

Habitat Conservation Plan
For the Authorized Incidental Take of the Desert Tortoise (*Gopherus agassizii*)
From the Proposed Copper Mountain Community College Expansion Site
Consisting of ± 157 Acres in the Community of Joshua Tree,
San Bernardino County, California

Prepared by:

Circle Mountain Biological Consultants
P.O. Box 3197
Wrightwood, California 92397
PH/FAX: (760) 249-4948
Email: circlemtn@yahoo.com
Contact: Ed LaRue, Sharon Dougherty

and

U.S. Department of the Interior
Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003
PH: (805) 644-1766
FAX: (805) 644-3958
Email: Brian_Croft@fws.gov
Contact: Brian Croft

On behalf of:

Copper Mountain Community College District
6162 Rotary Way
Joshua Tree, California 92252
PH: (760) 366-3791
FAX: (760) 366-1192
Email: kindred_murillo@cmccd.cc.ca.us
Contact: Kindred Murillo

June 2006

Table of Contents

Executive Summary	iv
1.0 INTRODUCTION AND BACKGROUND	1
1.1 Overview/Background	1
1.2 Incidental Take Permit Duration.....	2
1.3 Plan Area.....	3
1.4 Species to be Covered by the Permit	5
1.5 Regulatory/Legal Framework for the Plan	5
2.0 PROJECT DESCRIPTION/ACTIVITIES COVERED BY PERMIT	10
2.1 Project Description.....	10
2.2 Activities Covered by the Permit.....	13
3.0 CONSERVATION PROGRAM/MEASURES TO MINIMIZE AND MITIGATE FOR ADVERSE EFFECTS	15
3.1 Biological Goals.....	15
3.2 Biological Objectives.....	15
3.3 Measures to Mitigate Unavoidable Impacts	16
3.4 Measures to Minimize Impacts.....	19
3.5 Procedures for Removing Dead and Injured Desert Tortoises	26
3.6 Monitoring and Reports	26
3.7 Adaptive Management Strategy.....	29
4.0 ENVIRONMENTAL SETTING/BIOLOGICAL RESOURCES.....	31
4.1 Environmental Setting	31
4.2 Covered Wildlife Species	35
5.0 POTENTIAL BIOLOGICAL IMPACTS/TAKE ASSESSMENT	39

5.1	Direct, Indirect, and Cumulative Effects	39
6.0	CHANGED AND UNFORESEEN CIRCUMSTANCES	45
6.1	Changed Circumstances	45
6.2	Unforeseen Circumstances	46
7.0	FUNDING AND IMPLEMENTATION SCHEDULE	48
7.1	Cost of HCP Implementation	48
7.2	Funding for Changed Circumstances	58
7.3	Funding Mechanisms	58
8.0	PERMIT MODIFICATIONS	64
8.1	Permit Amendments	64
8.2	Suspension / Revocation	64
8.3	Permit Renewal	64
8.4	Permit Transfer	65
9.0	OTHER MEASURES AS REQUIRED BY THE DIRECTOR	65
10.0	ALTERNATIVES	66
10.1	Preferred Alternative	66
10.2	No Action Alternative	66
10.3	Other Alternatives Considered but Dismissed	67
11.0	LITERATURE CITED	68
12.0	APPENDICES	73
12.1	Appendix A - Implementing Agreement	
12.2	Appendix B – Application for State 2081 Incidental Take Permit	
12.3	Appendix C – Biological Survey Reports	
12.4	Appendix D – Desert Tortoise Exclusion Fencing Guidelines	
12.5	Appendix E – Desert Tortoise Handling Procedures and Temperature Limits	

Executive Summary

Copper Mountain Community College District (District) herein provides a Habitat Conservation Plan (HCP) to minimize and mitigate adverse effects to the federally threatened desert tortoise (*Gopherus agassizii*) on 156.53 acres of desert tortoise habitat located in the unincorporated community of Joshua Tree, San Bernardino County, California (Township 1 North, Range 7 East, southeast quarter of Section 26). Because development of this project would likely result in take of this threatened species, the District is using this HCP as the basis for their section 10(a)(1)(B) incidental take permit (permit) application. The District requests that the permit duration be 16 years, which would be sufficient to cover all foreseeable construction and monitoring activities.

The District proposes to expand the Copper Mountain Community College campus from the existing 8.59 acres onto 71.57 acres that it owns in adjacent areas. It would begin the phased construction with a solar field and an 84.96-acre translocation area for desert tortoises (Translocation Area) in 2006, followed by a multi-use sports complex, various roads, and a parking area in 2007. During the next 12 years, the District would construct parking lots, new sports fields, additional classroom facilities, and other buildings.

The District proposes to implement measures to minimize adverse effects during construction and operation of these facilities, additional measures to mitigate adverse effects, and post-construction measures to minimize indirect effects from ongoing use of the new facilities. To minimize adverse effects to the desert tortoise and its habitat, the District would provide on-site biological monitoring during construction. Biologists authorized by the U.S. Fish and Wildlife Service (Service) would move desert tortoises out of harm's way and conduct conservation awareness programs. In addition, the District would meet a schedule of reporting requirements and appoint a field contact representative to oversee compliance. The District would also establish and maintain a translocation area to receive any desert tortoises displaced by construction activities during campus development. The District would fund the maintenance and monitoring of desert tortoises in the on-site Translocation Area, and develop and implement a desert studies curriculum through its Desert Studies Center at the Copper Mountain Community College campus to increase the level of desert tortoise awareness among citizens in the surrounding communities.

To mitigate adverse effects, the District would purchase an 80-acre private in-holding in the Thermal Canyon area of Joshua Tree National Park. They would transfer this parcel to Joshua Tree National Park (Park) and provide the Park with funds to assure adequate management for desert tortoise conservation on the 80-acre site. The District would implement an additional mitigation measure within 12 months of permit issuance. Although the 80-acre parcel is desert tortoise habitat, they are providing this additional mitigation because habitat on the 80-acre Thermal Canyon parcel (Thermal Canyon Parcel) is not entirely comparable in value to habitat that the District would disturb on the Project Site. We have described two alternative methods for implementing this additional mitigation in the "Mitigation Measures" section of this document. The District has agreed to implement one of these measures to ensure adequate mitigation. Although the District will not implement this additional measure until after permit

issuance, the phased nature of their construction schedule will ensure that ground disturbance at the construction site does not outpace the implementation of mitigation.

**Habitat Conservation Plan
For the Authorized Incidental Take of the Desert Tortoise
From the Proposed Copper Mountain Community College Expansion Site
Consisting of ± 157 Acres in the Community of Joshua Tree,
San Bernardino County, California**

1.0 INTRODUCTION AND BACKGROUND

1.1 Overview/Background.

The purpose of this HCP is to outline a conservation strategy that the Copper Mountain Community College District (District) would implement to minimize and mitigate, to the maximum extent practicable, the incidental take of the federally threatened desert tortoise (*Gopherus agassizii*) during implementation of this project. In addition, this HCP would facilitate the District's request for issuance of a section 10(a)(1)(B) incidental take permit (permit) from the Service. This HCP is needed because the Project Site is within occupied habitat for the desert tortoise, and its implementation would likely result in take as defined by section 9 of the Endangered Species Act of 1973, as amended (Act).

The District proposes to expand the Copper Mountain Community College campus from the existing 8.59 acres onto 71.57 acres that it owns in adjacent areas. The District would establish a Translocation Area to accept desert tortoises displaced by their construction activities. In addition, they would implement measures to minimize adverse effects during construction and operation of the facilities.

To mitigate the adverse effects of this project, the District would purchase an 80-acre private in-holding in the Thermal Canyon area of Joshua Tree National Park (Park) and provide adequate management funding so the Park can manage it for desert tortoise conservation over the life of the permit. In addition, the District would implement an additional mitigation measure within 12 months of permit issuance. Although the 80-acre parcel is desert tortoise habitat, they are providing this additional mitigation because habitat on the Thermal Canyon Parcel is not entirely comparable in value to habitat they would disturb on the Project Site. Alternatives for this additional measure would include one of the following:

- 1) provide funding to a designated entity to improve management of desert tortoise habitat at a 605-acre desert park near Coyote Hole Springs or
- 2) provide land acquisition and management funding to the Desert Tortoise Preserve Committee (DTPC) for an additional 30 acres of desert tortoise habitat at the Desert Tortoise Natural Area (DTNA).

Although the District will not implement the additional measure until after permit issuance, the phased nature of their construction schedule will ensure that ground disturbance at the construction site does not outpace the implementation of mitigation. If the District is unable to complete the additional mitigation within the allotted timeframe, the Service will suspend their incidental take permit and the District will not proceed with the remaining phases of

development until the mitigation is in place. In addition, the District will remove or breach (in several locations) desert tortoise fencing that surrounds areas slated for future ground disturbance to allow desert tortoises to utilize these areas until the mitigation is in place. Once the mitigation is in place, these areas will require new clearance surveys and translocation of desert tortoises before ground disturbance begins.

1.2 Incidental Take Permit Duration.

This agreement would become effective on the date that the Service issues the permit to the District and would remain in effect for 16 years or until termination of the permit, whichever comes first. This permit duration would be sufficient to accommodate the District's 13-year construction schedule.

In addition, this permit duration would allow for post-translocation monitoring of desert tortoises, desert tortoise fence-installation, and habitat improvements at the Translocation Area. Because the permit term would authorize take for 3 years following the completion of the final phase of development, the permit would cover any incidental take that occurred due to implementation of these activities for a sufficient time to ensure success of translocation efforts. Following completion of these activities, the District does not anticipate additional management steps that could result in take of the desert tortoise at the Translocation Area. If the District requires additional incidental take coverage after 16 years for unanticipated management activities, they would apply to the Service for a permit amendment to cover these activities.

Finally, the 16-year permit duration would be sufficient to cover incidental take associated with either mitigation option described in the "Overview/Background" section. This permit duration would allow sufficient time for initial activities associated with improvement in management of desert tortoise habitat at the desert park near Coyote Hole Springs or enhancement and management activities associated with a mitigation land purchase at the DTNA. The District anticipates that 16 years would be sufficient time to complete all activities (route closures, fencing, signs, etc.) related to this mitigation. The entities performing land management activities on the mitigation lands would receive incidental take coverage through the District's permit as designated agents. If the District or land management entity requires additional incidental take coverage after 16 years for unanticipated management activities, it would apply to the Service for a permit renewal and/or amendment to cover these activities.

Because the District would transfer management of the Thermal Canyon Parcel to the Park, the Service would authorize any incidental take associated with management of that land through a section 7 consultation process between the Service and the Park. Therefore, we have not considered it when determining the appropriate permit duration.

1.3 Plan Area

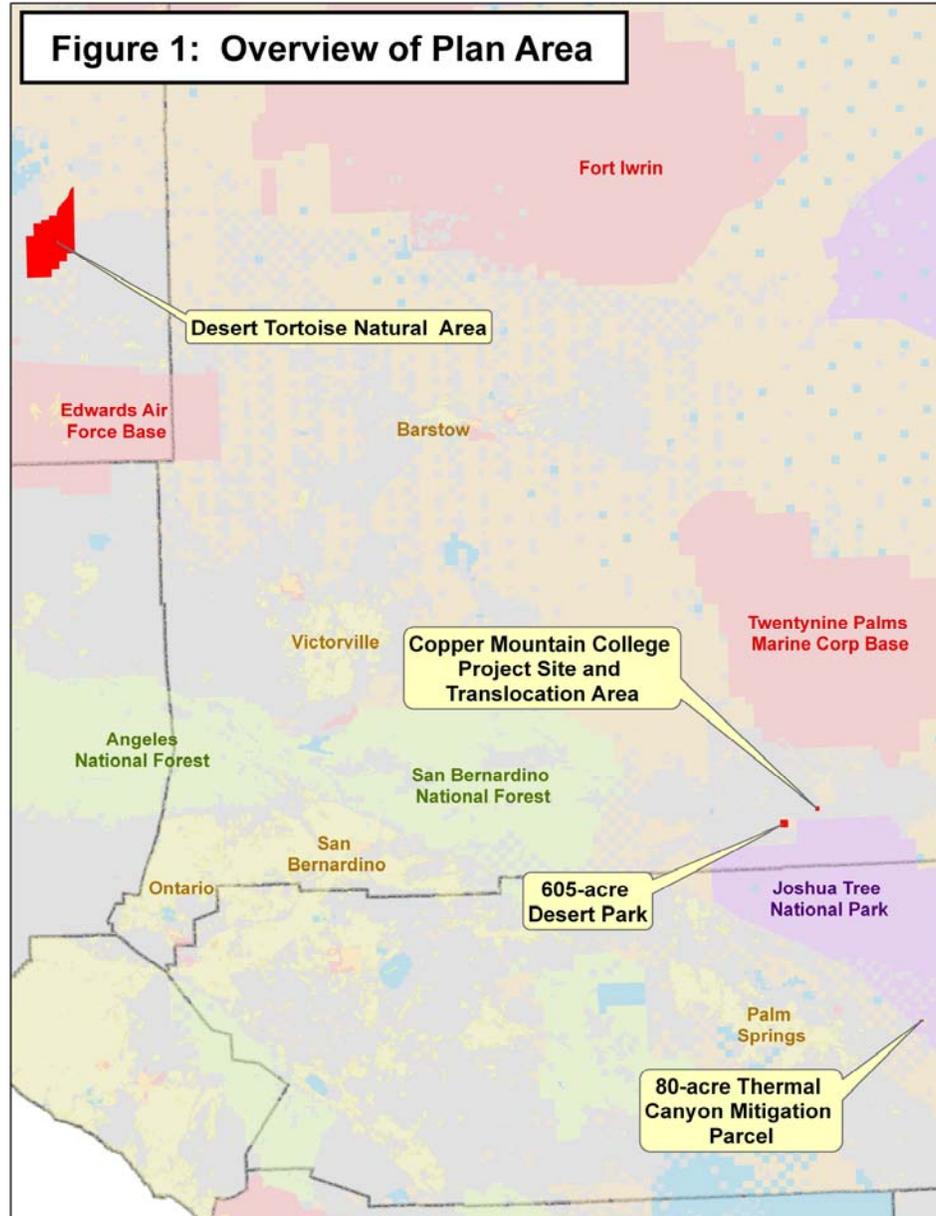


Figure 1: Overview of the locations of the four portions of the plan area.

The plan area for this HCP includes the following locations in the western Mojave Desert:

- 1) The 71.57-acre project site (Project Site) that the District would develop at Copper Mountain College, east of the Village of Joshua Tree in Township 1 North, Range 7 East, Southeast ¼ of Section 26 (see figure 2).
- 2) The 84.96-acre desert tortoise translocation area, adjacent to Copper Mountain College, that the District would construct and manage in Township 1 North, Range 7 East, Southeast ¼ of Section 26 (see figure 2).

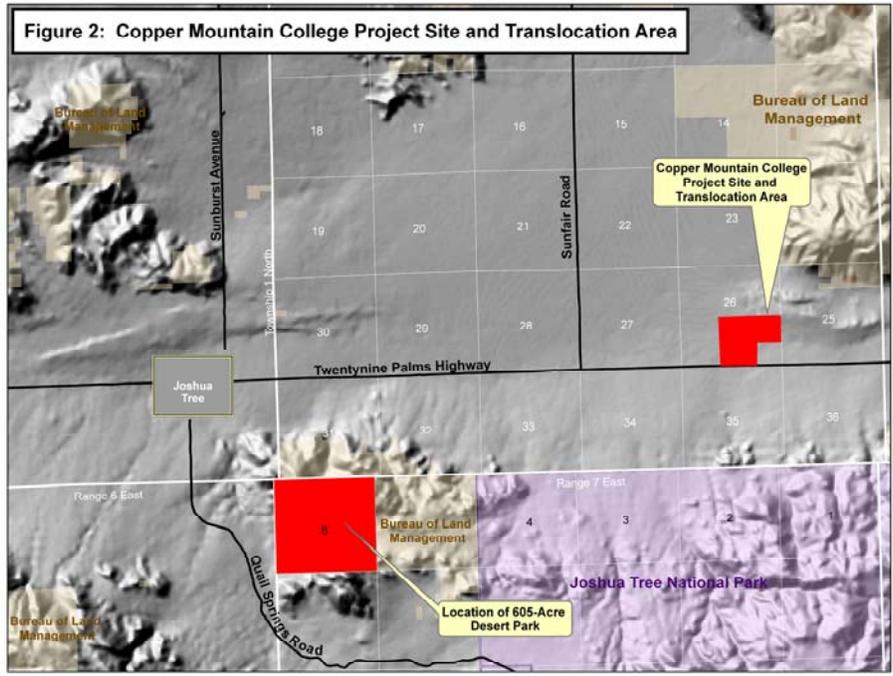


Figure 2: Copper Mountain College Project Site and Translocation Area

3) The 80-acre Thermal Canyon parcel that the District would purchase for mitigation in Township 5 South, Range 9 East, South 1/2 of the Northwest 1/4 of Section 13 (see figure 3).

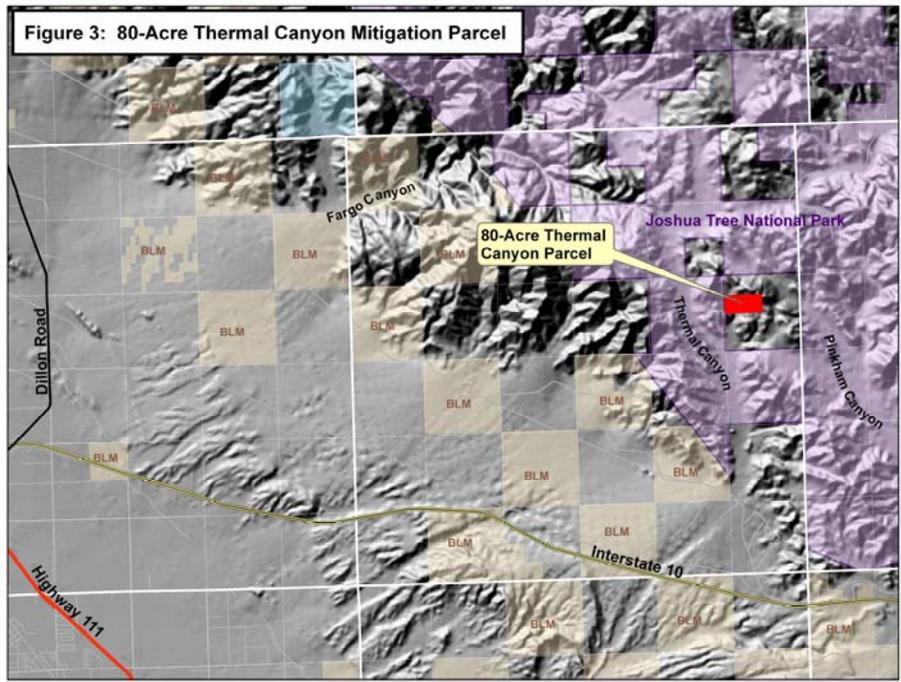


Figure 3: 80-acre Thermal Canyon Mitigation Parcel

- 4) The 605-acre desert park (Desert Park) located near Coyote Hole Spring in Township 1 South, Range 7 East, Section 6 that could be part of the District’s mitigation strategy (see figure 2).
- 5) All lands within the DTNA in order to provide mitigation for the District if they choose this as part of their mitigation strategy (see figure 4).

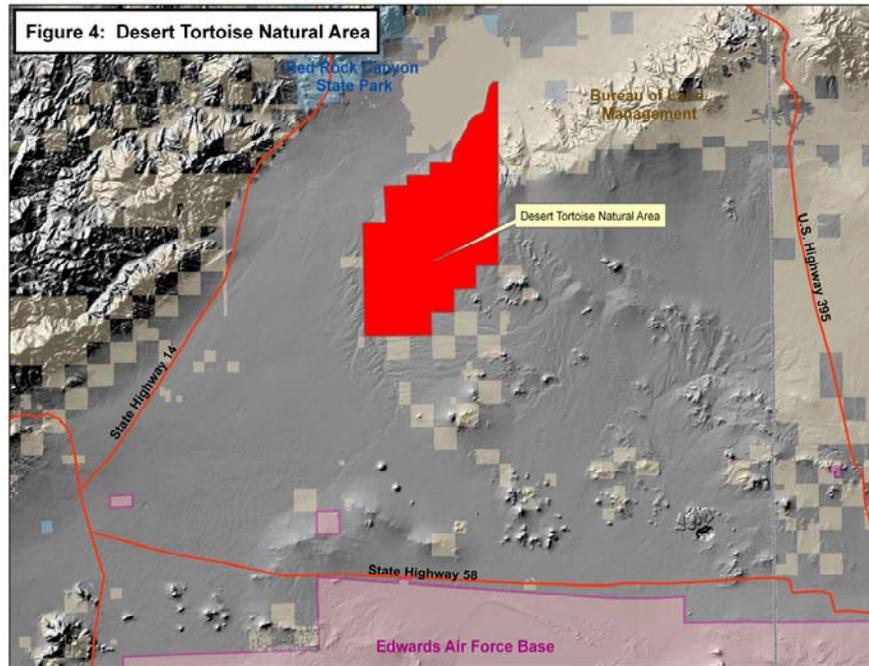


Figure 4: Desert Tortoise Natural Area

1.4 Species to be Covered by the Permit.

The District is requesting that the Service cover the following species for incidental take under section 10(a)(1)(B) of the Act and provide “no surprises” assurances for them through issuance of and incidental take permit.

Covered Species	Federal Status/State Status
Desert tortoise (<i>Gopherus agassizii</i>)	Federally Threatened/State Threatened

1.5 Regulatory/Legal Framework for the Plan.

1.5.1 ***Federal Endangered Species Act***

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. The Service defines “harm” to include significant habitat modification or

degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. The Service defines “harass” as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, or sheltering. Incidental take is take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

Pursuant to sections 11(a) and (b) of the Act, any person who knowingly violates section 9 of the Act or any permit, certificate, or regulation related to section 9, may be subject to civil penalties of up to \$25,000 for each violation or criminal penalties up to \$50,000 and/or imprisonment of up to one year.

Individuals and non-Federal government agencies proposing an action that is expected to result in the take of federally listed species are encouraged to apply for a permit under section 10(a)(1)(B) of the Act to be in compliance with the law. The Service issues such permits when take is not the intention of and is incidental to otherwise legal activities. An HCP must accompany an application for a permit. The regulatory standard under section 10 of the Act is that the permit applicant must minimize and mitigate, to the maximum extent practicable, the effects of the authorized incidental take. Under section 10 of the Act, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and the permit applicant must ensure adequate funding for a plan to minimize and mitigate adverse effects.

Section 7 of the Act requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat. “Jeopardize the continued existence of...” pursuant to 50 CFR 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of a permit under section 10(a)(1)(B) of the Act by the Service is a Federal action subject to section 7. As a Federal agency issuing a discretionary permit, the Service is required to consult with itself (i.e., conduct an internal consultation). Delivery of the HCP and a section 10 permit application initiates the section 7 consultation process within the Service.

The requirements of section 7 and section 10 substantially overlap. Elements unique to section 7 include analyses of adverse effects on designated critical habitat, analyses of adverse effects to listed plant species, if any, and analyses of direct, indirect, and cumulative effects on listed species. Cumulative effects are effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area, pursuant to section 7(a)(2) of the Act. The action area is the area influenced by the direct and indirect effects of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this HCP to meet the requirements of section 7 and to assist the Service with its internal consultation.

1.5.2 *The Section 10 Process - Habitat Conservation Plan Requirements and Guidelines*

The section 10 process for obtaining a permit has three primary phases: (1) the HCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of a permit application must include the following information:

- a. adverse effects likely to result from the proposed taking of the species for which permit coverage is requested;
- b. measures that would be implemented to monitor, minimize, and mitigate adverse effects;
- c. funding that would be made available to undertake such measures;
- d. procedures to deal with unforeseen circumstances;
- e. alternative actions considered that would not result in take; and
- f. additional measures the Service may require as necessary or appropriate for purposes of the plan.

The HCP development phase concludes and the permit processing phase begins when the permit applicant submits a complete application package to the appropriate permit-issuing office. A complete application package consists of 1) an HCP, 2) an Implementing Agreement (IA), 3) a permit application, and 4) a \$100 fee from the applicant. The Service must also publish a Notice of Availability of the HCP and supporting documents in the *Federal Register* to allow for public comment. The Service also prepares an Intra-Service section 7 Biological Opinion; and prepares a Set of Findings, which evaluates the permit application in the context of permit issuance criteria (see below). An Environmental Assessment or Environmental Impact Statement serves as the Service's record of compliance with the National Environmental Policy Act (NEPA), which is released for a 60-day to 90-day public comment period. No further NEPA review is required. An implementing agreement is required for HCPs unless the HCP qualifies as a low-effect HCP. The Service issues a permit upon a determination that the applicant has met all requirements for permit issuance. Statutory criteria for issuance of the permit specify that:

- a. the taking would be incidental;
- b. the impacts of incidental take would be minimized and mitigated to the maximum extent practicable;
- c. adequate funding for the HCP and procedures to handle unforeseen circumstances would be provided;
- d. the taking would not appreciably reduce the likelihood of survival and recovery of the species in the wild;
- e. the applicant would provide additional measures that Service requires as being necessary or appropriate; and the Service has received assurances, as may be required, that the HCP would be implemented.

During the post-issuance phase, the permittee and other responsible entities implement the HCP, and the Service monitors the permittee's compliance with the HCP and the long-term progress

and success of the HCP. The public is notified of permit issuance by means of the *Federal Register*.

1.5.3 *National Environmental Policy Act*

The purpose of the National Environmental Policy Act (NEPA) is to ensure that Federal agencies examine the environmental impacts of their actions (in this case deciding whether to issue a permit) and to utilize public participation. NEPA serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project alternatives to help the Service decide whether to issue a permit. The Service must perform NEPA analysis for each HCP as part of the permit application process.

1.5.4 *National Historic Preservation Act*

All Federal agencies are required to examine the adverse effects of their actions (e.g. issuance of a permit) on cultural resources. This may require consultation with the State Historic Preservation Office and appropriate American Indian tribes. The Service requests that all permit applicants submit a Request for Cultural Resources Compliance form. To complete compliance, the applicants may be required to contract for cultural resource surveys and possibly mitigation.

1.5.5 *Migratory Bird Treaty Act*

The Migratory Bird Treaty Act prohibits the intentional killing of migratory birds or the destruction of their active nests without a permit from the Service. The Service advises that permit applicants seek coverage under the Migratory Bird Treaty Act if their project would result in the intentional killing of migratory birds or destruction of active nests. Because the Service cannot authorize actions that violate other Federal laws, they cannot provide 10(a)(1)(B) incidental take coverage for migratory birds that are also listed pursuant to section 4 of the Act unless the permit applicant also possesses a Migratory Bird Treaty Act permit for the take of that species.

1.5.6 *California Endangered Species Act*

The California Endangered Species Act provides incidental take coverage for projects that would likely result in the incidental killing or injury of a State listed species through the issuance of a 2081 permit. Because the Service cannot authorize actions that violate State, Federal, or Local laws, they require that a permit applicant obtain a 2081 Incidental Take Permit if the California Department of Fish and Game determines that their project would likely kill or injure a State listed species.

1.5.7 *California Environmental Quality Act*

The California Environmental Quality Act (CEQA) requires that a State or Local lead agency perform an analysis of the significance of the impacts of a given project on the quality of the human environment. If the project's impacts are not significant, or the project proponent can mitigate the impacts below significance, the lead CEQA agency can file a "Negative Declaration" or a "Mitigated Negative Declaration". If the project proponent cannot mitigate the

impacts of the project below significance, the lead CEQA agency must develop an Environmental Impact Report that analyzes the proposed project and other alternatives. This process provides for public participation and comment in the development of alternatives.

2.0 PROJECT DESCRIPTION/ACTIVITIES COVERED BY PERMIT

2.1 Project Description

The *Copper Mountain College Master Plan Update* (Master Plan) (Lilburn 2003) provides information on the proposed project. The Master Plan would provide for the necessary facilities to meet the needs of population growth in the Morongo Basin. The District would build new facilities on land to the west and southwest of their existing facilities on a total area of 71.57 acres, excluding 8.59 acres of already developed land and 84.96 acres that the District would manage as a translocation area (Figure 5).

Figure 5 shows the locations of all 26 facilities and the Translocation Area, which can be cross-referenced with Table 2. Table 2 includes tabulated information for occupancy dates, funding sources, and acreage for all facilities. There is no way to estimate the time of year when construction activities would occur, but Table 2 provides estimates for the years in which the phases would occur over the 16-year permit duration.

The new facilities would include nine parking lots, new playing fields for sports such as baseball, tennis, and soccer, a new administration building, four classroom/laboratory complexes, a multi-use sports complex, a solar photovoltaic electricity energy generating field, expansion of the library, a vocational building, and a Desert Studies Center (Figure 5). The proposed Master Plan would also include construction of streets, drainage structures, hardscape, outdoor seating/assembly, and landscaping. The District would construct thirty-four new buildings to meet the needs and demands of the projected enrollment of 9,039 full-time and part-time students. Table 1 shows the projected enrollment up to the year 2025.

Table 1. Projected Enrollment

Year	*FTE Students	Total Student Body
2005	1,702	3,130
2010	2,200	3,844
2015	2,746	5,047
2020	3,675	6,755
2025	4,690	9,039

**FTE is the full time equivalent of all students, including full and part time students.*

Table 2 shows that there are 8 phases associated with campus expansion, beginning with initial construction in 2006, and ending in 2018. For the purposes of this HCP, we have described the development the District would perform in 2006-2007 as one phase. The District would develop 33.96 acres in late 2006 and 2007, 10.79 acres in 2008, etc., until they have completed development of the entire disturbance area of approximately 71.57 acres by 2018. The first phase of development, currently planned for 2006 and 2007, includes construction of the 5.26-acre solar field facility, Translocation Area, and additional developments described in Figure 5 and Table 2.

Figure 5: Phases of Development

* The colors indicate phases of development and can be cross-referenced with the development schedule in Table 2. This figure identifies the Translocation Area (yellow) as the “Desert Studies Demonstration”.

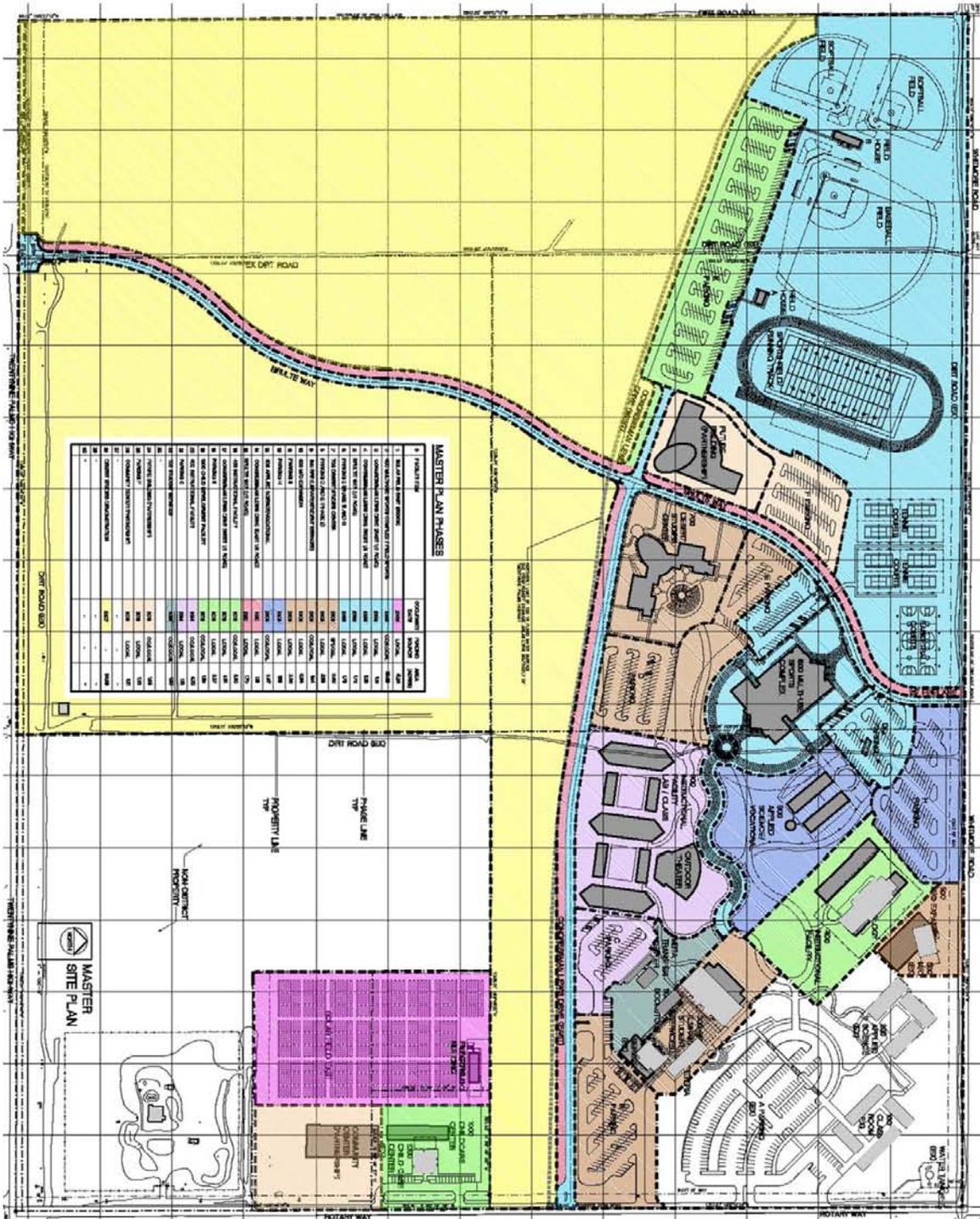


Table 2. Phases, Schedule, and Acreage for Proposed Campus Expansion.

* The colors indicate phases of development and can be cross-referenced with Figure 5. This figure identifies the Translocation Area as the “Desert Studies Demonstration”.

#	FACILITY ITEM	OCCUPANCY DATE	FUNDING SOURCE	AREA (ACRES)
1	SOLAR FIELD EAST (500KW)	2006	LOCAL	5.26
2	600 MULTI-USE SPORTS COMPLEX / FIELD SPORTS	2006	CC/LOCAL	23.83
3	CONGRESSMAN LEWIS DRIVE (EAST 1/2 ROAD)	2006	LOCAL	1.21
4	CONGRESSMAN LEWIS DRIVE (WEST 1/2 ROAD)	2006	LOCAL	0.16
5	BRULTE WAY (1/2 ROAD)	2006	LOCAL	1.72
6	PARKING E (PHASE 1) AND G	2006	LOCAL	1.78
7	700 DESERT STUDIES CENTER	2008	SPECIAL	2.62
8	PARKING D AND E (PHASE 2)	2008	LOCAL	2.93
9	300 RFE (LIBRARY/STUDENT SERVICES)	2008	CC/LOCAL	1.94
10	500 M/O EXPANSION	2008	LOCAL	0.94
11	PARKING B	2008	LOCAL	2.36
12	PARKING H	2009	LOCAL	1.93
13	800 APPLIED SCIENCE/VOCATIONAL	2009	CC/LOCAL	2.97
14	CONGRESSMAN LEWIS DRIVE (EAST 1/2 ROAD)	2010	LOCAL	1.13
15	BRULTE WAY (1/2 ROAD)	2010	LOCAL	1.70
16	400 INSTRUCTIONAL FACILITY	2012	CC/LOCAL	2.95
17	CONGRESSMAN LEWIS DRIVE (WEST 1/2 ROAD)	2012	LOCAL	0.14
18	PARKING K	2012	LOCAL	3.57
19	1000 CHILD DEVELOPMENT FACILITY	2012	CC/LOCAL	1.58
20	900 INSTRUCTIONAL FACILITY	2014	CC/LOCAL	4.35
21	PARKING C	2014	LOCAL	1.13
22	1100 STUDENT SERVICES	2016	CC/LOCAL	1.20
23	-			
24	FUTURE BUILDING (PARTNERSHIP)	2018	CC/LOCAL	1.63
25	PARKING F	2018	LOCAL	1.33
26	COMMUNITY CENTER (PARTNERSHIP)	2018	LOCAL	1.21
27	-	-	-	-
28	DESERT STUDIES DEMONSTRATION	2007	-	84.96
29	-	-	-	-
30	-	-	-	-

Construction is likely to begin affecting desert tortoises in 2006 when the District develops the multi-use sports complex, various roads, and Parking E. Given this, the Service strongly recommended that the District establish the Translocation Area in 2006, at which time, the District would install a desert tortoise-proof perimeter fence. Given its function as a depository for desert tortoises displaced by construction, the District would install the desert tortoise-proof

perimeter fence prior to construction of any facilities, roads, or the parking area. Additional information regarding the construction, monitoring, and maintenance of the Translocation Area is provided in the "Measures to Minimize Impacts" section of this document.

Once facilities are completed, uses would be similar to those that are on-going at existing facilities. For the most part, students access the campus via Rotary Way using conventional vehicles; there is little foot traffic or vehicle use through adjacent areas to access the campus. Access would change with the construction of Copper Mountain Drive and Brulte Way in 2007, which would provide new access. The District would construct additional access in 2010, as extensions of these two roads are developed.

2.2 Activities Covered by the Permit.

Through the implementation of this HCP and issuance of the subsequent permit, the District is seeking incidental take coverage for the following activities:

1. **Construction activities for all phases of the campus expansion within the 71.57-acre project site.** The District would phase-in clearing, grading, excavation, and facility construction, so that they can spread the adverse effects over the 16-year permit duration. The District anticipates that they would only develop 71.57 acres of the 156.53-acre site during the 16-year permit term. The permit would authorize incidental take of the covered species resulting from all phased construction activities for the 26 facilities listed in Table 2 and as described above. Minimization measures identified in this HCP would regulate all such activities. Construction would involve the use of standard heavy equipment to develop the site using current state-of-the-art machinery and construction techniques. At this time, it is not possible for the District to determine the exact types of machinery or the number of construction personnel they would need. The District is requesting incidental take coverage for all construction activities on the Project Site.
2. **Initial construction and subsequent monitoring and management of an 84.96-acre translocation area to receive desert tortoises displaced by construction activities.** The District would construct a Translocation Area (Figure 5) to protect resident desert tortoises and to receive desert tortoises displaced by construction activities. The District would fence the Translocation Area with desert tortoise-proof fencing to ensure that resident and displaced animals are protected and do not move into the Project Site or adjacent lands. The District would establish the Translocation Area in 2006, and place a deed restriction on this land to ensure that it is preserved in perpetuity. There are no rights-of-way or other encumbrances recorded on this parcel that would interfere with its use as a translocation area. The District is requesting incidental take coverage for all aspects of the initial fencing and establishment of this 84.96-acre area.

The District would monitor the health status of all resident and translocated desert tortoises to determine the success of the effort and to help in adaptive management of the site. In addition, the District would perform regular maintenance of the Translocation Area fence to repair damage or prevent deterioration. Repair of fencing could result in incidental take. The Service also considers the handling of desert tortoises during health assessments to be "take", although it is unlikely injury or mortality would occur because the District would use

Service-authorized biologists and follow standard protocols. The District is requesting incidental take coverage for all activities associated with the health-status monitoring program and Translocation Area fence maintenance.

3. **Implementation of minimization measures during construction of the campus expansion, including movement of desert tortoises from the 71.57-acre project site into the 84.96-acre translocation area.** Section 3.4 of this HCP identifies numerous measures that the District would implement to minimize adverse effects during campus construction activities. Some of these activities, such as handling desert tortoises during clearance surveys, movement of desert tortoises to the Translocation Area, installation, maintenance, and removal of temporary desert tortoise-proof fencing around work areas, and installation of a fence or block wall to surround the final campus expansion may result in incidental take. The District is requesting incidental take coverage for these activities.
4. **Enhancement and management activities associated with the 605-acre desert park near Coyote Hole Springs.** As part of their mitigation strategy, the District may choose to fund a designated entity to ensure adequate management of 605 acres of desert tortoise habitat located near Coyote Hole Springs (Figure 2). While working as the designated agent for the District, through a contract, the management entity that implements this mitigation would receive incidental take coverage for sign installation, trash and debris removal, and route closure/revegetation efforts through the District's permit. The "Measures to Mitigate Unavoidable Impacts" Section of this HCP provides a full description of the measures that the management entity would take to manage this parcel, but the items listed here are the only actions that would require incidental take coverage.
5. **Enhancement and management activities associated with a 30-acre parcel of desert tortoise habitat acquired at the DTNA.** As part of their mitigation strategy, the District may choose to fund the DTPC's acquisition, enhancement, and management of 30-acre of desert tortoise habitat at the DTNA (Figure 4). While working as the designated agent for the District, the DTPC would receive incidental take coverage for some management activities listed in the *Desert Tortoise Preserve Committee's Management Plan for the Desert Tortoise Natural Area and Adjacent Lands* (Connor 2002) that would occur on the 30-acre mitigation parcel (DTNA Parcel). These actions include sign and fence installations, trash removal, and revegetation and habitat restoration efforts. The "Measures to Mitigate Unavoidable Impacts" Section of this HCP provides a full description of the measures that the DTPC would implement to manage this parcel, but the items listed here are the only actions that would require incidental take coverage.

The permit would not cover management of the Thermal Canyon Parcel because the Park would manage the land. As a Federal agency, they would seek compliance with the Act through the section 7 consultation process if they determine that any of their management actions may adversely affect desert tortoises on that parcel.

3.0 CONSERVATION PROGRAM/MEASURES TO MINIMIZE AND MITIGATE FOR ADVERSE EFFECTS

3.1 Biological Goals.

The primary goals for this HCP are to:

1. Mitigate unavoidable adverse effects to the desert tortoise from Project Site development by providing for sustained desert tortoise conservation with a focus on the Morongo Basin and Joshua Tree National Park region (**Goal 1**);
2. Contribute to the conservation of desert tortoise populations and habitat within the plan area by restoring habitat that has been adversely affected by past anthropogenic activity and preventing future adverse effects to the mitigation lands and Translocation Area (**Goal 2**);
3. Minimize take of the desert tortoise related to construction of campus facilities and enhancement and management of the mitigation lands and Translocation Area (**Goal 3**);
4. Prevent the spread of Upper Respiratory Tract Disease (URTD) within the Translocation Area (**Goal 4**).

In keeping with Goal 3, the District does not wish to wound or kill desert tortoises during campus expansion, so they would implement a suite of minimization measures during construction. Other projects have effectively used these measures elsewhere to minimize adverse effects to desert tortoises in order to avoid or reduce take during construction activities at the Project Site (LaRue and Dougherty 1998).

An important aspect of Goal 2 would be to reduce habitat fragmentation, maintain habitat quality, reduce threats to habitat, and maintain viable desert tortoise populations on lands within the regions surrounding all portions of the plan area. The District would identify compensation lands in important desert tortoise habitat that would be managed for desert tortoise conservation and recovery.

3.2 Biological Objectives.

To initiate **Goal 1**, the District would achieve the following objectives prior to ground disturbance on the Project Site:

1. **Objective 1a:** Purchase 80 acres of desert tortoise habitat (Thermal Canyon Site) and transfer it to the Park; and
2. **Objective 1b:** Conserve 84.96 acres of desert tortoise habitat near the college expansion site (Translocation Area) that the District would manage for the desert tortoise under a conservation easement (deed restriction).

To complete **Goal 1**, the District would achieve **one** of the following objectives within 12 months of permit issuance:

1. **Objective 1c:** Fund improved management of 605 acres of desert tortoise habitat on non-Federal public lands in the Morongo Basin through a legally binding contract with the designated management entity (Desert Park near Coyote Hole Springs); or

2. **Objective 1d:** Fund the acquisition and management of 30 acres of desert tortoise habitat in the western Mojave Desert (at the DTNA).

To accomplish **Goal 2**, the District and/or designated land management entity would achieve the following objectives:

1. **Objective 2a:** Protect desert tortoise populations and habitat by restoring all habitats damaged by past off-highway vehicle (OHV) intrusions on the 80-acre mitigation parcel, Translocation Area, and any of the lands purchased and/or managed to fulfill Objective 1c or 1d.
2. **Objective 2b:** Protect desert tortoises and their habitat on the 80-acre mitigation parcel, 84.96-acre translocation area, and any of the lands purchased and/or managed to fulfill Objective 1c or 1d by removing non-native, invasive plant species with the exception of Mediterranean split grass (*Schizmus spp.*), red-stem filaree (*Erodium cicutarium*), and red brome (*Bromus madritensis spp. rubens*).
3. **Objective 2c:** Protect desert tortoise populations from common raven (*Corvus corax*) predation on the 80-acre mitigation parcel, Translocation Area, and any of the lands purchased and/or managed to fulfill Objectives 1c or 1d by maintaining these sites free of trash, unnatural water sources, and unnatural perching or roosting sites.

To accomplish **Goal 3**, the District would achieve the following objective:

1. **Objective 3:** Implement all minimization measures outlined in this HCP so that no desert tortoises are injured or killed during construction activities or during implementation of management activities on the 80-acre mitigation parcel, Translocation Area, or any of the lands purchased and/or managed to fulfill Objectives 1c or 1d.

To accomplish **Goal 4**, the District would achieve the following objective:

1. **Objective 4:** Implement all monitoring and adaptive management strategies in this HCP to ensure that no desert tortoises infected with URTD contact uninfected individuals.

If the District does not meet these objectives, they would implement adaptive management strategies. If the adaptive management strategies, detailed in Section 3.7 of this HCP, fail to remedy the problem, the District would contact the Service to determine the most appropriate course of action.

3.3 Measures to Mitigate Unavoidable Impacts.

In order to mitigate the take of desert tortoises on the Project Site to the maximum extent practicable, the District would complete the actions identified in section 3.3.1 and **one** of the two actions identified in sections 3.3.2 and 3.3.3. Although the District will not implement this additional measure until after permit issuance, the phased nature of their construction schedule will ensure that ground disturbance at the construction site does not outpace the implementation of mitigation (see Table 2). If the District is unable to complete the additional mitigation within the allotted timeframe, the Service will suspend their incidental take permit and they will not proceed with the remaining phases of development until the mitigation is in place. In addition, the District will remove or breach (in several locations) desert tortoise fencing that surrounds areas slated for future ground disturbance to allow desert tortoises to utilize these areas until the

mitigation is in place. Once the mitigation is in place, these areas will require new clearance surveys and translocation of desert tortoises, as identified in Section 3.3, before ground disturbance begins.

3.3.1 *Acquisition and management of 80-acre Thermal Canyon Parcel*

Based on the quality of habitat on the Project Site and existing land use conflicts, the District agreed that they would protect 1 acre of desert tortoise habitat, equal in habitat value to the Project Site, for every 1 acre of desert tortoise habitat they eliminate on the Project Site. To accomplish **Objective 1a**, the District would purchase 80 acres of land near Thermal Canyon prior to ground disturbance on the Project Site (Figure 3). The legal description for this parcel is Township 5 South, Range 9 East, South ½ of the Northwest ¼ of Section 13. The District would transfer the land to the Park for management during the permit term.

Because this parcel of land is contiguous with the Park, its acquisition would help consolidate ownership of habitat in this area. Due to the isolated location of this parcel and its pristine condition, it would not initially require any active enhancement or management to achieve **Objectives 2a, 2b, and 2c**. There are no current adverse effects to this parcel from OHVs, invasive species, or common ravens (Circle Mountain 2006a). Sections 3.6 and 3.7 identify the steps that the Park would take to monitor and adaptively manage the Parcel during the permit term. However, due to the remote location of the parcel and its pristine condition, we do not anticipate that the Park will have to implement these adaptive management measures.

Following the expiration of the Permit, the Park will continue to hold this parcel as part of its general land base. Because this parcel is so remote, we do not anticipate that threats to the desert tortoise will occur. Consequently, the Park will not need to actively manage this site for desert tortoise conservation after the Permit term. The site is currently in the Backcountry Transition Subzone, as defined by the Park's Backcountry and Wilderness Management Plan (NPS 2000). This subzone is land zoned for the conservation of natural resources and processes, but not legislatively designated as wilderness. In this subzone, the National Park Service could construct or operate minor facilities such as patrol stations or toilets, operate motor vehicles, land aircraft, and engage in other activities that are prohibited in wilderness. Since this subzone preserves natural resources, any proposed development would be minor (NPS 2000). However, the Park currently manages and will continue to manage this area as a defacto wilderness area, and will not implement any actions that are inconsistent with the preservation of this parcel for mitigation (DePrey 2006). In addition, the entire area, including the 80-acre Thermal Canyon Parcel is currently being considered for wilderness designation in House Resolution 6270, that is sponsored by Representative Mary Bono of California's 45th Congressional District.

Due to the rocky and mountainous nature of portions of the 80-acre parcel, it is not entirely comparable in habitat value to the land being disturbed at the Project Site. However, other portions of the parcel contain suitable desert tortoise habitat, and recent surveys have located sign on adjacent parcels (Circle Mountain 2006a, 2006b). Therefore, the Service believes that the parcel has some value as mitigation, but the District has agreed to implement one of two additional mitigation measures described in sections 3.3.2 through 3.3.3 to ensure that they mitigate at a 1 to 1 ratio.

3.3.2 *Management of a 605-acre desert park*

To complete the remainder of its mitigation through achievement of **Objective 1c**, the District may choose to provide funding to a designated entity, approved by the Service, for the improved management of desert tortoise habitat on a 605-acre desert park located near Coyote Hole Springs within 12 months of permit issuance (Figure 2). The designated entity would perform this work under a contract with the District and would serve as the designated agent of the District under the District's incidental take permit. The Service will review and approve the contract between the District and the designated management entity to ensure that it complies with the terms of the HCP. The legal description for this parcel is Township 1 South, Range 7 East, Section 6. The Bureau of Land Management (Bureau) leased this parcel to the Joshua Tree Park and Recreation District in 1962 for use as a desert park, but the park is not currently managed for desert tortoise conservation. While the park is managed for open space and low impact recreational pursuits, off-highway route proliferation has occurred and litter at the site serves as an attractant for common ravens. If the District chooses this option, it would not formally acquire this land but would provide funding to a designated non-governmental organization to implement management actions to benefit desert tortoise conservation on the parcel. This funding would enable the implementation of specific management actions on the parcel to control route proliferation and common raven attractants.

Because this parcel of land is contiguous with the Park, through an adjacent section of relatively undisturbed Bureau land, its improved management would increase the effective block of protected desert tortoise habitat that the Park boundary provides. Initial enhancement of this parcel would involve the following actions to achieve the District's identified biological objectives:

1. designation of a route network for vehicles accessing the parcel, identification of approved visitor use areas, and installation of signage on the parcel to convey this information to the public (**Objective 2a**);
2. closure of all routes not designated open during the route designation through installation of closed route markers or other measures (**Objective 2a**);
3. installation of signs providing the public with information about the status of the desert tortoise on the parcel; and
4. removal of all trash and debris from the site (**Objective 2c**).

These actions are consistent with the terms of the Bureau's lease. Implementation of this mitigation along with the mitigation identified in Section 3.3.1 would ensure that the District achieves the biological goals and objectives it has identified for this HCP. Sections 3.6 and 3.7 provide details about the monitoring and adaptive management strategies that would be implemented on the parcel to ensure long-term achievement of the biological goals and objectives. Following expiration of the permit, the designated land management entity would have completed all enhancements to the parcel and had several years of monitoring and adaptive management to ensure that the enhancements would continue to provide a benefit to the desert tortoise after active management ceases.

3.3.3 *Acquisition and management of 30 acres of land at the DTNA*

If the District does not choose to fund management of the Desert Park or if there are problems finding a management entity to accomplish this task, the District may choose to achieve **Objective 1d** by providing funds to the DTPC for acquisition and management of a 30-acre block of desert tortoise habitat at the DTNA (Figure 4). The DTPC will perform management of the parcel as an agent of the District under the District's permit. The Service will review the agreement/contract that is developed between the DTPC and the District to ensure that it complies with the terms of this HCP. The District does not currently know the legal description for this parcel, but the DTPC would purchase the land within the fenced DTNA as outlined in the *DTPCs Management Plan for the Desert Tortoise Natural Area and Adjacent Lands* (Connor 2002). The Bureau designated the DTNA as an Area of Critical Environmental Concern (ACEC) in the California Desert Conservation Area Plan (Bureau 1980) and developed an ACEC management plan in 1988 (Bureau 1988). The DTPC and Bureau cooperatively manage this area as a preserve for desert tortoises under the guidelines of the 1988 plan. If the District chooses this option, it would provide funding to the DTPC and they would acquire the land within 12-months of permit issuance and manage the land, in perpetuity, according to the ACEC management plan and the *DTPC's Management Plan for the Desert Tortoise Natural Area and Adjacent Lands*.

Because of the mixed public and private ownership of parcels at the DTNA, the purchase of a 30-acre parcel at the DTNA would help the DTPC and the Bureau consolidate management of the preserve and help ensure consistent management of all lands within the preserve boundaries for desert tortoise conservation. Although each parcel would require site-specific consideration under the DTNA's management plans, actions taken to enhance the parcel would likely involve mechanical control (no herbicides) of non-native invasive plant species and removal of all trash and debris from the site to achieve **Objectives 2b and 2c** respectively. Most of the DTNA is already fenced to exclude OHV intrusions, so the DTPC would only install fencing to achieve **Objective 2a** if necessary. However, the DTPC would still require money for fencing so that it can increase protection in other areas of the DTNA that would indirectly aid in the protection of the 30-acre parcel.

Implementation of this mitigation along with the mitigation identified in Section 3.3.1 would ensure that the District achieves the biological goals and objectives it has identified for this HCP. Sections 3.6 and 3.7 provide details about the monitoring and adaptive management strategies that the DTPC would implement on the parcel to ensure long-term achievement of the HCP's biological objectives. Following expiration of the permit, the DTPC would continue to manage this parcel of land to benefit the desert tortoises according to the mission of their organization.

3.4 Measures to Minimize Impacts.

This section identifies measures that the District or its designated representatives would implement to minimize adverse effects to desert tortoises found on the Project Site, Translocation Area, or mitigation lands during ground disturbing activities. Implementation of these measures would help the District achieve **Objective 3** of this HCP. Because the Park

would manage the Thermal Canyon Parcel, the Service would cover take for management activities at this location through the section 7 consultation process. Therefore, the Service may use this process to impose additional project-specific measures on that parcel. The District has identified the following measures to minimize take of desert tortoises during ground disturbing activities in all portions of the plan area.

3.4.1 *Use of field contact representatives (FCRs) for permitted activities in the plan area*

The District would appoint a field contact representative (FCR) who would be responsible for overseeing compliance with the HCP minimization measures for the desert tortoise and for coordinating compliance with project subcontractors and the Service. The FCR would have the authority to halt all project activities that are in violation of the measures given in the HCP.

3.4.2 *Desert tortoise awareness programs for permitted activities within the plan area*

Prior to ground disturbing activities within any portion of the plan area, a Service-authorized biologist or designated campus representative would meet with all construction personnel to administer a desert tortoise awareness program. The Service must receive, review, and approve the awareness program at least 30 days prior to its presentation. At a minimum, the program would include a discussion of the desert tortoise's distribution, general behavior, and ecology, its sensitivity to human activities, the protection afforded it by the Act, the procedures for reporting contacts with desert tortoises, and the importance of following all measures given in the HCP and any applicable Federal documents outlining those measures. The awareness program would also include a discussion of the definition of take and procedures for avoiding take.

No more than 48 hours prior to initiating any new ground disturbing activities within the plan area, the Service-authorized biologist would meet with all construction personnel in a classroom setting and administer the awareness program, including a Service-approved video presentation. Following this initial presentation, the Service-authorized biologist or other person designated by the Service-authorized biologist would make new construction personnel entering the site aware of the provisions required to minimize take of desert tortoises. The District would also provide a special awareness orientation for students and college employees. This awareness program would inform construction personnel, college employees, and students of the minimization measures the District is implementing at the Project Site to protect desert tortoises and the importance of abiding by those measures. The District would maintain a list of all construction personnel who have attended the awareness program. The person administering the awareness briefing would inform personnel that their signature on the list indicates that they understand the minimization measures and are willing to abide by them throughout all construction activities that could take desert tortoises.

Additional education measures would include the distribution of: (a) highly visible stickers to be worn on hard hats to identify workers who have attended the education program; the absence of such a sticker would indicate that a worker had not attended the session, which would be rectified prior to beginning work; (b) stickers or placards reminding construction personnel to check beneath their vehicles for desert tortoises prior to moving the vehicle; and (c) wallet-sized cards outlining important, practical desert tortoise protection measures.

3.4.3 Use of Service-authorized biologists for permitted activities in the plan area

Only biologists authorized by the Service would handle desert tortoises within the plan area. The District or designated land management entity (mitigation lands) would enlist a Service-authorized biologist to perform all clearance surveys and monitoring activities in all portions of the plan area prior to and during any ground disturbing activities that may result in the take of desert tortoises (e.g., installation of a desert tortoise-proof fence). Within 30 days prior to any ground disturbing activities in the plan area, the District would provide the resume(s) of the proposed biologist(s) to the Service. The Service would approve the biologist before construction begins and before the biologist begins monitoring duties. The Service-authorized biologist would have the authority to halt all project activity should danger to a desert tortoise arise. The Service-authorized biologist can then allow work to proceed after he/she has removed hazards to desert tortoises.

3.4.4 Minimizing disturbance from permitted activities on mitigation lands

When performing ground disturbing enhancement or management activities on lands described in Section 3.3 of this HCP, the District or the designated land management entity would confine the area of disturbance to the smallest practical area, considering topography, placement of facilities, location of burrows, public health and safety, and other limiting factors. The Service-authorized biologist would delineate work area boundaries with flagging or other marking to minimize surface disturbance associated with vehicle straying. The Service-authorized biologist would identify special habitat features, such as burrows, that personnel would avoid to the extent possible. The Service-authorized biologist and/or FCR would ensure compliance with this measure.

3.4.5 Minimization of disturbance from vehicle travel during permitted activities on mitigation lands

When performing management activities on lands described in Section 3.3 of this HCP, the District or the designated land management entity would not blade access roads to work sites. Cross-country access would be the standard for temporary activities when access to the Project Site cannot be restricted to previously disturbed routes of travel. A Service-authorized biologist would select and flag the cross-country access route prior to vehicle use to avoid burrows and to minimize disturbance of vegetation. Except when the project absolutely requires it, the District would prohibit cross-country vehicle use by employees and students during work and non-work hours.

3.4.6 Desert tortoise preconstruction surveys of the Project Site and establishment of a translocation area

A Service-authorized biologist would translocate desert tortoises found during preconstruction surveys into an 84.96-acre on-site translocation area that is sufficiently large and fenced, so that resident animals and individuals displaced by construction activities would be protected in perpetuity (Figure 5). This area will be protected from future development through a deed restriction or conservation easement that the District will hold. There are no rights-of-way or other encumbrances recorded on this parcel that would interfere with its use as a translocation

area. The Translocation Area is necessary to receive desert tortoises displaced by authorized construction activities, as no regional repository exists to receive displaced individuals. Adjacent areas are private land, so there is no potential to relocate displaced desert tortoises into these areas. In order to ensure achievement of **Objective 4**, the Service-authorized biologist would quarantine any animals showing signs of URTD and contact the Ventura Fish and Wildlife Office to determine a course of action.

The District would enclose the area with a 1-inch by 2-inch desert tortoise-proof fence during Phase 1 development (Appendix E). The District would permanently enclose the Translocation Area with a block wall or standard chain link fence in a later phase of the project. If the District uses chain link, they would affix a 24-inch by 1-inch by 2-inch mesh, galvanized steel hardware cloth to the bottom. They would bury the bottom 6 to 12 inches of the wire mesh below the soil surface to prevent desert tortoises from digging out (or in). The fence would be sufficient to prevent dogs from entering the Translocation Area. The District would place signs prohibiting the drop-off of unwanted desert tortoises along the fence to reduce the risk of the public releasing diseased animals into the area. The signs would refer people with unwanted pet desert tortoises to a local chapter of the California Turtle and Tortoise Club. The District would equip gates accessing the facility with features to prevent the escape of desert tortoises from the area. One design includes a 24-inch by 1-inch by 2-inch hardware cloth attached to the lower two feet and flush with the bottom of the gate. Beneath the gate, the District would bury an 8-inch by 8-inch barrier, such as a Douglas fir beam, with the top edge flush to the ground surface. We discuss activities associated with the monitoring and management of this facility in Section 3.6.2 and 3.7.2 respectively. There is no intent to receive displaced desert tortoises from other construction sites.

3.4.7 Long-term management of the Translocation Area

Following establishment of the Translocation Area, the District would perform monitoring and adaptive management activities described in Section 3.6 and 3.7 to ensure continued achievement of this HCP's biological objectives. The District will preserve the translocation area as habitat for the resident and translocated animals in perpetuity through a deed restriction or conservation easement that the District will hold. There are no rights-of-way or other encumbrances on this parcel that would interfere with its use as a translocation area. This restriction will prevent development of that land and require that it be maintained for the purpose intended in this HCP.

3.4.8 Desert tortoise preconstruction surveys of mitigation lands

When performing large-scale debris removal that require trucks and heavy equipment or when performing fence installations at the DTNA Parcel, the District or designated land management entity would employ a Service-authorized biologist to perform pre-project desert tortoise surveys. The Service-authorized biologist would move all desert tortoises found within the work areas out of harm's way in adjacent habitat of appropriate quality. The Service-authorized biologist would move all desert tortoises as short a distance as is necessary.

3.4.9 *Installation of desert tortoise-proof fencing and removal of desert tortoises from work areas on the Project Site*

Prior to clearing vegetation from a given phase of Project Site development, the District would erect a desert tortoise-proof fence around the perimeter of the area where they would develop permanent facilities. Once the phase is fenced, a Service-authorized biologist would remove desert tortoises from the area according to Service clearance survey protocols. The District would maintain the fence in place until construction is completed. The purpose of the fence is to preclude all desert tortoises from the construction footprint, including desert tortoises removed from the site that may try to return to their on-site burrow(s).

All project-related facilities and construction-related areas, such as staging areas and personnel parking areas, would occur within the fenced area(s). All related infrastructure (wells, water treatment, refuse transfer, developed parks, commercial development, etc.) would also remain within the fenced area. If the District requires placement of infrastructure off-site, they would contact the Service to seek approval of the activity prior to ground disturbance, unless permitted under a separate authorization.

All desert tortoise-proof fences would have either a desert tortoise-proof gate or a breakaway portion of fence that employees can open and close to allow vehicle access. The gate or modified fence would remain closed at all times during construction except to allow vehicles to enter or leave the site. The Service-authorized biologist may modify this measure if, based on his or her surveys of surrounding areas, he/she determines that there is little or no likelihood of desert tortoises entering the site through the opening. If the biologist determines that employees can leave the gate open, but subsequently finds that a desert tortoise has entered the construction area through that opening, they would install a gate or modified fence.

Prior to installing desert tortoise-proof fencing, the Service-authorized biologist would survey the fence alignment. The District would move the fence line when possible so that any desert tortoise burrows would remain on the outside of the fenced area. The Service-authorized biologist would consider the direction of the burrow and know that burrows may be 30 to 40 feet long. The Service-authorized biologist would consider and exclude burrow opening and its end when altering the fence line. Any desert tortoise burrows found within the proposed fence line that the District cannot avoid would be hand excavated by a Service-authorized biologist according to the excavation procedures given in Desert Tortoise Council (1999). The Service-authorized biologist would remain on-site to monitor the installation of the fence.

After installing the fence, and before any other activities occur within the fenced area, the Service-authorized biologist would survey the site for desert tortoises. The surveys would occur immediately after installation of the fence, and prior to brushing or grading activities. The Service-authorized biologist would search the fenced site three times unless he/she found no desert tortoises on the second search. The Service-authorized biologist would excavate burrows either as they are found or flag them for later excavation. They would also carefully check each burrow for viable desert tortoise eggs. When found, the Service-authorized biologist would have a plan for relocation eggs outside the work site, and move the eggs in such a way that their relocation (see Desert Tortoise Council 1999) does not adversely affect the viability of the eggs.

3.4.9a *Use of temporary desert tortoise-proof fencing on the Project Site*

If possible, the District would place temporary desert tortoise-proof fences at least 50 feet within the perimeter of a given property line to provide a buffer zone to minimize adverse effects to adjacent lands. The wire mesh fence (see Appendix E) would fasten securely to posts at intervals sufficient to ensure integrity of the fence. The wire mesh would extend at least 18 inches above the ground and 12 inches laid out at a right angle to the fence (extending away from the interior), flush with the surface of the ground or buried with soil and rock to prevent tortoises from entering the site.

The District would be responsible for maintaining the desert tortoise-proof fence throughout construction. On-site biological monitors, the Service-authorized biologist, or other designated person would check the fence regularly and after rainstorms, and repair any breaks in the fence immediately as part of their normal monitoring duties.

3.4.9b *Use of permanent desert tortoise-proof fencing on the Project Site*

Rather than fence a single phase, the District may decide to fence multiple phases and remove all desert tortoises at one time. In this event, the Service-authorized biologist would place the displaced desert tortoises into the Translocation Area. Because the fence would have to function for a longer period, it would be necessary to attach the fence to a chain-link or barbed wire fence that would withstand encroachment by motorcyclists or other OHVs. For this long-term fence, where practical, the District would bury the bottom 12 inches rather than fold it on top of the ground (as would be done for a temporary fence) (see Appendix E).

The District would enclose the final development on the Project Site within a permanent fence (e.g., block wall, barbed wire, or chain-link fence with hardware cloth attached to the bottom of the fence and buried 12 to 18 inches in the ground). This fence is separate from that which would enclose the Translocation Area. The District would install this fence inside the temporary desert tortoise-proof fence before they remove it. Once they have installed the permanent fence, they would remove the temporary fence.

3.4.10 ***Removal of the desert tortoise-proof fence and subsequent protection of desert tortoises.***

At the completion of construction, the District may remove the desert tortoise-proof fence surrounding a given work area or leave it in place to continue to exclude desert tortoises from the project footprint. Fence removal would depend on the nature of construction. If the District removes all desert tortoises at one time, they would install a more substantial fence (or even block wall). If construction proceeds in phases, the District may remove and use the fence for the next development phase. If they remove the fence with heavy equipment, Service-authorized biologists would monitor that activity. If removed by hand, a monitor need not be present. In either case, the Service-authorized biologist would document such activities in appropriate reports.

3.4.11 ***Report the onset of ground disturbing activities in the plan area***

Prior to beginning construction of a given phase at the Project Site or implementation of ground disturbing activities on mitigation lands, the District or designated land management entity (mitigation lands) would inform the Service of the area they would disturb and the proposed construction date. If survey data were available, the report would indicate how many desert

tortoises a given phase or mitigation lands project is likely to affect. They would provide the information 30 to 45 days prior to implementation to inform the agencies that they are acting on the permit. It is not necessary for the agencies to respond for implementation to proceed so long as they are implementing all appropriate provisions identified in this HCP accordingly.

3.4.12 Desert tortoise handling procedures during implementation of permitted activities in the plan area

Desert tortoises may be handled only by the Service-authorized biologist and only when necessary. The Service-authorized biologist shall follow the techniques for handling desert tortoises in "Guidelines for Handling Desert Tortoises during Construction Projects" (Desert Tortoise Council 1999) (see Appendix F).

3.4.13 Vehicle speed limits during implementation of permitted activities in the plan area

The Service-authorized biologist and field contact representative would ensure that all construction personnel and other people related to the project would maintain a 20-mile per hour speed limit on all dirt roads accessing the site. Only Service-authorized biologists would move desert tortoises observed along dirt access roads.

3.4.14 Checking beneath vehicles during implementation of permitted activities in the plan area

Workers would check beneath any parked vehicle within the plan area immediately prior to moving the vehicle while in desert tortoise habitat outside of areas fenced with desert tortoise-proof fencing. If an employee finds a desert tortoise beneath a vehicle, the Service-authorized biologist would move it from harm's way. Alternatively, the employee could wait and move the vehicle after the desert tortoise has left of its own accord.

3.4.15 Pet, firearms, and fireworks prohibitions on work sites within the plan area

Construction personnel would not to bring pets (except for service animals) or firearms onto the work sites in any portion of the plan area. The use of fireworks and other explosives (not used for construction purposes) would also be prohibited.

3.4.16 Minimization of predator attractants on work sites within the plan area

During all permitted activities within the plan area, personnel would promptly place all trash and food items in covered receptacles within the work site to reduce the attraction of common ravens and other desert tortoise predators. Personnel would place plastic garbage bags in raven-proof containers and not leave them in the open. They would regularly remove the containers from the site for disposal at an authorized landfill. The District would apply water used for dust suppression in a manner that avoids ponding and subsequent use by common ravens.

3.4.17 Prohibitions on the intentional killing of wildlife within the plan area

The District and/or designated land management entities (mitigation land) would not allow any intentional killing, harassment, wounding, or collection of wildlife within the plan area. This

measure pertains to both construction personnel and biological monitors. The only exception is if a desert tortoise is injured or found dead, in which case the Service-authorized biologist would handle the injured animal(s) or carcass according to the provisions outlined in section 3.5 of this HCP.

3.4.18 *Termination of monitoring by the Service-authorized biologist within the plan area*

Once a given work area at the Project Site has been fenced, surveyed, all desert tortoises removed and translocated, the vegetation cleared, and the area checked to ensure that no desert tortoises were injured or killed, the Service-authorized biologist would not be required to remain on-site as long as all other measures given herein are being implemented.

Once the service-authorized biologist leaves the site, the FCR would have the responsibility of ensuring compliance with HCP measures. The FCR would visit the site as often as needed to check the desert tortoise-proof fence and ensure that personnel are effectively carrying out other measures. If the FCR finds that employees are not implementing measures, the FCR would contact the District and the Service to inform them of the situation and halt all project activities that are in violation of the measures given in the HCP. The Service would then determine if the Service-authorized biologist should resume monitoring activities on a daily basis.

If construction personnel or other individuals observe a desert tortoise inside the fenced area after the Service-authorized biologist leaves, he/she would immediately go to the site, and with input from available Service personnel, move the desert tortoise into the Translocation Area.

During projects requiring a Service-authorized biologist on mitigation lands, the Service-authorized biologist would remain on site until the project is finished or until he/she determines that the continued implementation of the project would not take desert tortoises.

3.4.19 *Follow-up measures to minimize residual and indirect effects at the Project Site*

As described above, the District would monitor and maintain all desert tortoise-proof fences. Section 3.6 also describes steps the District would take at the Project Site to monitor common raven populations and desert tortoise populations within the Translocation Area.

The District would make employees aware that desert tortoises occur in adjacent areas and that they are protected by the Act. An educational brochure providing information about the local presence of desert tortoises and prohibitions against OHV activity, desert tortoise collection, release of pet desert tortoises, unleashed dogs, and other pertinent items, would be developed and made available to the public using the area. The District would place signs or information kiosks at prominent entry point(s) to provide information on desert tortoise conservation and minimize adverse effects from the increased number of people using the area after it is developed. The Desert Studies Center would also function to promote education of desert tortoise conservation issues in the local community.

3.5 Procedures for Removing Dead and Injured Desert Tortoises

If a dead desert tortoise were found, the Service-authorized biologist would make a determination as to the cause of death, and report the information to the Ventura Fish and Wildlife Office. If the

Service-authorized biologist determines that the cause of death or injury is from construction activities, he/she would report the incident(s) as follows. Upon locating a freshly dead or injured desert tortoise, the Service-authorized biologist would immediately notify the Service's Ventura Fish and Wildlife Office. If determinable, they would document the cause of death. Following initial notification, the District would make written notification within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. The Service-authorized biologist would send the notification to the Ventura Fish and Wildlife Office with copies to the Law Enforcement Office (Torrance).

If an injured desert tortoise is found, it would be transported to the nearest qualified veterinarian. The ultimate disposition of that desert tortoise would depend on recuperation from the injury and would be determined with input from the Service. The District would pay all veterinary bills.

3.6 Monitoring and Reports.

3.6.1 *Monitoring and reporting of permitted ground disturbing activities within the plan area*

The District or designated land management entity would enlist Service-authorized biologist(s) to monitor all activities the permit covers that may take the desert tortoise in any portion of the plan area. The Service-authorized biologist would maintain a record of all desert tortoises observed and moved during project activities. This information would include locations and dates of observations, approximate size, whether animals voided their bladders (if handled), general condition of health, any apparent injuries and state of healing, and diagnostic markings (i.e., identification numbers on marked costal scutes).

The Service-authorized biologist would provide a report to the Service within 90 days of completion of monitoring associated with any permitted ground disturbing activities in all portions of the plan area. The reports would include final determination of the acres of surface disturbance, all desert tortoise observations, and an evaluation of the adverse effects to desert tortoises resulting from the activities. The report would address the appropriateness of the conservation measures and, in the context of adaptive management, make recommendations as to how to change the measures for future permitted activities.

3.6.2 *Long-term monitoring of the Translocation Area*

The District would monitor desert tortoises within the Translocation Area for the permit duration to ensure that the translocation is successful and to ensure that they are achieving **Objectives 2a, 2b, and 2c**. The Service-authorized biologist would work with the District for the first three years to establish and modify the monitoring program as necessary. In the fourth year and beyond, appropriate college staff would carry on the responsibilities for at least the next 12 years. The staff member in charge of the program would take the following actions:

- permanently mark all desert tortoises within the Translocation Area following the methodology described in "Guidelines for Handling Desert Tortoises During Construction Projects" (Desert Tortoise Council 1999);

- perform annual surveys in early spring of the area to identify the total number of desert tortoises present;
- weigh, measure, and perform a visual health assessment of desert tortoises within the Translocation Area to detect evidence of disease on an annual basis;
- perform annual surveys for the presence of hatchling desert tortoises and desert tortoises that have been injured or killed by common ravens;
- perform an annual assessment of new facilities to determine if they are subsidizing common raven populations in the Translocation Area;
- count common raven numbers and nests once a week using a standard methodology (eg; 15-minute surveys of the Translocation Area at 6:00 a.m. on each Wednesday throughout the year);
- monitor all fence lines surrounding the Translocation Area once a week;
- perform an annual assessment to determine the presence of non-native invasive plant species within the Translocation Area;

Though not obligated to do so, the District anticipates that it would continue after the 16-year permit expires. However, procedures for monitoring may change in order to avoid the need to handle desert tortoises. If the District cannot develop procedures to perform the monitoring without handling desert tortoises, they would seek a permit renewal for these activities. Regardless of the level of continued management, the area will continue to be preserved for its intended purpose through a deed restriction or conservation easement that is held by the District. There are no rights-of-way or other encumbrances on this parcel that would interfere with its use as a translocation area.

3.6.3 *Translocation area reporting*

The District would maintain records of all monitoring activities described in Section 3.6.2 and make them available to the Service upon request. In addition, they would submit a monitoring report for all of these activities to the Service no later than January 31 of each year following issuance of the permit for the duration of the permit.

3.6.4 *Long-term monitoring of the 80-acre Thermal Canyon parcel*

The Park would perform long-term monitoring of the 80-acre parcel, for the permit duration, according to the guidelines of this HCP and the associated implementing agreement to ensure that they are achieving **Objectives 2a, 2b, and 2c**. Following expiration of this permit, the Park would continue to monitor the site according to its agency's mission and Park policies, but due to the remote location of this parcel and the lack of current threats at the site, we do not anticipate that it would require parcel-specific monitoring to achieve the biological goals and objectives of this HCP. For the 16-year duration of this permit, the Park would visit the site once a year to assess whether OHV intrusions, common raven subsidies, and/or non-native invasive plants occur on the site. These visits would involve 1 to 2-hour walking surveys of the site.

3.6.5 *80-acre Thermal Canyon parcel reporting*

The District would provide notification to the Service upon acquisition of this parcel and transfer to the Park. The Park would provide an annual report describing the results of its walking surveys to the District and the Service during the permit term.

3.6.6 *Long-term monitoring or the 605-acre desert park*

If the District chooses this parcel to complete its mitigation, the designated land management entity would perform long-term monitoring of the desert park for the permit duration to ensure that they are achieving **Objectives 2a, 2b, and 2c**. Monitoring of this site would include the following:

- perform monthly surveys of all route closures on the site to determine compliance with the designated route network;
- perform monthly monitoring of the site to determine the presence of trash, debris, or other raven subsidies; and
- perform monthly monitoring of all signs to determine the need for repair or replacement.

3.6.7 *605-acre desert park reporting*

If the District chooses this parcel to complete its mitigation, the designated land management entity would provide an annual report to the District and the Service that describes the findings of their monthly surveys and reports on any adaptive management that they performed.

3.6.8 *Long-term monitoring of the 30-acre DTNA parcel*

If the District chooses this method to complete its mitigation, the DTPC would perform long-term monitoring of the parcel according to the strategy described in the *Management Plan for the DTNA and Adjacent Lands* (Connor 2002) in perpetuity to ensure that they are achieving **Objectives 2a, 2b, and 2c**. Monitoring of this site would include the following:

- perform periodic survey and evaluation of the site to determine the presence of degraded habitats that require revegetation;
- perform twice-yearly inspections of the parcel for signs of sheep and OHV egress, trash build up, and presence of non-native invasive plants; and
- perform patrols of fences that are established to protect the parcel at least once a month.

Funding for this mitigation option would also contribute to other monitoring activities on the DTNA, such as continued monitoring of the desert tortoise long-term study plots. We have not included these items here because they do not pertain specifically to the management of the 30-acre parcel. However, Section 6.0 identifies these additional items and their associated costs.

3.6.9 *30-acre DTNA parcel reporting*

The DTPC would provide a report to the Service on or before the 12-month deadline for acquisition. Upon request, the DTPC would provide reports to the Service that account for any actions taken or

funds expended in the enhancement and long-term management of the DTNA Parcel. If the DTPC determines that they need to take action to manage the parcel that is inconsistent with the provisions of this, they would contact the Service to seek authorization.

3.7 Adaptive Management Strategy

3.7.1 *Adaptive management during ground disturbing activities*

During all ground-disturbing activities within the plan area, the District or designated land management entity (mitigation lands) would maintain open communication with the Service to ensure that they are employing the latest methods to move desert tortoises from harm's way. If incidental take in the form of injury or mortality occurs during a given phase of development or during mitigation lands management that the Service did not anticipate in its biological opinion, the District and the Service would discuss the circumstances of the take and determine if the District can modify the HCP's minimization measures to avoid additional take. If the Service and the District agree on modifications to the minimization measures, the Service would make a minor amendment to the HCP. Implementation of this procedure would ensure continued achievement of **Objective 3**.

3.7.2 *Adaptive management of the Translocation Area*

Once the District has completed initial enhancement of the Translocation Area (Section 3.4.6), it would monitor the site and implement the following adaptive management measures, when necessary, to ensure continued achievement of the HCP's biological objectives:

1. quarantine any desert tortoises within the Translocation Area showing signs of URTD, and contact the Service to determine the most appropriate and recent protocols to implement for the care and handling of desert tortoises that have URTD (**Objective 4**);
2. remove any common raven subsidies (trash, water sources, roosting sites) identified within the Translocation Area or Project Site during annual desert tortoise surveys or other Translocation Area assessments (**Objective 2c**);
3. repair any damage to Translocation Area boundary fences that is detected during weekly monitoring (**Objective 2a**);
4. remove any raven nests in the Translocation Area and adjacent lands during the non-nesting season if desert tortoises that have been killed or injured by common ravens are found within the Translocation Area during annual surveys (**Objective 2c**);
5. mechanically control (no herbicides) any non-native invasive plant populations within the Translocation Area. Because there is no effective method for eradicating Mediterranean split grass, red-stem filaree, and red brome in desert ecosystems, the District will not perform removal of these species if they are identified during yearly monitoring;
6. if monitoring of the translocation area shows less than three non-neonate desert tortoise mortalities during the permit term from causes other than old age, the Service will consider the translocation a success, and no further management will be required. If the success criterion is not met, the Service will extend the District's permit for translocation area management and will work with the District to determine what management modifications need to be made.

The District anticipates that it would continue after the 16-year permit expires regardless of the success criteria. Regardless of the level of continued management, the area will continue to be preserved for its intended purpose through a deed restriction or conservation easement that is held by the District. There are no rights-of-way or other encumbrances on this parcel that would interfere with its use as a translocation area.

3.7.3 Adaptive management of the 80-acre Thermal Canyon parcel

Once the District has transferred management of this parcel to the Park (section 3.3.1), the Park would monitor the site and implement the following adaptive management measures to ensure continued achievement of the HCP's biological objectives:

1. remove any trash and debris from the site that is detected during inspections of the parcel (**Objective 2c**) and
2. perform native plant revegetation of sites identified during inspections that show substantial degradation (**Objective 2a and 2b**).

The District has identified these adaptive management strategies to comply with the Service's five-point policy. However, it is extremely unlikely that these measures will be required because of the current condition of the parcel, its remote location, and the lack of threats to the desert tortoise on the site. Following the expiration of the permit, parcel-specific management will not be necessary to ensure conservation of the site for desert tortoises. The Park's management of this area, as described in section 3.3.1, is sufficient to ensure conservation of this parcel.

3.7.4 Adaptive management of the 605-acre desert park

Once a designated land management entity has completed initial enhancement of the 605-acre parcel (Section 3.3.2), it would monitor the site and implement the following adaptive management measures to ensure continued achievement of the HCP's biological objectives:

1. remove any trash, debris, or other common raven subsidies from the site that are detected during monthly inspections of the parcel (**Objective 2c**);
2. repair any damaged signs discovered during monthly patrols (**Objective 2a**);
3. vertically mulch routes identified and signed as closed if they are used more than 4 times (**Objective 2a**);
4. perform native plant revegetation of sites identified during inspections that show substantial degradation (**Objective 2a and 2b**).

3.7.5 Adaptive management of the 30-acre DTNA parcel

Once the DTPC has completed initial enhancement of the 30-acre parcel (Section 3.3.3), it would monitor the site and implement the following adaptive management measures to ensure continued achievement of the HCP's biological objectives:

1. repair any DTNA boundary fencing or signs that it discovers during its monthly fence patrols (**Objective 2a**);

2. remove any new trash and debris from the site that is detected during twice-yearly inspection of the parcel (**Objective 2c**); and
3. perform native plant revegetation of sites identified during twice-yearly inspections that show substantial degradation (**Objective 2a and 2b**).

4.0 ENVIRONMENTAL SETTING/BIOLOGICAL RESOURCES

4.1 Environmental Setting.

4.1.1 Climate.

Refer to Table 3 for information regarding temperature and precipitation in all portions of the plan area. The table provides average values from 1971 to 2000 for the weather station located nearest to each distinct portion of the plan area (Desert Research Institute 2006).

Table 3: Temperature and Precipitation Data for the Plan Area

Plan Area Location	Hottest Month	Hottest Month Average High Temp (F)	Hottest Month Average Low Temp (F)	Coldest Month	Coldest Month Average High Temp (F)	Coldest Month Average Low Temp (F)	Average Annual Precipitation (inches)	Wet Season	Weather Station Data
DTNA	July	104.3	69.2	Dec	58	28.2	3.05	Nov. to Mar.	Cantil, CA (1971-2000)
Project Site and Transloc. Area	July	105.6	70.8	Dec	63.7	35.5	4.6	Dec. to Mar. and July to Aug.	Twentynine Palms, CA (1971-2000)
605-acre Desert Park	July	105.6	70.8	Dec	63.7	35.5	4.6	Dec. to Mar. and July to Aug.	Twentynine Palms, CA (1971-2000)
80-acre Thermal Canyon Parcel	July	106.9	78.4	Dec	71.8	40.8	3.3	Dec. to Mar. and Aug. to Sep.	Indio, CA (1971-2000)

4.1.2 Topography, geology, soils

On the Project Site and Translocation Area, elevations range from 2,470 feet to 2,535 feet. The terrain is relatively flat but rises gently on an alluvial fan toward the slopes of Copper Mountain, which lies to the northeast. Soils on this site consist of older and recent alluvium containing loose fine sand, disintegrated rock, pebbly sands and silts, and minor ad-mixtures of pebble-cobble gravel derived from valley areas and adjacent highlands (Norris and Webb *in* Lilburn 2003).

The Thermal Canyon Parcel ranges in elevation from 2,475 feet to 3,070 feet. Terrain on the site is mountainous in many areas but also contains a gently sloping valley in the south-central portion of the site and an incised valley near the southeast corner of the parcel. The site appears to be composed of decomposing granite with associated granite bedrock and large boulders common throughout (Circle Mountain 2006a).

The Desert Park ranges in elevation from 3,100 feet to 3,653 feet. Terrain at the park is composed of a wide valley that slopes upward from west to east. At the western boundary of the parcel, the valley is approximately 1 mile wide, but it narrows to half a mile in width on the eastern boundary. Boulder-strewn hills flank the north and south margins of the valley. We do not have specific information regarding the soil types on this site, but soils in the valley are conducive to burrowing by desert tortoises.

The DTNA ranges in elevation from approximately 1,950 feet near Koehn Lake to 3,600 feet in the east expansion area. The majority of the DTNA is comprised of alluvial fans that originate in the Rand Mountains. Mountainous areas of the Rand Mountains are found in the northern portions of the DTNA. We do not have specific information regarding the soils in the DTNA. However, Mojave Desert soils in the southeastern portion of Kern County are shallow, deep, or very deep, and well to excessively drained. Surface soil layers range from sand to clay loams (Bureau 2005) and most areas have soils conducive to burrowing by desert tortoises.

4.1.3 *Hydrology, streams, rivers, drainages*

The Project Site and Translocation Area are located within the Joshua Tree surface-water Hydrologic Unit (HU) of the Colorado River Hydrologic Region (HR) and within the Joshua Tree ground-water subbasin. Two large ephemeral washes and many smaller drainage channels carry water from the higher slopes east of the site to the playa to the west. The Joshua Tree ground-water subbasin, that underlies the Project Site, contains three water-bearing units that are 300, 450, and 1,500 feet thick for the shallow, middle, and deep aquifers respectively (Nishikawa et. al 2004). The Desert Park is located within the same HU and HR as the Project Site and Translocation Area. It is not located within a designated ground-water subbasin, but runoff from the site provides recharge to the Joshua Tree ground-water subbasin. A wash cuts across the northeast quarter of this parcel.

The 80-acre Thermal Canyon site is located within the Whitewater surface-water HU of the Colorado River HR. It is not located within a designated ground-water subbasin, but runoff from the site provides recharge to the Coachella ground-water subbasin. A 100-foot wide wash crosses the southwest corner of the parcel, which constitutes one of three primary tributaries of Thermal Canyon Wash (Circle Mountain 2006a).

The DTNA is located within the Fremont surface-water HU of the Colorado River HR. The non-mountainous areas of the DTNA are located within the Fremont Valley ground-water basin. Washes that dissect alluvial fans coming off the Rand Mountains empty into Fremont Valley and Koehn Lake, where they recharge the ground-water basin.

4.1.4 *Vegetation and sensitive plant species*

Vegetation on the Project Site and Translocation Area is best characterized as creosote bush-white bursage series. Common shrub, grass, and cactus species on the site include Anderson's boxthorn (*Lycium andersoni*), peachthorn (*L. cooperi*), winterfat (*Kraschenninkovia lanata*), paperbag bush (*Salazaria mexicana*), silver cholla (*Opuntia echinocerus*), beavertail cactus (*O. basilaris*), pencil cholla (*O. ramosissima*), hedgehog cactus (*Echinocereus engelmannii*), cotton-top (*Echinocactus polycephalus*), cheesebush (*Hymenoclea salsola*), Parish's golden-eye (*Viguiera deltoidea* var *parishii*), senna (*Senna armata*), and big galleta (*Pleuraphis rigida*) (Circle Mountain 2004). No plant species of concern were located on the Project Site or

Translocation Area. Vegetation on the Desert Park consists of a creosote bush scrub plant community in most areas. We do not have a specific plant inventory of this site.

Common plant species on the Thermal Canyon Parcel included creosote (*Larrea tridentate*), white bursage (*Ambrosia dumosa*), Nevada joint-fir (*Ephedra nevadensis*), indigo bush (*Psoralea spp.*), desert mallow (*Sphaeralcea ambigua*), Parish's golden-eye, senna, Pima rhatany (*Krameria erecta*), white rhatany (*Krameria grayi*), ocotillo (*Fouquieria splendens*), and jojoba (*Simmondsia chinensis*) (Circle Mountain 2006a). The only plant species of concern found on this parcel was the Alverson's foxtail cactus (*Coryphantha alversonii*) (Circle Mountain 2006a).

Because this HCP would allow the District 12 months after permit issuance to buy the DTNA Parcel for mitigation and the exact location of the parcel has not yet been identified, we do not know the exact vegetation type that would be present. However, the DTNA contains creosote bush scrub, Joshua tree woodland, creosote bush-rocky slope, and saltbush scrub plant communities (Berry 1978 in Bureau 1988). Common plant species at the DTNA include: white bursage, goldenhead (*Acamptopappus sphaerocephalus*), cheesebush, winterfat, spiny hopsage (*Grayia spinosa*), Anderson's boxthorn, peachthorn, Indian rice grass (*Achnatherum hymenoides*), desert needle grass (*Achnatherum speciosum*), California buckwheat (*Eriogonum fasciculatum*), Nevada joint-fir, paperbag bush, horsebrush (*Tetradymia stenolepis*), allscale (*Atriplex polycarpa*), shadscale (*Atriplex confertifolia*), scalebroom (*Lepidospartum squamatum*), and sandpaper plant (*Petalonyx thurberi*). Plant species of concern that have been located on the DTNA include the Barstow woolly sunflower (*Eriophyllum mohavense*), Mojave chorizanthe (*Chorizanthe spinosa*), and Mojave fish-hook cactus (*Sclerocactus polyancistrus*) (Bureau 1988).

Wildlife

Wildlife species detected on the Project Site and Translocation Area included 6 reptile, 22 bird, and 7 mammal species, mostly typical animals of the Mojave Desert. Reptiles include the desert tortoise, western whiptail (*Cnemidophorus tigris*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), long-tailed brush lizard (*Urosaurus graciosus*), and desert horned lizard (*Phrynosoma platyrhinos*). The only reptile species of concern on the site was the desert tortoise. Common birds included mourning dove (*Zenaidura macroura*), black-throated sparrow (*Amphispiza bilineata*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), Gambel's quail (*Callipepla gambelii*), great-horned owl (*Bubo virginianus*) (detected by pellets), and barn owl (*Tyto alba*) (carcass found on Highway 62 in 2005). Several bird species associated with human habitation were also found on-site, including common raven (*Corvus corax*), house finch (*Carpodacus mexicanus*), European starling (*Sturnus vulgaris*), and rock dove (*Columba livia*). Migrant bird species included northern rough-winged swallow (*Stelgidopteryx serripennis*), barn swallow (*Hirundo rustica*), Say's phoebe (*Sayornis saya*), white-crowned sparrow (*Zonotrichia leucophrys*), and yellow-rumped warbler (*Dendroica coronata*). Bird species of concern on the site included the western burrowing owl (*Athene cunicularia hypugea*), loggerhead shrike (*Lanius ludovicianus*), and LeConte's thrasher (*Toxostoma lecontei*). Mammals included antelope ground squirrel (*Ammospermophilus leucurus*), coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), bobcat (*Lynx rufus*), black-tailed hare (*Lepus californicus*), Audubon's cottontail (*Sylvilagus audubonii*), and kangaroo rats (*Dipodomys spp.*) (Circle Mountain 2004). Wildlife on the Desert Park is likely similar to that

found on the Project Site, Translocation Area, and Thermal Canyon Parcel given the location and habitat types present. We do not have a specific species inventory of this site.

Wildlife Species detected on or near the Thermal Canyon Parcel included the desert tortoise, common chuckwalla (*Sauromalus obesus*), side-blotched lizard, red-tailed hawk (*Bureo jamaicensis*), Gambel's quail, Say's phoebe, verdin (*Auriparus flavipes*), black-throated sparrow, white-crowned sparrow (*Zonotrichia leucophrys*), desert woodrat (*Neotoma lepida*), black-tailed hare, Audobon cottontail, gray fox (*Urocyon cinereoargenteus*), and bobcat. The only species of concern detected on or near the site was the desert tortoise. The timing of surveys, in January of 2006, likely influenced the bird and reptile diversity detected on the site (Circle Mountain 2006a).

Because this HCP would allow the District 12 months after permit issuance to buy the DTNA Parcel, we do not know which wildlife species would be present. However, the DTNA supports 30 species of reptiles, 29 species of breeding birds, 23 species of mammals, and additional wintering bird species. Of these species, the following are considered species of concern: desert tortoise, Mohave ground squirrel (*Spermophilus mohavensis*), Swainson's hawk (*Buteo swainsoni*), western burrowing owl, and loggerhead shrike (Bureau 1988).

4.1.6 *Existing land use*

Circle Mountain (2002 and 2005b) reported observable human disturbances on the Project Site and Translocation Area to be OHV use (387 instances), roads and trails (55 instances), signs of domestic dog (68 instances of digs, tracks, feces, etc.), shotgun shells (18), dumping of vegetation and yard waste (18), targets for recreational shooting (9), rifle shells (8), dumping of trash (5), and evidence of skeet shooting (1). In most cases, these impacts were dispersed throughout the 156.62 acres. We do not have specific survey information for the Desert Park, but route proliferation within the park suggests that some OHV use has occurred. The site's primary purpose is to provide an area for picnicking, camping, and hiking near the Village of Joshua Tree.

There is no existing human land use on the Thermal Canyon Parcel. During a January 2006 survey, surveyors detected three shotgun shells and two old beer cans that indicated an isolated incident of target shooting at the southwest corner of the site. They did not detect any evidence of OHV use or other human disturbances on the site.

The DTPC manages the DTNA as a desert tortoise preserve, and provides opportunities for nature walks, sightseeing, photography, and other contemplative uses. Although the Bureau and DTPC do not allow shooting within the DTNA, target shooting and hunting still occurs sporadically within the fenced preserve and on adjacent lands. During 313 days of observations on and adjacent to the DTNA between 1981 and 1983, surveyors documented 159 firearm users (Campbell 1983 and Uptain 1987 *in* Bureau 1988). In addition, OHV activity has focused on areas around the fenced DTNA for many decades, with the most intense activities occurring near the southeastern and northeastern boundaries (Bureau 1988). The Rand Mountains area, to the northeast, is popular with OHV enthusiasts, who have use private lands south of the DTNA for camping and staging areas. OHV use in the Rand Mountains and at "Camp C", south of the DTNA accounts for about 76 percent of the OHV activity adjacent to the DTNA (Uptain 1987 *in* Bureau 1988). Some illegal use within fenced areas of the DTNA has also occurred. Trespass sheep grazing also occasionally occurs on the DTNA.

4.2 Covered Wildlife Species

4.2.1 *Desert tortoise*

4.2.1.a *Life History*

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

Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Although they spend most of their lives in burrows or caves to escape the extreme conditions of the desert, they will become active in suitable weather at any time of the year; rainfall, particularly during the summer, often initiates activity. Young desert tortoises are more likely to be active in less optimal weather than adults (Wilson 1999). Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), and Weinstein et al. (1987).

Adult desert tortoises use several burrows during their active season. In Nevada, adults used 12 to 25 shelter sites (e.g., burrows and pallets) per year (Burge 1978). A desert tortoise may use several burrows over the span of a few days, or it may return to the same burrow each night (Bury and Marlow 1973; Coombs 1974; Grant 1936). Desert tortoises depend on their burrows to escape the extreme effects of temperature, humidity, and to avoid predators (Brattstrom 1965; McGinnis and Voigt 1971; Voigt 1971). The temperature inside a summer burrow will range from 19 to 37.8°C although outside temperature will be much warmer. The humidity in a burrow is relatively high and constant, creating an environmental buffer against desiccation in the desert. Desert tortoises have also been observed to leave their burrows on warm days during the winter months (Woodbury and Hardy 1948; Coombs 1977).

Limited information is available on the movements and home range of the desert tortoise throughout its lifetime. In general, the home range of a desert tortoise varies by the age and sex of the animal and the availability of forage (Berry 1973). Adult desert tortoises have larger home ranges than younger animals and males tend to have larger home ranges than females. In years of higher than average precipitation, desert tortoises have larger home ranges than during dry years. An annual home range has been documented at 42 hectares while a multi-year home range will be larger (Esque *et al.* 1990). Burge (1977) documented mean home range sizes of 32

hectares (79 acres) for male desert tortoises and 14 hectares (34.5 acres) for female desert tortoises.

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

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

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

Neonate desert tortoises emerge from their winter burrows as early as late January to take advantage of freshly germinating annual plants. Freshly germinating plants and plant species that remain small throughout their phenological development are important to neonate desert tortoises because their size prohibits access to taller plants. As plants grow taller during the spring, some species become inaccessible to small desert tortoises.

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

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

4.2.1.b *Reasons for Listing*

The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 *Federal Register* 32326). In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 *Federal Register* 12178). The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published February 8, 1994 (59 *Federal Register* 5820). Critical habitat for the desert tortoise only overlaps the action area on the 80-acre Thermal Canyon Parcel. All other portions of the plan area are not within critical habitat.

The Service listed the desert tortoise in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species. Predation by common ravens and feral dogs, mortality on paved and unpaved roads, vandalism and poaching continue to cause loss of individuals; unauthorized off-road vehicle use, cattle grazing, urbanization, mining, and the development of utilities are activities that continue to cause loss and degradation of habitat.

4.2.1.c *Distribution of desert tortoises within the plan area*

Desert tortoises are known to occur on the Project Site, Translocation Area, Desert Park, and at the DTNA. The presence of desert tortoise sign in areas immediately adjacent to the Thermal Canyon Parcel indicates that they likely utilize portions of this parcel as well. Between 1998 and 2005, surveyors detected desert tortoise sign on three surveys of the Project Site, Translocation Area, and adjacent lands (Circle Mountain Biological Consultants 1998, Circle Mountain Biological Consultants 2002, Circle Mountain Biological Consultants 2005b). In 2002, surveyors observed three adult, one hatchling, and one subadult desert tortoises. In surveys conducted in 2002 and 2005, surveyors located 8 carcasses, 28 burrows, 3 sets of fresh tracks not associated with burrows, eggshell fragments, and more than 290 scat (Circle Mountain 2002 and 2005b). Desert tortoise sign (i.e., scat and burrows) is distributed throughout the Project Site and Translocation Area, but the five desert tortoises observed during the surveys were concentrated along a centrally-located wash, running east to west through the site (Circle Mountain Biological Consultants 2002, 2005b). Based on surveys, it appears that desert tortoises occur throughout these areas, but are somewhat less likely to occur within a hundred feet of Highway 62, which probably serves as a "sink" (i.e., place where tortoises are lost to vehicle collision) to the local desert tortoise population. It is likely that desert tortoises still occur throughout the Project Site and

Translocation Area, but the present location of animals is probably different than was observed in 2002 and 2005. We do not have information regarding the distribution of desert tortoise sign on the Desert Park, but Service staff observed an adult female desert tortoise in the wash that crosses the northeastern portion of the site.

Surveyors found no desert tortoise sign on the 80-acre Thermal Canyon site, but they did locate 15 desert tortoise scat and one desert tortoise burrow on a 160-acre parcel immediately to the south. This parcel contained similar habitat characteristics to those found on the 80-acre site. It is possible that desert tortoises inhabit the 80-acre site, but were undetected during surveys due to mountainous rocky terrain. Because we do not know the location of the DTNA Parcel, we cannot provide any information regarding the presence or distribution of desert tortoise sign on it.

4.2.1.d *Abundance of desert tortoises within the plan area*

Maps produced by the Bureau indicate that the Project Site, Translocation Area, and Desert Park are located in areas that supported between 20 and 50 desert tortoises per square mile in the early 1980s. The DTNA supported between 100 and 250 desert tortoises per square mile in some areas and over 250 desert tortoises per square mile in other areas during this period (Bureau of Land Management 1980). However, there have been declines in desert tortoise densities over much of the western Mojave since the Bureau produced these maps. We do not have any historic information regarding estimated desert tortoise densities in the region of the western Mojave that contains the Thermal Canyon Parcel.

Recent surveys of the Project Site, Translocation Area, and Thermal Canyon Parcel did not attempt to quantify the number of desert tortoises. Researchers looked at desert tortoise densities on permanent study plots located at the DTNA in 1993. Plots located inside the fenced areas of the DTNA supported an estimated 61 desert tortoises per square mile, while plots outside of the fence had 42 desert tortoises per square mile. These numbers not only show the effect of DTNA fencing on desert tortoise populations but also demonstrate the declines this species has experienced in the western Mojave Desert since the early 1980s.

5.0 POTENTIAL BIOLOGICAL IMPACTS/TAKE ASSESSMENT

5.1 Direct, Indirect, and Cumulative Effects.

5.1.1 *Regional Direct and Indirect Effects*

On a regional scale, we anticipate minimal direct and indirect effects to the desert tortoise at the Project Site, Translocation Area, Desert Park, Thermal Canyon Parcel, and the DTNA. The Project Site and Translocation Area are not located within regional conservation areas that the Service has identified as essential to the survival and recovery of the species and the amount of desert tortoise habitat that would be lost is a small fraction of the total available in the Morongo Basin. In addition, acquisition and/or management of mitigation parcels would be beneficial to the desert tortoise on a regional scale by providing consistent management of desert tortoise habitat in areas that have a mixed public and private ownership.

5.1.2 *Local Direct and Indirect Effects*

5.1.2.a *Effects of Project Site Construction, Fence Installation and Repair, Trash Removal, and Non-native Plant Control on the Desert Tortoise*

Construction activities and fence installation and repair on the Project Site would result in adverse effects to the desert tortoise. Direct adverse effects may include crushing of unseen individuals on access roads and on the Project Site, destruction of burrows, handling of individuals during translocations, and entrapment of individuals in excavations. Trash removal, non-native plant control, fence installation and repair (DTNA and Translocation Area only) at the Translocation Area, DTNA Parcel, and Desert Park would have similar effects because of the need for cross-country vehicle travel. Service-authorized biologists would remove all desert tortoises from work sites and cross-country access routes prior to ground disturbance. Consequently, these activities are likely to directly kill or injure few desert tortoises. In addition, the District would fence work areas on the Project Site with desert tortoise-proof fencing to eliminate the likelihood of take in these areas. However, use of unfenced access routes could potentially kill or injure some desert tortoises that re-enter these areas. We cannot reasonably predict the number of desert tortoises these activities may kill or injure. We discuss the effects of handling desert tortoises later in this section.

Indirect effects of construction and operation of facilities on the Project Site would include permanent habitat loss and increased raven predation. Development of the Project Site would result in the direct loss of 71.57 acres of desert tortoise habitat. In addition, fencing activities and trash removal within the plan area are likely to result in temporary habitat degradation due to cross-country vehicle travel. Fencing activities would temporarily affect a 10 to 15-foot wide area along the fence alignments. We anticipate that 15,500 feet of fencing would be required to fence the Project Site and Translocation Area. We cannot predict how much habitat fence repairs would disturb, but these activities would only disturb small areas of habitat when needed. We anticipate that the effects to habitat along the fence alignments would be temporary. Fencing of habitat on the mitigation lands and Translocation Area would likely result in increased habitat quality on the fenced areas due to the elimination of OHV use. However, fencing could displace

OHV use to adjacent parcels, and put desert tortoises in those areas at risk. In the Yucca Valley area, for example, excessive motorcycle use was displaced from one construction site to adjacent undeveloped areas where an adult tortoise was put at heightened risk due to the shift in unauthorized vehicle use (Circle Mountain 2004).

The construction of facilities could result in an increased number of common ravens on the Project Site due to food and water subsidies that commonly occur near human habitations. A larger raven population on the Project Site would likely result in higher numbers of raven-killed desert tortoises in adjacent areas. Because ravens prey on young desert tortoises with undeveloped shells, increased raven predation would likely result in decreased desert tortoise recruitment in adjacent areas. We cannot reasonably predict the number of common ravens the Project Site would attract, the number of desert tortoises these ravens would kill, or the magnitude of the effect on population dynamics in adjacent areas. However, the District is proposing minimization measures to decrease common raven subsidies and eliminate nests within the Project Site and Translocation Area. These measures would likely reduce the number of common ravens that the area would have supported without them. We do not anticipate that fence installation activities would have an affect on common raven populations or the level of common raven predation. Trash removal is likely to decrease the number of common ravens on the Translocation Area and mitigation lands by reducing common raven subsidies.

5.1.2.b Effects of Clearance Surveys and Translocation Area Establishment on the Desert Tortoise

Clearance surveys within the plan area and Translocation Area establishment would result in adverse effects to desert tortoises. Direct effects to the desert tortoise are primarily associated with handling and manipulation of desert tortoises during clearance surveys and annual Translocation Area monitoring. Desert tortoises could void their bladders when handled, which may result in an important loss of stored fluids. Improper handling techniques could also result in transmission of URTD between individuals, which could result in death of the animal. However, because Service-authorized biologists would perform this activity according to established protocols, it is unlikely that animals would suffer injury or mortality due to loss of fluid or disease transmission. In 2002, surveyors detected five desert tortoises on the Project Site and Translocation Area combined, but desert tortoise abundance and distribution on the site has likely changed since this time. In addition, we cannot predict all locations within the plan area where the District or other entity would need to perform additional clearance surveys during mitigation land management activities. Consequently, we do not know how many desert tortoises surveyors would handle during work area clearance surveys or Translocation Area monitoring.

Indirect effects to the desert tortoise would include loss of habitat and individuals from the Morongo Basin population, increased mortality of translocated animals, and transmission of URTD from translocated animals to animals that are resident to the Translocation Area. Establishment of the Translocation Area would effectively prevent desert tortoises, except those translocated to or resident on the site, from using 84.96 acres of habitat within the Morongo Basin. In addition, the desert tortoises that remain on the site and their associated offspring would no longer be part of the overall population of desert tortoises within the Morongo Basin.

Desert tortoises translocated from the Project Site to the Translocation Area could also experience increased mortality because they are not as well adapted to their new environment. In one study, 4 of 16 desert tortoises, moved 5.6 kilometers from their original homerange died within 2.5 years (Stewart 1993 *in* USGS 2002). However, a second study found that 13 desert tortoises, moved immediately adjacent to a development site, showed no difference in survival when compared to the resident animal (Corn 1994b, 1997 *in* USGS 2002). Recent studies in Nevada and Utah indicated that translocated desert tortoises had similar levels of mortality compared to resident desert tortoises, and translocated females produced similar numbers of eggs compared to resident females (Field 1999 and Nussear 2004 *in* Esque et al. 2005). Furthermore, there appeared to be no adverse effects on the resident populations into which desert tortoises were translocated as measured by survivorship, reproductive output, and movement patterns (Nussear 2004 *in* Esque et al. 2005). Because the District would move animals to the Translocation Area immediately adjacent to the Project Site, it is unlikely that they would suffer increased mortality.

It is unlikely that translocated or resident desert tortoises within the fenced translocation area will suffer competitive interactions due to increased density and limited resources. Saethre et al. (2003) looked at the carrying capacity for desert tortoises in fenced enclosures, and found that densities below 850 desert tortoises per square kilometer resulted in no effect to survival in a two-year study. In 2002, surveyors detected five desert tortoises on the Project Site and Translocation Area combined. Even if there are twice as many desert tortoises on the site as were detected during intensive surveys, the density of desert tortoises within the translocation area would be 29 individuals per square kilometer, which is well below the carrying capacity identified by Saethre et al. (2003).

Translocated desert tortoises could transfer URTD to animals that are resident to the Translocation Area. Service-authorized biologists would check animals for signs of URTD prior to moving them to the Translocation Area, but animals can sometimes have the disease without expressing outward clinical signs that a biologist would detect. However, the desert tortoises on the Project Site and Translocation Area already live in close proximity to each other and likely have current interactions. If disease was present in the desert tortoises within the Project Site and Translocation Area, it is likely that transmission has already occurred. The District is proposing to perform annual health assessments of desert tortoises within the Translocation Area. They would quarantine any animals showing signs of URTD in a clean container of appropriate size and contact the Service to determine the most appropriate and recent protocols to use in care of the desert tortoise. This would greatly reduce the chance of spreading URTD to other animals within the Translocation Area.

In 2002, surveyors detected five desert tortoises on the Project Site and Translocation Area combined, but desert tortoise abundance and distribution on the site has likely changed since this time. Consequently, we do not know how many desert tortoises that clearance surveys and Translocation Area establishment may indirectly affect.

5.1.2.c Effects of Vertical Mulching and Revegetation on the Desert Tortoise

Vertical mulching would have indirect beneficial effects by decreasing vehicular access into undisturbed portions of the mitigation lands, but collection of plant materials for this purpose

could result in temporary loss of branches from some shrubs within desert tortoise habitat. Because vertical mulching usually involves the hand collection of dead plant materials, these adverse effects would be minimal. Successful revegetation efforts would have beneficial effects on the Desert Park by increasing the quantity of desert tortoise habitat on the parcel. We cannot reasonably quantify the magnitude of the beneficial effects to the desert tortoise for either of these activities.

5.1.3 *Effects of the HCP on Desert Tortoise Critical Habitat*

The proposed campus expansion and the HCP plan area, with one exception, are not located within the boundaries of critical habitat for the desert tortoise. The 80-acre Thermal Canyon Parcel is located within critical habitat for the desert tortoise. However, the management actions the District proposes are not likely to adversely affect critical habitat. Because any ground disturbance would likely affect a very small area and be temporary in nature, such effects would likely not be measurable within the context of the function and conservation role of the critical habitat unit. These effects would be minimal and small in scope because land management actions such as walking surveys of the site, use of existing access routes, and clean up of small amounts of trash would not result in substantial effects to habitat and would not occur more than two or three times a year. When performing restoration on potential sites of OHV use, disturbance by restoration activities would be within the site already disturbed by the OHV use.

5.1.4 *Cumulative Effects*

Cumulative effects are actions that have, are, and/or would occur within the action area. The action area is the area influenced by direct and indirect effects of covered activities. The action area is not always solely contained within the HCP's plan area boundary. For this discussion, the action area is considered a 10-mile radius around the Project Site campus. We do not anticipate any cumulative effects from management activities on mitigation lands. Cumulative effects occur when direct or indirect effects overlap with offsite direct or indirect effects from other known projects. Known projects are those that are currently in the planning stage, under construction, already in place, or are very likely to be planned in the foreseeable future.

In the mid-1990s, the Joshua Basin Water District installed a 52-mile long water pipeline in the Copper Mesa area (Circle Mountain Biological Consultants 1997b), which is located to the north and northwest. Families that once relied on water tank storage were given the opportunity to hook into readily available water. This new infrastructure has likely resulted in increased single-family-home development in the Copper Mesa region, but we do not know the acreage of desert tortoise habitat that it has affected.

In addition, there has been a recent increase in the number of discretionary permits solicited in the Morongo Basin, from the Town of Yucca Valley, City of Twentynine Palms, and San Bernardino County. Between April and October 2004, Circle Mountain Biological Consultants (CMBC) surveyed more than 2,600 acres in the Morongo Basin, including 900 acres in Twentynine Palms and 1,700 acres in Yucca Valley. Between 1990 when the desert tortoise was

listed and 2003, CMBC surveyed 16 different sites in the Twentynine Palms area. In 2004, CMBC surveyed 12 additional sites in and adjacent to the city.

Most of the effects to the desert tortoise that are associated with this HCP would be contained within the boundaries of the plan area. However, there is potential that common ravens attracted to the Project Site would prey on desert tortoises in surrounding areas. This adverse effect would be cumulative to the direct and indirect effects associated with the past, present, and future projects listed above. We do not have an accurate estimate of the number of desert tortoises or the amount of habitat that these projects have, are, or may affect. In addition, we cannot reasonably predict how many desert tortoises raven predation might affect in habitats adjacent to the Project Site and Translocation Area. The District is proposing minimization measures to decrease common raven subsidies and eliminate nests within the Project Site and Translocation Area. These measures would likely reduce the number of common ravens that the area would have supported without them.

5.1.5 *Anticipated take*

Take is defined in section 9 of the Act as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such activity. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering (50 CFR 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering.

The District's proposed project is to expand existing campus facilities into adjacent lands it owns, including 71.57 acres accommodating new facilities and 84.96 acres identified as the Translocation Area. During the most recent desert tortoise survey in 2002, CMBC found five desert tortoises in the Project Site. We do not know the number of desert tortoises the proposed project could affect. Therefore, the District is requesting that the Service cover take for any desert tortoises found on the 156.62 acres and mitigation lands during the permit term.

Desert tortoises could be taken during grading and construction of the expanded college facilities, implementation of minimization measures, monitoring and management of the Translocation Area, and during enhancement and management of the mitigation lands. We anticipate that desert tortoises could be taken in the following manner:

1. Desert tortoises on the Project Site, Translocation Area, and mitigation lands would be **captured** during project implementation. A Service-authorized biologist would be called upon to move a desert tortoise (if necessary) out of harm's way to avoid harm, undue stress, or mortality to the individual animal within the Project Site. He/she would move these desert tortoises to the Translocation Area, where the District would monitor them for the permit duration. In addition, enhancement and management actions on the mitigation parcel may require desert tortoises to be moved out of harm's way. Service-authorized biologists would move these desert tortoises from the immediate work area

and place them in adjacent habitat, where they would monitor them until completion of activities. In addition, the District would capture resident and translocated desert tortoises within the Translocation Area during regular monitoring efforts. During this monitoring, a Service-authorized biologist would handle desert tortoises for a brief period (probably less than 30 minutes) to take measurements and assess health status.

We anticipate that all desert tortoises within the 71.57 acres project site, 84.96-acre translocation area, and the mitigation parcel could be captured over the 16-year permit term. This capture would be temporary, and only for moving tortoises out of harms way or for performing monitoring activities. In the case of the Translocation Area, all desert tortoises moved to the Translocation Area or that are resident there may be captured multiple times during the permit term in order to perform monitoring. Monitoring would involve the measurement of body dimensions and assessment of health status by looking for external signs of Upper Respiratory Tract Disease and other diseases. Likewise, the District may capture some desert tortoises that are resident on the mitigation parcel more than once over the course of the permit term.

2. Desert tortoises on the Project Site, Translocation Area, and mitigation lands could be **wounded or killed** during project implementation. These forms of take would occur if clearance surveys overlooked desert tortoises or nests are unsuccessfully relocated during site clearance. Hatchlings and juvenile desert tortoises are nearly impossible to find. Injury or mortality could also result during Translocation Area monitoring efforts if desert tortoises are handled improperly. Raven predation brought on by increased human refuse at the expanded campus could also cause injury or mortality of desert tortoises on or near the Project Site.

It is difficult to determine the precise number of desert tortoises that could be killed or injured on the Project Site for the following reasons: a) current survey information may not reflect the number of desert tortoises present at the start of project activities; b) the number of desert tortoises present in undeveloped phases of the Project Site and on the mitigation lands would change over the 16-year life of the permit and cannot be predicted from a survey done today; and c) the precise number of desert tortoises that would be protected from injury or mortality by the proposed minimization measures cannot be quantified. Consequently, we cannot anticipate the number of animals that could be injured or killed over the 16-year permit term. We anticipate the project may kill or injure few if any desert tortoises because the proposed minimization measures have proven to be successful in preventing or reducing the likelihood of injury or mortality on similar projects involving development within desert tortoise habitat. In addition, the District would implement common raven monitoring and management so that few if any desert tortoises would suffer injury or mortality from predation subsidized by project implementation.

If the incidental take limit identified in the Service's intra-office biological opinion is met, all construction activities would cease, and the District would meet with the Service to discuss the reasons for take and modify the measures as necessary to avoid additional take. Under no circumstance would the District exceed the take limit prior to Service approval. The District will

implement the adaptive management strategies outlined in Section 3.7 to ensure that take is not exceeded.

6.0 CHANGED AND UNFORESEEN CIRCUMSTANCES

6.1 Changed Circumstances

6.1.1 *Summary of Changed Circumstances*

Section 10 regulations [(69 *Federal Register* 71723, December 10, 2004 as codified in 50 Code of Federal Regulations (C.F.R.), Sections 17.22(b)(2) and 17.32(b)(2))] require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the HCP. In addition, the HCP No Surprises Rule [50 CFR 17.22 (b)(5) and 17.32 (b)(5)] describes the obligations of the permittee and the Service. The purpose of the No Surprises Rule is to provide assurance to the non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

Changed circumstances are defined in 50 CFR 17.3 as changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated by plan developers and the Service and for which contingency plans can be prepared (e.g., the new listing of species, a fire, or other natural catastrophic event in areas prone to such events). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the HCP's operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the HCP or IA), then the permittee will implement those measures as specified in the plan. However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures absent the consent of the permittee, provided that the HCP is being "properly implement" (properly implemented means the commitments and the provisions of the HCP and the IA have been or are fully implemented). With regard to this HCP, changed circumstances include the following:

- Listing of a new species that occurs within the plan area
- Fire on the mitigation lands or Translocation Area that destroys desert tortoise habitat.

6.1.2 *Newly Listed Species*

If a new species, not covered by this HCP, is listed under the Act during the term of the permit, the Service will reevaluate the permit. The HCP's covered activities may be modified to ensure that they are not likely to jeopardize the continued existence of that species or result in adverse modification of any newly designated critical habitat. The District would implement the modifications to the covered activities. The District would continue to implement such modifications until such time as they have applied for and the Service has approved an amendment of the permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the Service notifies the District in writing that the modifications to the covered activities are no longer required.

6.1.3 *Fire*

It is reasonable to predict that a fire could damage desert tortoise habitat on the Desert Park, DTNA Parcel, or Translocation Area. Because of the rocky nature of the Thermal Canyon Parcel and the absence of many areas conducive to fine fuel accumulation and fire spread, we do not think fire is a reasonable changed circumstance for that site. Given the difficulty of restoring desert scrub habitats and the extremely low success rate of large-scale seeding efforts, it is unlikely that rapid restoration of large areas of burned habitats on any of the mitigation lands or Translocation Area would be feasible. However, the District would likely be able to restore small pockets of habitat throughout the burned areas that could serve as seed sources for the natural restoration of burned areas. In the event of a fire on the Translocation Area, DTNA Parcel, or Desert Park, the District or other land management entity would perform seeding on at least 5 percent of the burned area. They would distribute seeding sites throughout the burned area so that pockets of habitat would develop in regular intervals across the burned area. If fire destroys more than 75 percent of the habitat within the Translocation Area, the District would contact the Service to determine the need for removing the surviving desert tortoises from the site. In this event, the District would not attempt to revegetate the Translocation Area.

6.2 Unforeseen Circumstances

Unforeseen circumstances are defined in 50 CFR 17.3 as changes in circumstances that affect a species or geographic area covered by the HCP that could not reasonably be anticipated by plan developers and the Service at the time of the HCP's negotiation and development, and that result in a substantial and adverse change in status of the covered species. The purpose of the No Surprises Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the Act that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

In case of an unforeseen event, the permittee shall immediately notify the Service staff who have functioned as the principal contacts for the proposed action. In determining whether such an event constitutes an unforeseen circumstance, the Service shall consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the HCP; percentage of range conserved by the HCP; ecological significance of that portion of the range affected by the HCP; level of knowledge about the

affected species and the degree of specificity of the species' conservation program under the HCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

If the Service determines that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstances and the HCP is being properly implemented, the additional measures required of the permittee must be as close as possible to the terms of the original HCP and must be limited to modifications within any conserved habitat area or to adjustments within lands or waters already set-aside in the HCP's operating conservation program. Additional conservation and mitigation measures shall involve the commitment of additional land or financial compensation or restrictions on the use of land or other natural resources otherwise available for development or use under original terms of the HCP only with the consent of the permittee.

7.0 FUNDING AND IMPLEMENTATION SCHEDULE

7.1 Cost of HCP Implementation

The District would pay all costs associated with implementation of this HCP. We have estimated these costs, in 2006 dollars, in Tables 4-10 of this section. Tables 11-14 summarize all the costs (adjusted for inflation) for implementing the minimization, mitigation, monitoring, and reporting measures for both mitigation options for the duration of the permit term. Tables 11 and 12 summarize the costs associated with the Project Site, Translocation Area, and Thermal Canyon Parcel. Tables 13 and 14 summarize the additional costs for implementation of either of the two additional mitigation measures. Sections 7.1.1 and 7.1.2 provide a detailed breakdown of the costs associated with minimization measures, land acquisitions, land enhancements, long-term land management, and reporting in Phases 1 and 2 of HCP implementation. Each section provides two alternative cost scenarios based on the mitigation strategy that the District chooses to pursue in 2007.

Following the completion of Phase 2, the District would have completed all mitigation land acquisition and all enhancements on these lands and the Translocation Area. In addition, they would have completed the first year of long-term management on these sites. Consequently, the District's remaining annual costs for long-term management of the mitigation lands would be consistent on an annual basis. The District would be responsible for these costs annually, including non-development years, for the duration of the permit term. Tables 11-14 provide the summary costs for each year of the permit term based on the two mitigation strategies that the District would choose from. These tables show the one-time and recurring costs, and show how the recurring costs fluctuate in certain years depending on the phase of development and inflation rate. For example, reporting costs would be consistent from year to year except during non-development years, when the Service would not require phase-ending reports for the Project Site. Minimization measure costs for the Project Site would vary based on the acreage of a given phase of development and the consequent variation in the amount of time required to monitor initial vegetation clearing. Because all other items would have consistent costs from year to year, we have not provided a specific cost breakdown for each year of the permit term.

A Service-authorized biologist would implement most of the minimization measures on the Project Site, which would cost between \$40 and \$100 per hour. To ensure that sufficient funds are available, the cost estimate given below is estimated at \$100/hour. Those duties that would be implemented by college employees or the FCR are estimated at \$20 per hour. Unless "college personnel" or "FCR" are noted, a Service-authorized biologist would perform all services. The cost to monitor fence installation is based on installing 100 linear feet per hour. Miscellaneous FCR responsibilities include administering awareness programs to individual construction personnel, follow-up monitoring of perimeter fences, and ensuring that all other protective measures are implemented once the biologist leaves the site. We estimate the hourly rate for Park staff at \$100 per hour when in the field and \$50 per hour when doing work to fulfill reporting requirements. All costs associated with the DTNA Parcel are estimated on a per acre basis and are taken from *the Desert Tortoise Natural Area Management Plan Budget* (Connor 2003). We have not previously identified some of the management items listed for the DTNA Parcel because they do not all pertain specifically to the 30-acre parcel. However, we have listed

them here because they are crucial to the DTNA’s management of the preserve as a whole and are part of the enhancement and management fees that the DTNA requires.

7.1.1 *Phase 1*

Tables 4 through 7 provide cost estimates for the first phase of HCP implementation, which the District would carry out in 2006 and 2007. Table 4 provides information regarding the costs associated with implementation of Project Site minimization measures, establishment of the Translocation Area, and Project Site reporting requirements. Table 5 provides the cost for mitigation in 2006, which involves the acquisition of the Thermal Canyon Parcel. Because the acquisition would likely occur in the fall of 2006, no management costs are included for 2006. Table 6 provides the costs for mitigation in 2007 based on the Desert Park mitigation strategy. It includes the 2007 management and reporting requirements for the Thermal Canyon Parcel and the costs associated with initial enhancement of the Desert Park. Table 7 provides the costs for mitigation in 2007 based on the DTNA Parcel mitigation strategy. It includes the 2007 management and reporting requirements for the Thermal Canyon Parcel and the costs associated with acquisition and initial enhancement of the DTNA Parcel.

Table 4: Phase 1 Estimated Costs for Project Site Minimization Measures, Reporting, and Translocation Area Enhancements

ESTIMATED COST	PHASE 1: PROJECT SITE MINIMIZATION MEASURES ON 33.96 ACRES IN 2006-2007
3 hours X \$100 per hour = \$300	Project Site Minimization: Prepare and administer desert tortoise awareness program
3 hours = \$60	Project Site Minimization: Subsequent field awareness programs administered by college personnel
\$100	Project Site Minimization: Hard hat stickers, rearview mirror placards, wallet-sized cards
40 hours = \$800	Project Site Minimization: Miscellaneous FCR responsibilities by college personnel
15,500 feet @ \$5.00/foot = \$77,500	Project Site Minimization: Install desert tortoise-proof fence around Translocation Area and all phases of development – materials & installation, including labor
150 hours = \$15,000	Project Site Minimization: Monitor installation of all fencing
55 hours = \$5,500	Project Site Minimization: Survey for and remove desert tortoises from all fenced areas
15 hours = \$1,500	Project Site Minimization: Remain on-site until all 33.96 acres of Phase 1 are cleared of vegetation
16 hours = \$1,600	Project Site Reporting: Phase-end report
5 hours = \$500	Project Site Minimization: Emergency removal of desert tortoise from fenced areas
\$300	Project Site Minimization: Veterinarian cost for injured desert tortoise
50 signs X \$5.00/per sign = \$250	Translocation Area Initial Enhancement: installation of boundary signs (fence installation is included as a project minimization measure above)
Total Estimated Minimization Costs for 2006-2007 = \$103,410	

Table 5: Phase 1 Estimated Costs for Mitigation Land Acquisition

ESTIMATED COST	PHASE 1: MITIGATION MEASURES 2006
80 acres X \$1,000/acre = \$80,000	Thermal Canyon Acquisition: Purchase Thermal Canyon Parcel and transfer management to Joshua Tree National Park (prior to ground disturbance on Project Site)
Total Estimated Mitigation Cost for 2006 = \$80,000	

Table 6: Phase 1 Estimated Costs for Mitigation Land Management, Enhancements, and Reporting (DTNA Parcel Strategy)

ESTIMATED COST	PHASE 1: MITIGATION MEASURES 2007 (DTNA PARCEL OPTION)
10 hours X \$100/hour = \$1,000	Thermal Canyon Monitoring and Management: 1 inspection of the Thermal Canyon Parcel by Park Staff (includes travel time, support costs), removal of any trash and debris from the site, and revegetation of any disturbed areas (cost includes any minimization measures and assumes minor disturbances and minor debris removal based on the isolation of the parcel).
3 hour X \$50/hour = \$150	Thermal Canyon Reporting on parcel condition, if necessary
30 acres X \$2,000/acre = \$60,000	30-acre DTNA Acquisition
\$7.45/acre X 30 acres = \$223.50	DTNA Parcel Enhancement: Boundary Surveys
\$190.39/acre X 30 acres = \$5,711.70	DTNA Parcel Enhancement: Fence installation (includes implementation of needed minimization measures)
\$0.37/acre X 30 acres = \$11.10	DTNA Parcel Enhancement: Sign installation
\$0.61/acre X 30 acres = \$18.30	DTNA Parcel Enhancement: Non-native plant control
\$0.13/acre X 30 acres = \$3.90	DTNA Parcel Enhancement: Habitat / property inspections
\$10.72/acre X 30 acres = \$321.62	DTNA Parcel Enhancement: Desert tortoise and Mohave ground squirrel monitoring
\$22.30/acre X 30 acres = \$669.00	DTNA Parcel Enhancement: Trash removal and other miscellaneous expenses (includes implementation of needed minimization measures)
\$0.29/acre X 30 acres = \$8.70	DTNA Parcel Reporting
Total Estimated Mitigation Costs for 2007 (DTNA Parcel Option) = \$68,117.82	

Table 7: Phase 1 Estimated Costs for Mitigation Land Management, Enhancements, and Reporting (605-acre Desert Park Strategy)

ESTIMATED COST	PHASE 1: MITIGATION MEASURES 2007 (605-ACRE DESERT PARK OPTION)
10 hours X \$100/hour = \$1,000	Thermal Canyon Monitoring and Management: 1 inspection of the Thermal Canyon Parcel by Park Service Staff (includes travel time, support costs), removal of any trash and debris from the site, and revegetation of any disturbed areas (cost includes any minimization measures and assumes minor disturbances and minor debris removal based on the isolation of the parcel).
3 hour X \$50/hour = \$150	Thermal Canyon Reporting on parcel condition.
40 hours X \$40/hour = \$1,600	605-acre Desert Park Initial Enhancement: Route Designation (GPS routes and produce route map)
Labor (\$1,528) + Equipment (\$1,966) = \$3,494	605-acre Desert Park Initial Enhancement: Trash Removal (assumes a 10-person crew and one Service-authorized biologist would be needed)
30 carsonite route markers (\$450) + Educational Kiosk (\$600) + Labor (\$100) = \$1,150	605-acre Desert Park Initial Enhancement: Installation of educational signs and closed route markers (assumes no need for a Service-authorized biologist)
3 hours X \$20/hour = \$60	605-acre Desert Park Reporting on parcel.
Total Estimated Mitigation Costs for 2007 (605-acre Desert Park Option) = \$7,454	

Tables 11-14 provide a summary of the total cost of Phase 1 of HCP implementation based on the two strategies of mitigation that the District may pursue.

7.1.2 *Phases 2-8*

Tables 8-10 provide cost estimates for the second phase of HCP implementation, which the District would carry out in 2008. Table 8 provides information regarding all of the costs associated with implementation of construction site minimization measures, monitoring and management of the Translocation Area, and Project Site reporting requirements. Table 9 provides the costs for mitigation in 2008 based on the Desert Park mitigation strategy. It includes the management and reporting requirements for the Thermal Canyon Parcel and the Desert Park. Table 10 provides the costs for mitigation in 2008 based on the DTNA Parcel mitigation strategy. It includes the management and reporting requirements for the Thermal Canyon Parcel and the DTNA Parcel.

Tables 8: Phase 2 Estimated Costs for Project Site Minimization Measures, Reporting, and Translocation Area Management

ESTIMATED TIME AND COST	PHASE 2: PROJECT SITE MINIMIZATION MEASURES ON 10.79 ACRES IN 2008 AND TRANSLOCATION AREA MANAGEMENT
3 hours = \$300	Project Site Minimization: Administer tortoise awareness program
3 hours = \$60	Project Site Minimization: Subsequent field awareness programs administered by the college personnel
40 hours = \$800	Project Site Minimization: Miscellaneous FCR responsibilities carried out by college personnel
5 hours = \$500	Project Site Minimization: Service-authorized biologist remains on-site until all 10.79 acres of Phase 2 are cleared of vegetation
16 hours = \$1,600	Project Site Reporting: Phase-end report
5 hours = \$500	Project Site Minimization: Emergency removal of desert tortoises from fenced areas
\$300	Project Site Minimization: Veterinarian cost for injured desert tortoise
10 hours X \$100/hour = \$1,000	Translocation Area Monitoring and Management: Annual desert tortoise survey (assumes the use of one Service-authorized biologist and 15 students or volunteers)
3 hours X \$20/hour = \$60	Translocation Area Monitoring and Management: Annual assessment of raven subsidies on Project Site
13 hours X \$20/hour = \$260	Translocation Area Monitoring and Management: Weekly 15-minute raven surveys of Translocation Area and Project Site
13 hours X \$20/hour = \$260	Translocation Area Monitoring and Management: Weekly boundary fence monitoring
4 hours X \$20/hour = \$80	Translocation Area Monitoring and Management: Annual non-native plant survey of the Translocation Area (assumes a crew of 15 students or volunteers and one college employee)
\$500	Translocation Area Monitoring and Management: Contingency for quarantine and removal of desert tortoises with URTD by a Service-authorized biologist
16 hours X \$20/hour = \$320	Translocation Area Monitoring and Management: Periodic removal of common raven subsidies from Translocation Area and Project Site
3 hours X \$20/hour = \$60	Translocation Area Monitoring and Management: Contingency for removal of raven nests found on the Project Site or Translocation Area when nests are not occupied.
50 feet X \$5.00/foot = \$250	Translocation Area Monitoring and Management: Contingency for repair of boundary fences (assumes damage to 50 feet of fencing a year)
Labor (\$300) + Equipment (\$100) = \$400	Translocation Area Monitoring and Management: Periodic mechanical removal of non-native plants found in Translocation Area (assumes a crew of 15 students with on college employee)
8 hours X \$100/hour = \$800	Translocation Area Reporting
Total Estimated Cost for Phase 2 Minimization Measures = \$8,050	

Table 9: Phase 2 Estimated Costs for Mitigation Land Management and Reporting (DTNA Parcel Option)

ESTIMATED COST	PHASE 2: MITIGATION MEASURES 2008 (DTNA PARCEL OPTION)
10 hours X \$100/hour = \$1,000	Thermal Canyon Monitoring and Management: 1 inspection of the Thermal Canyon Parcel by Park Staff (includes travel time, support costs), removal of any trash and debris from the site, and revegetation of any disturbed areas (cost includes any minimization measures and assumes minor disturbances and minor debris removal based on the isolation of the parcel).
3 hour X \$50/hour = \$150	Thermal Canyon Reporting on parcel condition, if necessary
30 acres X \$0.17/acre = \$5.10	30-acre DTNA Monitoring and Management: Fence and sign maintenance
30 acres X \$0.61/acre = \$18.30	30-acre DTNA Monitoring and Management: Non-native plant control
30 acres X \$4.29/acre = \$128.70	30-acre DTNA Monitoring and Management: Predator management
30 acres X \$0.13/acre = \$3.90	30-acre DTNA Monitoring and Management: Habitat/Property inspections
30 acres X \$10.72/acre = \$321.60	30-acre DTNA Monitoring and Management: Desert tortoise and Mohave ground squirrel monitoring
30 acres X \$3.31/acre = \$99.30	30-acre DTNA Monitoring and Management: Security/Enforcement
30 acres X \$11.61/acre = \$348.30	30-acre DTNA Monitoring and Management: Trash removal and other miscellaneous expenses (includes implementation of needed minimization measures)
30 acres X \$0.29/acre = \$8.70	30-acre DTNA Reporting
Total Estimated Mitigation Costs for 2008 (DTNA Parcel Option) = \$2,083.90	

Table 10: Phase 2 Estimated Costs for Mitigation Land Management and Reporting (605-acre Desert Park Option)

ESTIMATED COST	PHASE 2: MITIGATION MEASURES 2008 (605-ACRE DESERT PARK OPTION)
10 hours X \$100/hour = \$1,000	Thermal Canyon Monitoring and Management: 1 inspection of the Thermal Canyon Parcel by Park Staff (includes travel time, support costs), removal of any trash and debris from the site, and revegetation of any disturbed areas (cost includes any minimization measures and assumes minor disturbances and minor debris removal based on the isolation of the parcel).
3 hour X \$50/hour = \$150	Thermal Canyon Reporting on parcel condition if necessary
96 hours X \$20/hour = \$1,920	605-acre Desert Park Monitoring and Management: Monthly monitoring visit to site (includes period removal of trash and repair of signs)
0.10 acres X \$2000/acre = \$200	605-acre Desert Park Monitoring and Management: Contingency for periodic vertical mulching and restoration of non-compliance routes and other disturbed areas (assumes 0.10 acres of disturbed site restoration a year)
3 hours X \$20/hour = \$60	605-acre Desert Park Reporting on parcel.
Total Estimated Mitigation Costs for 2008 (605-acre Desert Park Option) = \$3,330	

Tables 11-14 provide a summary of the total cost (adjusted for inflation) of Phase 2 of HCP implementation based on the two strategies of mitigation that the District may pursue. It also includes the costs for the remaining years of HCP implementation for the duration of the permit.

Table 11: Summary Cost Table for the District’s Project Site Measures, Translocation Area Enhancement and Management, and Reporting

TYPE OF COST	P1 2006	P1 2007	P2 2008	P3 2009	P4 2010	P4 2011	P5 2012	P5 2013	P6 2014	P6 2015	P7 2016	P7 2017	P8 2018	P8 2019	P8 2020	P8 2021	TOTAL COST
Project Site Minimization Measures (2006 dollars)	\$101,560	_	\$2,460	\$2,160	\$2,060	_	\$2,360	_	\$2,260	_	\$2,010	_	\$2,160	_	_	_	\$117,030
(2.5% Inflation Factor)	\$0	_	\$124.54	\$166.08	\$213.85	_	\$376.88	_	\$493.59	_	\$562.97	_	\$744.96	_	_	_	\$2,682.87
Project Site Minimization Measures (Adjusted for Inflation)	\$101,560	_	\$2,584.54	\$2,326.08	\$2,273.85	_	\$2,736.88	_	\$2,753.59	_	\$2,572.97	_	\$2,904.96	_	_	_	\$119,712.87
Project Site Reporting Costs (2006 dollars)	_	\$1,600	\$1,600	\$1,600	\$1,600	_	\$1,600	_	\$1,600	_	\$1,600	_	\$1,600	_	_	_	\$12,800
(2.5% Inflation Factor)	_	\$40	\$81	\$123.02	\$166.10	_	\$255.51	_	\$349.44	_	\$448.14	_	\$551.82	_	_	_	\$2,015.03
Project Site Reporting Costs (Adjusted for Inflation)	_	\$1,640	\$1,681	\$1,723.02	\$1,766.10	_	\$1,855.51	_	\$1,949.44	_	\$2,048.14	_	\$2,151.82	_	_	_	\$14,815.03
Translocation Area Land Enhancement	_	\$250	_	\$250													
Translocation Area Land Management (2006 dollars)	_	_	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$3,190	\$44,660
Translocation Area Reporting Costs (2006 dollars)	_	_	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$800	\$11,200
(2.5% Inflation Factor)	_	_	\$201.99	\$306.79	\$414.21	\$524.32	\$637.18	\$752.86	\$871.43	\$992.96	\$1,117.54	\$1,245.23	\$1,376.11	\$1,510.26	\$1,647.77	\$1,788.71	\$13,387.36
Translocation Area Land Management and Reporting Costs (Adjusted for Inflation)	_	_	\$4,191.99	\$4,296.79	\$4,404.21	\$4,514.32	\$4,627.18	\$4,742.86	\$4,861.43	\$4,982.96	\$5,107.54	\$5,235.23	\$5,366.11	\$5,500.26	\$5,637.77	\$5,778.71	\$69,247.36
Translocation area Changed Circumstances	_	\$4,248	_	\$4,248													
Thermal Canyon Parcel Land Acquisition	\$80,000	_	\$80,000														
Total Costs (Adjusted for Inflation)	\$181.56	\$6,138	\$8,457.53	\$8,345.89	\$8,444.16	\$4,514.32	\$9,219.57	\$4,742.86	\$9,564.46	\$4,982.96	\$9,728.65	\$5,235.23	\$10,422.89	\$5,500.26	\$5,637.77	\$5,778.71	\$288,273.26

Table 12: Summary Cost Table for the 80-acre Thermal Canyon Parcel's Management and Reporting

TYPE OF COST	P1 2006	P1 2007	P2 2008	P3 2009	P4 2010	P5 2011	P5 2012	P5 2013	P6 2014	P6 2015	P7 2016	P7 2017	P8 2018	P8 2019	P8 2020	P8 2021	TOTAL COST
Thermal Canyon Parcel Land Management (2006 dollars)	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	\$15,000
Thermal Canyon Parcel Reporting Costs (2006 dollars)	-	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	\$2,250
(2.5% Inflation Factor)	-	28.75	58.22	88.42	119.38	151.12	183.65	216.99	251.16	286.19	322.1	358.9	396.62	435.29	474.92	515.54	\$3,887.25
Total Costs (Adjusted for Inflation)	-	1178.75	1208.22	1238.42	1269.38	1301.12	1333.65	1366.99	1401.16	1436.19	1472.1	1508.9	1546.62	1585.29	1624.92	1665.54	\$21,137.25

Table 13: Summary Cost Table for the 605-acre Desert Park Option (Enhancement, Management, Reporting, and Changed Circumstances)

TYPE OF COST	P1 2006	P1 2007	P2 2008	P3 2009	P4 2010	P5 2011	P5 2012	P5 2013	P6 2014	P6 2015	P7 2016	P7 2017	P8 2018	P8 2019	P8 2020	P8 2021	TOTAL COST
605-acre Park Land Enhancement	-	\$6,244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	\$6,244
605-ACRE PARK LAND MANAGEMENT	-	-	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$2,120	\$29,680
605-acre Park Reporting Costs	-	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$900
(2.5% Inflation Factor)	-	-	\$110.36	\$167.62	\$226.31	\$286.47	\$348.13	\$411.33	\$476.12	\$542.52	\$610.58	\$680.35	\$751.85	\$825.15	\$900.28	\$977.29	\$7,314
605-acre Park Land Management and Reporting Costs (Adjusted for Inflation)	-	\$60	\$2,290.36	\$2,347.62	\$2,406.31	\$2,466.47	\$2,528.13	\$2,591.33	\$2,656.12	\$2,722.52	\$2,790.58	\$2,860.35	\$2,931.85	\$3,005.15	\$3,080.28	\$3,157.29	\$37,894
Changed Circumstances-605-acre Park	-	\$30,250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	\$30,250
Total Cost	-	36,554	2,290	2,348	2,406	2,466	2,528	2,591	2,656	2,723	2,791	2,860	2,932	3,005	3,080	3,157	\$74,388

Table 14: Summary Cost Table for the 30-acre DTNA Parcel Option (Enhancement, Management, Reporting, and Changed Circumstances)

TYPE OF COST	P1 2006	P1 2007	P2 2008	P3 2009	P4 2010	P5 2011	P5 2012	2013	P6 2014	2015	P7 2016	2017	P8 2018	2019	2020	2021	TOTAL COST
DTNA Parcel Acquisition	–	\$60,000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	\$60,000
DTNA Parcel Enhancement	–	\$6,959.12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	\$6,959.12
DTNA Parcel Land Management	–	–	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$925.20	\$12,952.80
DTNA Parcel Reporting Costs	–	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$8.70	\$130.50
(2.5% Inflation Factor)	–	–	\$47.28	\$71.81	\$96.95	\$122.72	\$149.14	\$176.22	\$203.97	\$232.41	\$261.57	\$291.46	\$322.09	\$353.49	\$385.68	\$418.67	\$1,971
DTNA Parcel Management and Reporting Costs (Adjusted for inflation)		\$8.70	\$981.18	\$1,005.71	\$1,030.85	\$1,056.62	\$1,083.04	\$1,110.12	\$1,137.87	\$1,166.31	\$1,195.47	\$1,225.36	\$1,255.99	\$1,287.39	\$1,319.58	\$1,352.57	\$16,216.77
DTNA Parcel Changed Circumstances	–	1,500	–	–	–	–	–	–	–	–	–	–	–	–	–	–	\$1,500
Total Cost	–	\$68,467.82	\$981.18	\$1,005.71	\$1,030.85	\$1,056.62	\$1,083.04	\$1,110.12	\$1,137.87	\$1,166.31	\$1,195.47	\$1,225.36	\$1,255.99	\$1,287.39	\$1,319.58	\$1,352.57	\$84,675.89

7.2 Funding for Changed Circumstances

In Section 6.1, we identified fire as a changed circumstance that could adversely affect desert tortoises and their habitat in any portion of the plan area. The following table identifies the costs associated with this changed circumstance on the Translocation Area, the DTNA Parcel, and the Desert Park. Because a burn could destroy all habitat on these parcels, we have based our estimates on elimination of all habitat on the parcel. We have included these values in Tables 11 and 12 in the previous section to provide a full summary of all HCP implementation costs.

Table 15: Funding for changed circumstances

CHANGED CIRCUMSTANCE REMEDY	84.96-ACRE TRANSLOCATION AREA	605-ACRE DESERT PARK	30-ACRE DTNA PARCEL
Reseeding 5% of the burned area @ \$1000/acre	\$4,248 for 4.3 acres	\$30,250 for 30.25 acres	\$1,500 for 1.5 acres

7.3 Funding Mechanisms

7.3.1 *Project Site Minimization Measures and Reporting*

Because the District is required to implement the minimization measures and reporting obligations on the Project Site during construction, they would provide funding to implement this portion of the HCP on a phase-by-phase basis. The District is not proposing to establish an interest-bearing account to fund these measures. They would expend funds for each phase of development as identified in Tables 11. If funding were not available to implement these measures during a given phase, the District would postpone construction of that phase until funds are available. In total, the District would expend an estimated \$119,712.87 to implement minimization measures and \$14,815.03 to complete Project Site reports during the 16-year permit duration.

7.3.2 *Translocation Area Enhancement, Long-Term Management, Reporting, and Changed Circumstances*

After they establish the Translocation Area in Phase 1 of development, the District would need funds available to enhance and manage this site regardless of the progress of phased construction. In addition, they would need funds for annual reporting and potential changed circumstances. Because these activities are not tied to the construction phases, the District must provide a mechanism to assure that these funds would be available for the permit duration. In 2007, the District would deposit \$4,498 in an interest-bearing bank account to pay for initial Translocation Area enhancement (\$250) and potential changed circumstances (\$4,248) (see Table 11). Beginning in 2008, the District would need \$3,990 (2006 dollars - \$4,191.99 in 2008 dollars) available every year to fund long-term management and reporting (\$69,247.36) on the Translocation Area (see Table 11). In order to assure funding for these activities, the District

would deposit an additional \$50,416.20 into the interest-bearing account mentioned previously. Assuming a 5 percent rate of return each year and a 2.5 percent annual rate of inflation, the account would generate enough interest to fund the long-term management and reporting required for the Translocation Area over the remainder of the permit term (see table 16). Following the completion of the permit term, the District would continue to fund the management of the Translocation Area on an annual basis. Funds set aside in this account will only be used by the District for the purposes identified in this HCP.

Table 16: Expenditure Summary for Translocation Area Long-term Management and Reporting

Phase/Year	Account Balance Prior to Annual Withdrawal	Land Management and Reporting Withdrawals (Adjusted for Inflation)	Account Balance After Annual Withdrawal	Annual Interest Earned on Account Balance After Withdrawal	Account Balance After Withdrawal Plus the Interest Earned on the Account
P1 2006	-	-	-	-	-
P1 2007	-	-	-	-	-
P2 2008	\$50,416.20	\$4,191.99	\$46,224.21	\$2,311.21	\$48,535.42
P3 2009	\$48,535.42	\$4,296.79	\$44,238.63	\$2,211.93	\$46,450.56
P4 2010	\$46,450.56	\$4,404.21	\$42,046.35	\$2,102.32	\$44,148.67
2011	\$44,148.67	\$4,514.31	\$39,634.36	\$1,981.72	\$41,616.07
P6 2012	\$41,616.07	\$4,627.17	\$36,988.90	\$1,849.45	\$38,838.35
2013	\$38,838.35	\$4,742.85	\$34,095.49	\$1,704.77	\$35,800.27
P8 2014	\$35,800.27	\$4,861.42	\$30,938.85	\$1,546.94	\$32,485.79
2015	\$32,485.79	\$4,982.96	\$27,502.83	\$1,375.14	\$28,877.97
P10 2016	\$28,877.97	\$5,107.53	\$23,770.44	\$1,188.52	\$24,958.96
2017	\$24,958.96	\$5,235.22	\$19,723.74	\$986.19	\$20,709.93
P12 2018	\$20,709.93	\$5,366.10	\$15,343.82	\$767.19	\$16,111.01
2019	\$16,111.01	\$5,500.25	\$10,610.76	\$530.54	\$11,141.30
2020	\$11,141.30	\$5,637.76	\$5,503.54	\$275.18	\$5,778.72
2021	\$5,778.72	\$5,778.70	\$0.01	\$0.00	\$0.01
Total		\$69,247.29		\$18,831.10	

7.3.3 80-acre Thermal Canyon Parcel Long-term Management and Reporting

Prior to permit issuance, the District would purchase the Thermal Canyon Parcel for \$80,000 (see Table 11). After the District transfers the parcel to the Park in 2006, the Park would need funds available for management and annual reporting on the site for the duration of the permit. The District must provide a mechanism to assure that these funds would be available to the Park for the permit duration. Beginning in 2007, the Park would need \$1,150 (2006 dollars - \$1178.75 in 2007 dollars) available every year to fund long-term management and reporting (\$21,137.27) on this parcel. In 2007, the District would deposit \$15,017.79 in an interest-bearing account that the Park can draw from for management and reporting purposes in this parcel. The

Park will use these funds only for their intended purpose. This is assured through the implementing agreement that has been developed for this HCP. Assuming a 5 percent rate of return each year and a 2.5 percent annual rate of inflation, the account would generate enough interest to fund the long-term management and reporting required for the site over the remainder of the permit term (see Table 17). Following expiration of the permit, the Park would assume financial responsibility for the continued management of the site from their base funds.

Table 17: Expenditure Summary for 80-acre Thermal Canyon Parcel Management and Reporting

Phase/Year	Account Balance Prior to Annual Withdrawal	Land Management and Reporting Withdrawals (Adjusted for Inflation)	Account Balance After Annual Withdrawal	Annual Interest Earned on Account Balance After Withdrawal	Account Balance After Withdrawal Plus the Interest Earned on the Account
P1 2006	-	-	-	-	-
P1 2007	\$15,017.79	\$1,178.75	\$13,839.04	\$691.95	\$14,530.99
P2 2008	\$14,530.99	\$1,208.22	\$13,322.77	\$666.14	\$13,988.91
P3 2009	\$13,988.91	\$1,238.42	\$12,750.49	\$637.52	\$13,388.01
P4 2010	\$13,388.01	\$1,269.38	\$12,118.63	\$605.93	\$12,724.56
2011	\$12,724.56	\$1,301.12	\$11,423.44	\$571.17	\$11,994.61
P6 2012	\$11,994.61	\$1,333.65	\$10,660.96	\$533.05	\$11,194.01
2013	\$11,194.01	\$1,366.99	\$9,827.02	\$491.35	\$10,318.37
P8 2014	\$10,318.37	\$1,401.16	\$8,917.21	\$445.86	\$9,363.07
2015	\$9,363.07	\$1,436.19	\$7,926.88	\$396.34	\$8,323.22
P10 2016	\$8,323.22	\$1,472.10	\$6,851.13	\$342.56	\$7,193.68
2017	\$7,193.68	\$1,508.90	\$5,684.78	\$284.24	\$5,969.02
P12 2018	\$5,969.02	\$1,546.62	\$4,422.40	\$221.12	\$4,643.52
2019	\$4,643.52	\$1,585.29	\$3,058.23	\$152.91	\$3,211.14
2020	\$3,211.14	\$1,624.92	\$1,586.22	\$79.31	\$1,665.53
2021	\$1,665.53	\$1,665.54	-\$0.01	\$0.00	
Total		\$21,137.26		\$6,119.46	

7.3.4 605-acre Desert Park Enhancement, Long-Term Management, Reporting, and Changed Circumstances

If the District chooses to fund management of the Desert Park as a portion of their mitigation strategy in 2007, the chosen land management entity would need funds to enhance and manage this site. In addition, they would need funds for annual reporting and potential changed circumstances. In 2007, the District would deposit \$36,554 in an interest-bearing account that the chosen land management entity can access, to pay for initial enhancements (\$6,244), reporting (\$60), and potential changed circumstances (\$30,250). Beginning in 2008, the chosen land management entity would need \$ 2,180 (2007 dollars – \$2290.36 in 2008 dollars) available every year to fund long-term management and reporting (\$37,834) on the Desert Park. In order

to assure funding for these activities, the District would deposit an additional \$27,545.68 into the interest-bearing account mentioned previously. Assuming a 5 percent rate of return each year and a 2.5 percent annual rate of inflation, the account would generate enough interest to fund the long-term management and reporting required for the Desert Park over the remainder of the permit term (see table 18). The District will enter into a Service-approved contract with the designated land management entity to ensure that they expends funds from this account for the purposes identified in this HCP. Once the permit has expired, the District would have no further financial responsibility for its portion of the management of the Park.

Table 18: Expenditure Summary for 605-acre Desert Park Option (Management and Reporting)

Phase/Year	Account Balance Prior to Annual Withdrawal	Land Management and Reporting Withdrawals (Adjusted for Inflation)	Account Balance After Annual Withdrawal	Annual Interest Earned on Account Balance After Withdrawal	Account Balance After Withdrawal Plus the Interest Earned on the Account
P1 2006	-	-	-	-	-
P1 2007	-	-	-	-	-
P2 2008	\$27,545.68	\$2,290.36	\$25,255.32	\$1,262.77	\$26,518.09
P3 2009	\$26,518.09	\$2,347.62	\$24,170.47	\$1,208.52	\$25,378.99
P4 2010	\$25,378.99	\$2,406.31	\$22,972.68	\$1,148.63	\$24,121.31
2011	\$24,121.31	\$2,466.47	\$21,654.85	\$1,082.74	\$22,737.59
P6 2012	\$22,737.59	\$2,528.13	\$20,209.46	\$1,010.47	\$21,219.93
2013	\$21,219.93	\$2,591.33	\$18,628.60	\$931.43	\$19,560.03
P8 2014	\$19,560.03	\$2,656.12	\$16,903.92	\$845.20	\$17,749.11
2015	\$17,749.11	\$2,722.52	\$15,026.59	\$751.33	\$15,777.92
P10 2016	\$15,777.92	\$2,790.58	\$12,987.34	\$649.37	\$13,636.71
2017	\$13,636.71	\$2,860.35	\$10,776.36	\$538.82	\$11,315.18
P12 2018	\$11,315.18	\$2,931.85	\$8,383.33	\$419.17	\$8,802.49
2019	\$8,802.49	\$3,005.15	\$5,797.34	\$289.87	\$6,087.21
2020	\$6,087.21	\$3,080.28	\$3,006.93	\$150.35	\$3,157.28
2021	\$3,157.28	\$3,157.29	-\$0.01	\$0.00	
Total		\$37,834.35		\$10,288.66	

7.3.5 DTNA Parcel Enhancement, Long-Term Management, Reporting, and Changed Circumstances

If the District chooses to purchase mitigation lands at the DTNA, they would provide \$60,000 in land acquisition fees to the DTPC in 2007 (see Table 14). The DTPC would need additional funds to enhance and manage this site. They would also need funds for annual reporting and potential changed circumstances. In 2007, the District would deposit \$5,286.30 in an interest-bearing account, that the DTPC can access, to pay for initial enhancements, reporting, and potential changed circumstances (see Table 14). Beginning in 2008, the DTPC would need

\$933.90 (2006 dollars - \$981.18 in 2008 dollars) available every year to fund long-term management and reporting on the 30-acre site. Because the DTPC would be accepting an increase in their land base and a subsequent increase in the cost for managing the DTNA, they would require that the District assure these funds beyond the term of the permit. This would prevent the DTPC from taking on an extra financial burden for management after the permit expires. In order to assure funding for these activities, in 2008, the District would deposit an additional \$11,800.45 into the interest-bearing account mentioned previously. Assuming a 5 percent rate of return each year and a 2.5 percent rate of inflation, the account would generate enough interest to fund the long-term management and reporting required for the site during the remainder of the permit term (see Table 21). The District will enter into a Service-approved contract or agreement with the DTNA to ensure that they expend funds from this account for the purposes identified in this HCP.

Table 19: Expenditure Summary for 30-acre DTNA Parcel Option (Management and Reporting)

Phase/Year	Account Balance Prior to Annual Withdrawal	Land Management and Reporting Withdrawals (Adjusted for Inflation)	Account Balance After Annual Withdrawal	Annual Interest Earned on Account Balance After Withdrawal	Account Balance After Withdrawal Plus the Interest Earned on the Account
P1 2006	-	-	-	-	-
P1 2007	-	-	-	-	-
P2 2008	\$11,800.45	\$981.18	\$10,819.27	\$540.96	\$11,360.23
P3 2009	\$11,360.23	\$1,005.71	\$10,354.52	\$517.73	\$10,872.25
P4 2010	\$10,872.25	\$1,030.85	\$9,841.40	\$492.07	\$10,333.47
2011	\$10,333.47	\$1,056.62	\$9,276.85	\$463.84	\$9,740.68
P6 2012	\$9,740.68	\$1,083.04	\$8,657.64	\$432.88	\$9,090.53
2013	\$9,090.53	\$1,110.12	\$7,980.41	\$399.02	\$8,379.43
P8 2014	\$8,379.43	\$1,137.87	\$7,241.56	\$362.08	\$7,603.64
2015	\$7,603.64	\$1,166.31	\$6,437.33	\$321.87	\$6,759.20
P10 2016	\$6,759.20	\$1,195.47	\$5,563.73	\$278.19	\$5,841.91
2017	\$5,841.91	\$1,225.36	\$4,616.55	\$230.83	\$4,847.38
P12 2018	\$4,847.38	\$1,255.99	\$3,591.39	\$179.57	\$3,770.95
2019	\$3,770.95	\$1,287.39	\$2,483.56	\$124.18	\$2,607.74
2020	\$2,607.74	\$1,319.58	\$1,288.16	\$64.41	\$1,352.57
2021	\$1,352.57	\$1,352.57	\$0.00	\$0.00	\$0.00
Total		\$16,208.06		\$4,407.63	

Assuming a 2.5 percent annual rate of inflation, by the end of the permit term, the cost of implementing the long-term management on the DTNA Parcel would be \$1,352.57 per year. In order to assure funding (\$1,352.57 per year) in perpetuity, the District will establish a letter of credit or bond at the bank holding the funds for the DTNA account in 2008. This will be held by the bank to ensure that the District provides an additional \$27,051.40 to the DTNA by 2018 for

perpetual management of the 30-acre parcel following permit expiration. Following the expiration of the permit, the DTPC would accept financial responsibility for any subsequent inflation in the cost of implementing management on the DTNA Parcel.

7.3.6 Summary of Expenditures

Based on the costs associated with HCP implementation and the funding mechanisms described above, the District would expend funds according to the following schedule. The expenditures in red are the deposits made into bank accounts with a 5 percent rate of return that the land managers (Park, DTPC, etc.) have access to for enhancements, changed circumstances, and long-term management.

Table 20: Schedule of Expenditures (605-acre Desert Park Option)

TYPE OF COST	2006	2007	2008	2009	2010	2012	2014	2016	2018	TOTAL
Project Site Minimization Measures and Reporting	\$101,560	\$1,640	\$4,265.54	\$4049.10	\$4039.95	\$4592.39	\$4703.03	\$4621.11	\$5056.78	\$134,527.90
Translocation Area Initial Enhancements and Changed Circumstances		\$4,498								\$4,498
Translocation Area Management and Reporting			\$50,416.20							\$50,416.20
80-acre Thermal Canyon Parcel Acquisition	\$80,000									\$80,000
80-acre Thermal Canyon Parcel Management and Reporting		\$15,017.79								\$15,017.79
605-acre Desert Park Enhancements and Changed Circumstances		\$36,494								\$36,494
605-acre Desert Park Management and Reporting		\$60	\$27,545.68							\$27,605.68
Total Expenditures	181,560	\$57,709.79	\$82,227.42	\$4049.10	\$4039.95	\$4592.39	\$4703.03	\$4621.11	\$5056.78	\$348,559.57

Table 21: Schedule of Expenditures (DTNA Parcel Option)

TYPE OF COST	2006	2007	2008	2009	2010	2012	2014	2016	2018	TOTAL
Project Site Minimization Measures and Reporting	\$101,560	\$1,640	\$4,265.54	\$4,049.10	\$4,039.95	\$4,592.39	\$4,703.03	\$4,621.11	\$5,056.78	\$134,527.90
Translocation Area Initial Enhancements and Changed Circumstances		\$4,498								\$4,498.00
Translocation Area Management and Reporting			\$50,416.20							\$50,416.20
80-acre Thermal Canyon Parcel Acquisition	\$80,000									\$80,000.00
80-acre Thermal Canyon Parcel Management and Reporting		\$15,017.79								\$15,017.79
DTNA Parcel Acquisition		\$60,000								\$60,000.00
DTNA Parcel Enhancements and Changed Circumstances		\$8,459.12								\$8,459.12
DTNA Parcel Management and Reporting		\$8.70	\$11,800.45						\$27,051.40	\$38,860.55
Total Expenditures	\$181,560	\$89,624	\$66,482	\$4,049	\$4,040	\$4,592	\$4,703	\$4,621	\$32,108	\$391,779.56

8.0 PERMIT MODIFICATIONS

8.1 Permit Amendments

8.1.1 *Minor Amendments*

Minor amendments are changes that do not affect the scope of the HCP's effect and conservation strategy, change amount of take, add new species, and change significantly the boundaries of the HCP. Examples of minor amendments include correction of spelling errors or minor corrections in boundary descriptions. The minor amendment process is accomplished through an exchange of letters between the permit holder and the Service's Field Office.

8.1.2 *Major Amendments*

Major amendments to the HCP and permit are changes that affect the scope of the HCP and conservation strategy, increase the amount of take, add new species, and change significantly the boundaries of the HCP. Major amendments often require amendments to the Service's decision documents, including the NEPA document, the biological opinion, and findings and recommendations document. Major amendments will often require additional public review and comment.

8.2 Suspension/Revocation

The Service may suspend or revoke their respective permits if the District fails to implement the HCP in accordance with the terms and conditions of the permits or if suspension or revocation is otherwise required by law. Suspension or revocation of the section 10(a)(1)(B) permit, in whole or in part, by the Service shall be in accordance with 50 CFR 13.27-29 and 17.32 (b)(8).

8.3 Permit Renewal

Upon expiration, the section 10(a)(1)(B) permit may be renewed without the issuance of a new permit, provided that the permit is renewable, and that biological circumstances and other pertinent factors affecting covered species are not significantly different than those described in the original HCP. To renew the permit, the District shall submit to the Service, in writing:

- * a request to renew the permit with reference to the original permit number;
- * certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, and inclusion of a list of changes;
- * a description of any take that has occurred under the existing permit; and
- * a description of any portions of the project still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

If the Service concurs with the information provided in the request, it shall renew the permit consistent with permit renewal procedures required by Federal regulation (50 CFR 13.22). If the District files a renewal request and the request is on file with the issuing Service office at least 30 days prior to the permits expiration, the permit shall remain valid while the renewal is being processed, provided the existing permit is renewable. However, the District may not take listed species beyond the quantity authorized by the original permit. If the District fails to file a renewal request within 30 days prior to permit expiration, the permit shall become invalid upon expiration. The District must have complied with all annual reporting requirements to qualify for a permit renewal.

8.4 Permit Transfer

In the event of sale or transfer of ownership of the property during the life of the permit, a new permit application, permit fee, and an Assumption Agreement will be submitted to the Service by the new owner(s). The new owner(s) will commit to all requirements regarding the take authorization and minimization and mitigation obligations of this HCP unless otherwise specified in the Assumption Agreement and agreed to in advance with the Service.

9.0 OTHER MEASURES AS REQUIRED BY THE DIRECTOR

In general, an Implementing Agreement (IA) between the permit applicant and the Service is required by the Director. The Implementing Agreement is a legal contract to specify roles and responsibilities and ensure compliance with the permit. An implementing agreement has been developed for this HCP and is attached (Appendix A). This agreement describes the roles and responsibilities of the District and Joshua Tree National Park in implementing this HCP.

10.0 ALTERNATIVES

Section 10(a)(2)(A)(iii) of the Act requires that alternatives to the taking of species be considered and that reasons why such alternatives are not implemented be discussed. Alternatives presented below include the Preferred Alternative, No Action Alternative, and Alternatives Considered but dismissed.

10.1 Preferred Alternative

The Preferred Alternative is issuance of a section 10(a)(1)(B) permit that would allow subsequent development of the subject property with implementation of mitigation and minimization measures to offset adverse effects to the desert tortoise. Aspects of the Preferred Alternative, including associated direct and indirect effects, are described throughout this HCP.

10.2 No Action Alternative

The No Action Alternative would result in the Service not issuing a permit. The District would not expand its facilities onto 71.57 acres of land adjacent to its current footprint. In addition, the District would not purchase mitigation land for desert tortoise conservation in Thermal Canyon or the DTNA, and they would not provide funding for management of the Desert Park near Joshua Tree or protect 84.96 acres of habitat within the proposed Translocation Area. The District would continue to utilize the current facilities at the site.

Refer to the “Environmental Setting” section of this HCP for a detailed description of the current condition of the human environment in all portions of the plan area. Based on our analysis of land use, desert tortoises and their habitat on the Project Site and Translocation Area currently experience adverse effects due to illegal dumping and OHV use. Selection of the no action alternative would preserve this current situation, but would not result in the direct removal of 71.57 acres of desert tortoise habitat due to campus expansion or the displacement of desert tortoises from the Project Site to the Translocation Area. However, the habitat quality in these areas will continue to degrade due to illegal activities, and the desert tortoises on these sites will likely be extirpated in the future from these activities.

Based on our analysis of land use, desert tortoises and their habitat do not currently experience adverse effects from human-caused activities on the Thermal Canyon Parcel. Selection of the “no action” alternative would not result in any adverse or beneficial effects to the human environment on this parcel of land in the short-term. However, allowing the parcel to remain in private ownership leaves the parcel open to human activities such as mining, illegal dumping, and OHV use that may increase in the future. These activities would threaten desert tortoises and their habitats on this parcel. In addition, the “no action” alternative would result in no active management of the site. This could result in non-native plant species invading the site without being checked by active management and increased probability of fire, which would destroy desert tortoise habitat and injure or kill desert tortoises on site.

Based on our analysis of land use, desert tortoises on private parcels at the DTNA currently experience low levels of adverse effects caused by illegal OHV trespass and trespass sheep

grazing. Selection of the “no action” alternative would result in no change in this situation in the short-term. It would not allow active management of the site to prevent the spread of non-native invasive plant species, and would not allow the DTPC to perform habitat restoration activities. In addition, the parcel would be open to future private land uses within the DTNA that may not be compatible with the DTPCs management of the DTNA as a whole. If the District chooses to perform its mitigation on the 605-acre desert park rather than at the DTNA, the result will be the same as that described for the “no action” alternative in this portion of the plan area.

Based on our analysis of land use, desert tortoises on the Desert Park currently experience adverse effects caused by OHV route proliferation and subsequent habitat fragmentation. There are likely issues with illegal dumping as well. Selection of the “no action” alternative would result in no change in this situation. It would also not allow active management of the site to prevent the spread of non-native invasive plant species. If the District chooses to perform its mitigation at the DTNA rather than at the Desert Park, the result will be the same as that described for the “no action” alternative in this portion of the plan area.

10.3 Other Alternatives Considered but Dismissed

10.3.1 *Selection of another site*

For some types of development, it is possible to choose among different sites to minimize adverse effects and still satisfy a proponent’s development needs. In this case, the District owns the lands on which the existing and expanded facilities would be located. The lands are contiguous to the existing campus. The District is not financially able to purchase and develop other, distant properties.

10.3.2 *Alternative construction configurations*

The District considered alternative configurations for the Project Site, including the initial configuration (STA Planning, Inc. 1992) when the expansion area was 115 acres and the interim configuration on 135 acres (Lilburn Corporation 2003). Analysis in the Draft EIR (Lilburn Corporation 2003) revealed that these configurations would have placed the sports fields within a 100-year floodplain. Therefore, they were dismissed from further consideration.

10.3.3 *Alternative mitigation strategies*

The District initially looked for mitigation lands within the Joshua Tree area to offset the adverse effects on the Project Site. They found that potential compensation lands in this area were between \$5,000 and \$10,000 per acre (John Simpson, personal communication). It would therefore cost between \$357,550 and \$715,100 to acquire 71.57 acres of land in this area and additional funds to ensure adequate management. This option is cost prohibitive for the District, which is a non-profit organization. In addition, securing land at a higher mitigation ratio than is currently proposed was discussed early in the planning process. This option was discarded because it would be cost prohibitive to the District and is not necessary because the mitigation strategy proposed in this HCP already mitigates the impacts of the taking sufficiently.

11.0 LITERATURE CITED

- Avery, H.W. 1998. Nutritional ecology of the desert tortoise (*Gopherus agassizii*) in relation to cattle grazing in the Mojave Desert. Ph.D. Dissertation, Department of Biology, University of California, Los Angeles. California.
- Berry, K.H. 1973. The magnitude of the required desert tortoise relocation project and an examination of potential relocation sites. Contract F-9353. State of California, Division of Highways, Desert Tortoise Relocation Project. On file at: U.S. Geological Survey, Biological Resources Division, Riverside Field Station, Riverside, California.
- Brattstrom, B.H. 1974. The evolution of reptilian social behavior. Amer. Zool. 14: 35-49.
- Burge, B. 1977. Daily and seasonal behavior, and areas utilized by the desert tortoise (*Gopherus agassizii*) in Southern Nevada. Desert Tortoise Council, Proceedings of the 1977 Symposium.
- Burge, B. 1978. Physical characteristics and patterns of utilization of cover sites by *Gopherus agassizii* in southern Nevada. Proceedings of the 1978 Symposium of the Desert Tortoise Council.
- Burge, B and W. Bradley. 1976. Population density, structure, and feeding habitats of the desert tortoise, *Gopherus agassizii*, in a low desert study area in southern Nevada. Proceedings of the 1976 Symposium of the Desert Tortoise Council.
- Bury, R.B., and R.W. Marlow. 1973. The desert tortoise, will it survive? Natural Parks Conservation Magazine 47(6):9-12.
- Circle Mountain Biological Consultants. 1997b. Copper Mountain Mesa Water Facilities Project: Final report for desert tortoise biological monitoring. Unpublished report prepared by Ed LaRue for U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, and California Department of Fish and Game on behalf of Joshua Basin Water District. Wrightwood, CA.
- Circle Mountain Biological Consultants. 1998. Focused desert tortoise survey for proposed 2.2-acre Childcare America Facility in an unincorporated portion of San Bernardino County, California. Unpublished report prepared on behalf of Childcare America and Warner Engineering. Wrightwood, CA.
- Circle Mountain Biological Consultants. 2002. College of the Desert, Copper Mountain College, General biological survey and focused desert tortoise survey on +/- 115 acres in the Community of Joshua Tree, San Bernardino County, California. Unpublished report prepared on behalf of The Addington Partnership. Wrightwood, CA.

- Circle Mountain Biological Consultants. 2004. Focused desert tortoise survey on 65 acres in Yucca Valley, California. Unpublished report prepared on behalf of Copper Hills Homes. Wrightwood, CA.
- Circle Mountain Biological Consultants. 2005a. Focused desert tortoise survey and general biological inventory for a 640 site (APN 585-051-02) in the Town of Yucca Valley, San Bernardino County, California. Unpublished report prepared by Ed LaRue on behalf of DanMark Development, L.L.C. Wrightwood, CA.
- Circle Mountain Biological Consultants. 2005b. Focused desert tortoise survey and general biological inventory for a 40-acre± site within the proposed Copper Mountain College expansion area, San Bernardino County, California. Unpublished report prepared by Ed LaRue on behalf of Copper Mountain Community College District. Wrightwood, CA.
- Circle Mountain Biological Consultants. 2006a. Desert tortoise habitat assessment and general biological inventory for an 80-acre± proposed mitigation parcel for the Copper Mountain Community College Habitat Conservation Plan, Riverside County, California. Unpublished report prepared by Ed LaRue on behalf of Copper Mountain Community College District. Wrightwood, CA.
- Circle Mountain Biological Consultants. 2006b. Desert tortoise habitat assessment and general biological inventory for an 160-acre± proposed mitigation parcel for the Copper Mountain Community College Habitat Conservation Plan, Riverside County, California. Unpublished report prepared by Ed LaRue on behalf of Copper Mountain Community College District. Wrightwood, CA.
- Coombs, E.M. 1974. Utah cooperative desert tortoise study (*Gopherus agassizii*). 17 pages.
- Coombs, E.M. 1977. Wildlife observations of the hot desert region, Washington County, Utah, with emphasis on reptilian species and their habitats in relation to livestock grazing. Report from the Utah Division of Wildlife Resources.
- Congdon, J.D., A.E. Dunham, and R.C. Van Loben Sels. 1993. Delayed sexual maturity and demographics of Blanding's turtles (*Emydoidea blandingii*): implications for conservation and management of long-lived organisms. *Conservation Biology* 7:826-833.
- Connor, M.J. 2002. Desert Tortoise Preserve Committee Management Plan: Desert Tortoise Natural Area and Adjacent Lands.
- Connor, M.J. 2003. Desert Tortoise Preserve Committee: Desert Tortoise Natural Area Management Plan Budget. December 2003.
- DePrey, P. 2006. Personal communication. Telephone communication regarding Joshua Tree National Parks management of the 80-acre Thermal Canyon Parcel following permit expiration. Dated October 31. Resources Branch Chief, Joshua Tree National Park, Twenty-nine Palms, California.

- Desert Tortoise Council. 1999 (revised from 1994 version). Guidelines for handling desert tortoises during construction projects. Edward L. LaRue, Jr., editor. San Bernardino, CA.
- Desert Research Institute. 2006. Western Regional Climate Center: www.wrcc.dri.edu. Reno, Nevada.
- Esque, T.C., R.B. Bury, and L.A. DeFalco. 1990. Nutrition and foraging ecology of the desert tortoise: FY1989 annual report. Prepared for USDI Bureau of Land Management, Cedar City, Utah. 68 pages.
- Esque, T.C. 1994. Diet and diet selection of the desert tortoise (*Gopherus agassizii*) in the northeast Mojave Desert. M.Sc. thesis, Colorado State Univ. Fort Collins, CO.
- Esque, T.C., K.E. Nussear, and P.A. Medica. 2005. Draft desert tortoise translocation plan for Fort Irwin's land expansion program at the U.S. Army National Training Center (NTC) and Fort Irwin. Prepared for U.S. Army National Training Center by USGS Western Ecological Research Center, Las Vegas Field Office, Henderson, Nevada,
- Grant, C. 1936. The southwestern desert tortoise, *Gopherus agassizii*. *Zoologica* 21(4): 225-229.
- Hovik, D and D. Hardenbrook. 1989. Summer and fall activity and movements of desert tortoises in Pahrump Valley, Nevada. (Abstract). Proceedings of the 1989 Symposium of the Desert Tortoise Council.
- Jennings, W.B. 1993. Foraging ecology of the desert tortoise (*Gopherus agassizii*) in the western Mojave Desert. Master's thesis. Arlington, University of Texas: 101pp.
- LaRue, E. and S. Dougherty. 1998. Federal Biological Opinion analysis for the proposed Eagle Mountain Landfill project. Proceedings of the 1997-1998 Symposia of the Desert Tortoise Council.
- Lilburn Corporation. 2003. Draft Program Environmental Impact Report (SCH No. 2003061062), Copper Mountain College Master Plan Update. Prepared for Copper Mountain Community College District. San Bernardino, CA.
- Luckenbach, R. 1982. Ecology and management of the desert tortoise (*Gopherus agassizii*) in California. In: R. Bury (editor). North American tortoises: Conservation and ecology. U.S. Fish and Wildlife Service, Wildlife Research Report 12. Washington, D.C.
- McGinnis, S.M. and W.G. Voigt 1971. Thermoregulation in the desert tortoise, *Gopherus agassizii*. *Comparative Biochemistry and Physiology* 40(A): 119-126.
- Medica, P.A., C.L. Lyons, and R.B. Turner. 1982. A comparison of the 1981 populations of desert tortoises (*Gopherus agassizii*) in grazed and ungrazed areas in Ivanpah Valley, California. Pages 99-124, Proc. Symp. Desert Tortoise Council 1982.

- Nagy, K.A. and P.A. Medica. 1986. Physiological ecology of desert tortoises in southern Nevada. *Herpetologica* 42(1):73-92.
- National Park Service. 2000. Backcountry and Wilderness Management Plan: an amendment to the 1995 General Management Plan. Joshua Tree National Park, Twenty-nine Palms, California.
- Nishikawa, T., Izbicki, J.A., Stamos, C.L., and Martin, P. 2004. Evaluation of geohydrologic framework, recharge estimates, and ground-water flow of the Joshua Tree area, San Bernardino County, California: U.S. Geological Survey Scientific Investigations Report 2004-5267, 115p.
- Oftedal, O.T. 2001. Low rainfall affects the nutritive quality as well as the total quantity of food available to the desert tortoise. Abstract of paper presented at the Twenty-sixth Annual Meeting and Symposium of the Desert Tortoise Council.
- Saethre, M.B., T.C. Esque, P.A. Medica, R. Marlow, and C.R. Tracy. 2003. Determining the carrying capacity of desert tortoises. Proceedings of the 28th Annual Meeting and Symposium of the Desert Tortoise Council.
- Schamberger, M. and F.B. Turner. 1986. The application of habitat modeling to the desert tortoise (*Gopherus agassizii*). *Herpetologica* 42(1):134-138.
- STA Planning, Inc. 1992, Copper Mountain Campus, Master Plan EIR, Desert Community College District. 550C Newport Center Drive, Newport Beach, CA.
- Tierra Madre Consultants, Inc. 1993. Draft Environmental Assessment for issuance of a permit to allow incidental take of desert tortoise (*Gopherus agassizii*), a threatened species, under section 10(a)(1)(B) of the Endangered Species Act to Valley Community Chapel and Good Shepherd Lutheran Church for a five-acre site in Yucca Valley, San Bernardino County, California. Unpublished report prepared by Ed LaRue for U.S. Fish and Wildlife Service on behalf of Art Miller, Jr. Riverside, CA.
- Turner, F.B. and D.E. Brown. 1982. Sonoran desertscrub. *In*: D.E. Brown (editor). Biotic communities of the American Southwest - United States and Mexico. *Desert Plants* 4(1-4):181-222.
- U.S. Bureau of Land Management. 1980. California Desert Conservation Area Plan. California Desert District, Riverside, California
- U.S. Bureau of Land Management. 1988. A Sikes Act Management Plan for the Desert Tortoise Research Natural Area and Area of Critical Environmental Concern. California Desert District, Ridgecrest Resource Area, Ridgecrest, California.

- U.S. Bureau of Land Management. 2005. West Mojave Plan: A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment, Final Environmental Impact Report and Statement. Riverside, California.
- U.S. Geological Survey. 2002. Threats to desert tortoise populations: a critical review of the literature. Prepared for the West Mojave Planning Team, Bureau of Land Management.
- Voigt, W.C. 1971. Thermal ecology of *Gopherus agassizii* in the Mojave Desert, Kern County, California. Hayward State University, Hayward, California. Thesis 96 pp.
- Weinstein, M, K. Berry, and F. Turner. 1987. An analysis of habitat relationships of the desert tortoise in California. Unpublished report prepared for Southern California Edison Company.
- Woodbury, A. and R. Hardy. 1948. Studies of the desert tortoise, *Gopherus agassizii*. Ecological Monographs 18: 145-200.
- Wilson, D.S., D.J. Morafka, C.R. Tracy, and K.A. Nagy. 1999. Winter activity of juvenile desert tortoises (*Gopherus agassizii*) in the Mojave Desert. Journal of Herpetology 33:496-501.

12.0 APPENDICES

Appendix A. Implementing Agreement

Appendix B. Application for State 2081 Incidental Take Permit

Appendix C. Biological Survey Reports

Appendix D. Desert Tortoise Exclusion Fencing Guidelines

Appendix E. Desert Tortoise Handling Procedures and Temperature Limit

