County involving 700 motorcyclists, "devastated all vegetation in an area approximately 1-2 meters wide and 5 kilometers long." Prior to the Frontier 500 Race, Burge (1986) located and flagged 26 tortoise burrows, none of which was crushed, although she observed motorcycle tracks within one to two feet of several flagged burrows.

Impacts have also been associated with races that were not directly attributable to event participants. The USFWS (1994b) reported that non-event participants often camped in unauthorized areas, litter and garbage were often associated with such illegal campsites, and BLM and other monitors were unable to prevent or control these unauthorized activities.

**Stoddard to Johnson Valley Competitive Event Corridor:** BLM currently allows the use of the Stoddard-to-Johnson Valley Corridor, which runs through the southwestern portion of the proposed Ord-Rodman DWMA. Official use of this corridor for an organized event was last authorized by the BLM in 1994, when the "Stoddard Valley-to-Johnson Valley Point-to-Point Corridor Run" occurred.

The event, which occurred on 26 November 1994, was sponsored by the American Motorcyclist Association and monitored by the BLM and its appointees. Although the total racecourse was 173 miles long, all monitoring was restricted to the 21.25-mile Stoddard-to-Johnson Valley Corridor. Prior to the event, LaRue (1994) found a total of 24 tortoise burrows, including 17 burrows that were located between 6 inches and 40 feet from the designated route. Although the event authorized participation of up to 500 motorcyclists, only 87 individuals actually participated (LaRue 1994). Racers were under "yellow flag conditions" that included (a) a well-marked route, (b) speed limits of 40 miles per hour for the eastern seven miles of the corridor and 30 miles per hour elsewhere, (c) pace motorcycles every 15 minutes that were not to be passed by event participants, (d) no passing of other racers while in the corridor, and (e) participants were timed and could not pass through the corridor in under 40 minutes. Additionally, there was light rain and snow immediately prior to and during the race, which likely reduced riders' tendencies to stray from the route to avoid dust created by the racer(s) that were immediately ahead of them (LaRue 1994).

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LaRue (1994) found that 22 event-related tracks left the route for a total linear distance of 1,074 feet. The average track length was 48.8 linear feet and ranged from 10 to 300 feet in length. Perpendicular distances between the 22 tracks and the route averaged 3.95 feet and ranged from 0.5 to 20.0 feet. Most of the straying (i.e., 16 of 22 tracks, or 73%) occurred along Jensen Pass, which was the narrowest part of the corridor (i.e., 8.1 feet wide), and the remaining six tracks occurred along wider routes (i.e., widths ranged from 9.7 to 17.3 feet). Although the BLM employed 10 rangers, eight observers, and one helicopter between 24 and 26 November to enforce the closure of 119 square miles of desert that encompassed the corridor, LaRue (1994) still found 23 motorcycle tracks, 13 truck tracks, and 5 quad-runner tracks that were not caused by the racers. He concluded that the tracks were probably associated with monitors or unauthorized use by the general public.

**Johnson Valley to Parker Competitive Event Corridor:** The western portion of this corridor coincides with the northeastern boundary of the proposed Ord-Rodman DWMA. This is important because the USFWS (2002) reported that during events elsewhere along the route, riders were authorized to travel up to 100 feet from the centerline of the established road, along the southern side of the corridor to avoid impacts to the Chemehuevi DWMA in the East Mojave, which occurs north of the road. They (USFWS 2002) concluded that (a) this off-road travel was likely to kill or injure desert tortoises, disturb habitat, and could accelerate the spread of invasive species; (b) some potential existed for racers to cause degradation of habitat in the area surrounding the western end of the race (in the vicinity of the proposed Ord-Rodman DWMA); and (c) the proximity of the OHV event to the Chemehuevi DWMA posed, at a minimum, an indirect threat to the stability of the area, since tortoises travel beyond reserve area boundaries, and invasive plants may have more ready access to reserves if adjacent habitats are disturbed.

**Dual Sport Events:** The USFWS (2002) concluded that organized, non-speed events, such as dual sports rides in the western Mojave Desert, resulted in minimal habitat disturbance, if any, and that they were unaware of any injuries or mortalities of desert tortoises that have occurred during these events. They acknowledged that some level of mortality or injury may be undetected but impacts were anticipated to be minimal because dual sports occurred on existing roads and were usually conducted when most desert tortoises were inactive.

*This section demonstrates previous recommendations. Most Desert races appeared not to have adversely affected hibernating Desert Tortoises. However, better surveys of the routes must be required to guarantee protection.*

### **3.3.2.7 Current Effectiveness of Existing Protected Areas through 3-140**

**Pages 3-133**

**Desert Tortoise Research Natural Area:** Although there are several ACECs in tortoise habitat, only the DTNA was expressly established for conservation of the desert tortoise. The DTNA has been partially fenced since the late 1970's and completely fenced since the late 1990's. Even so, there are still threats to this most protected area. Each year a naturalist is employed by the

Desert Tortoise Preserve Committee (DTPC) to educate the public about tortoise biology and protection. Several times each year, DTPC naturalists have encountered pet tortoise owners attempting to release their animals into the DTNA (Michael Connor, pers. comm., Nov. 2002). Some of these tortoises have been symptomatic for URTD or other diseases. The fence line has been cut from time to time and trespass motorcycle tracks have been seen bisecting the area within the fence (LaRue, 2001 pers. obs.). Feral dogs and ravens continue to be a problem.

Some have questioned the efficacy of fencing off large areas, such as the DTNA, when the data do not appear to show that tortoise populations are increasing inside the fence. Dr. Berry (pers. comm., Nov 2002) has shown that decreases have been similar on both sides of the fence, but that tortoise numbers within the fenced area remain somewhat higher than numbers outside the fence. Sign count and distance sampling data support Dr. Berry's findings that there have been significant declines in the DTNA and the surrounding region. Most importantly, they also show that there has been recent reproduction within the remnant population. Eight of 13 (61%) tortoises found inside the fenced area were subadult animals.

This may be a very significant finding, when one considers that the subadult cohort may only constitute 15 to 20% of the regional population. Within the 697 mi<sup>2</sup> area bounded by Garlock Road, Highway 14, Highway 58, and Highway 395, a total of 324 mi. 2 (46%) were surveyed. All subadults observed within the 324 mi<sup>2</sup> surveyed area were located within, or immediately adjacent to, the DTNA (Map 3-9). The next nearest subadult was located 17 miles east of the DTNA, found in the spring during line distance sampling surveys. It is promising that there may be recruitment in an area that has experienced significant population declines, and noteworthy that no subadult animals were observed in any of the other older die-off regions. This may suggest that the perimeter fence is functioning in some manner to promote recruitment, and to minimize vehicle and sheep grazing impacts to reproducing females and new animals. These recruits are exceedingly vulnerable to natural predators (especially coyotes and kit foxes), predators that have increased due to man (coyotes and ravens), vehicular cross-country travel, and trampling by sheep. Except for the predators, protective fencing has reduced or completely eliminated many of these impacts. And there is evidence that tortoise habitat is responding in a positive way. For example, during his studies at the DTNA, comparing various parameters inside and outside the fence, Dr. Matthew Brooks (1993) found (a) higher biomass of native annuals inside the fence; (b) higher biomass of non-native annuals outside the fence; (c) higher abundance of birds inside the fence; and (d) higher abundance of reptiles inside the fence. The increases, which likely show the results of habitat protection and rehabilitation, were attributed to less human use inside the fence.

**Wilderness Areas:** With the passage of the California Desert Protection Act, there are now a total of 684 mi<sup>2</sup> of wilderness within the planning area. This includes 17 wilderness areas, eight of which are completely or mostly outside the 2002 range of the tortoise. Only the eastern 10 mi<sup>2</sup> of the 77 mi<sup>2</sup> Owens Peak Wilderness Area are within the range, where three transects were surveyed, and no tortoise sign found.

The remaining eight wilderness areas, encompassing 391 mi<sup>2</sup> (57% of all wilderness acreage), are fully within the tortoise range. As a general measure of tortoise conservation value, Table 3-28 lists the acreage of each area, acreage above and below 20% slope, and acreage above and below 4,000 feet elevation.

*The results of studies to return captive Desert Tortoises to the wild have shown that tortoises once acclimated to living conditions with plenty of food cannot readjust to areas of sparse food supply. Usually areas with plenty of food supplies are also areas with considerable moisture in the ground. This may make the captive tortoise susceptible to the upper respiratory diseases that may become severe when the tortoise does not have the abundant food supply that was available in captivity. The BLM must work with volunteer Turtle and Tortoise Societies to educate owners that tortoises should not be returned to the wild but placed on an adoption list. There many people wanting to adopt Desert Tortoises and know that it is illegal to take the wild ones in the Desert as pets.*

*A significant Desert Tortoise population has been located in Sheephole Valley on the east side, at least 12 miles from the nearest paved highway. This is holding up the construction of a guzzler.*

**3.3.5 Other Mammals                      Beginning Page 3-167**

**3.3.5.1 Bighorn Sheep                      Pages 3-167 and 3-168**

*The loss of the Bighorn Sheep populations is also a concern for those who like to tour the plan area in the motor vehicles. Many members have worked with the State of California to provide a better water supply for this animal. Those who have studied the Bighorn Sheep and have work with the California Department of Fish and Game have noted that the population has remained stable in the study area in spite of efforts to increase the population.*

*The construction water guzzlers is designed to provide a better water and food supply for these animals. These animals are high in most nature lover's list to view in the wild.*

*In Death Valley National Park, a Bighorn Sheep was viewed grazing in a high groundwater area and was not disturbed by passing motorists on the adjacent route.*

*To save this species, a program is needed to increase both the water and food supply and reduce the predators that are thought to prevent populations increases. These predators are thought to be pumas or Mountain Lions, which are protected from hunting in California by voter referendum. A campaign is needed to repeal this law and to reduce the numbers of these predator cats populations to be in nature's balance. This recent drought has forced these cats into populated areas with tragic consequences.*