



Coachella Valley Conservation Commission

August 2011

**Coachella Valley Multiple Species Habitat Conservation Plan &
Natural Community Conservation Plan**

**Dos Palmas Conservation Area Reserve
Management Unit 4
Reserve Management Unit Plan**



**Prepared by the
Coachella Valley Mountains Conservancy
for the Coachella Valley Conservation Commission**

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Conservation & Natural Community
Conservation Plan**

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Management Unit 4
Reserve Management Unit Plan**

**Prepared for:
Coachella Valley Conservation Commission
Palm Desert, CA**

**Prepared by:
Coachella Valley Mountains Conservancy
Palm Desert, CA**

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***Reserve Management Unit Plan
Reserve Management Unit 4:
Dos Palmas Conservation Area***

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1.0 Purpose

The Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (CVMSHCP) requires that the Coachella Valley Conservation Commission (CVCC) ensures adequate management of locally (Permittee) managed Reserve Lands. This, in turn, requires that CVCC, in coordination with the Reserve Management Unit Committees (RMUC), prepares a Reserve Management Unit Plan (RMUP) for each Reserve Management Unit (RMU) for review and approval by the Reserve Management Oversight Committee (RMOC) to define specific management actions, schedules, and responsibilities. The RMUPs are to be completed within 3 years of plan adoption. This RMUP fulfills this requirement for the Dos Palmas RMU, which is one of the 6 RMUs identified in the CVMSHCP. An RMU may be comprised of just one of the Conservation Areas identified in the CVMSHCP or of multiple Conservation Areas. RMU 4 consists solely of the Dos Palmas Conservation Area.

In addition to providing specific management actions, schedules, and responsibilities for Permittee managed lands, the RMUP is intended to provide a framework for and to facilitate the collaborative management by all the involved management entities (local, state and federal agencies and non-profit organizations) to provide for effective, efficient, and cooperative use of the combined resources available. While individual agencies remain responsible for managing their lands, the premise of the RMUP is that maximizing cooperation and coordination should result in the best management of all Reserve lands and facilitate each entity's management.

1.1 General Background

The CVMSHCP establishes a structure for coordinating management in the Reserve System among the various entities involved through the establishment of an RMUC for each RMU. The CVMSHCP also provides for CVCC to retain a Land Manager to ensure management of the Permittees' mitigation lands and coordination with the RMUC for each RMU, and with the RMOC. Figures 1-1 and 1-2 show the relationship between the different managing entities and their role in the management of the RMUs. Land Managers and interested parties are referred to the following sections of the CVMSHCP for information regarding the identified topics.

Reserve Management Oversight Committee – Section 6.1.3

Reserve Management Unit Committees – Section 6.1.4

Land Manager – Section 6.1.5

Monitoring Program Administrator – Section 6.1.6

RMUP Requirements - Section 6.2

Reserve System Management and Monitoring Program – Section 8.0

Figure 1-1: Organizational Structure & Decision Process for the Monitoring and Management Programs

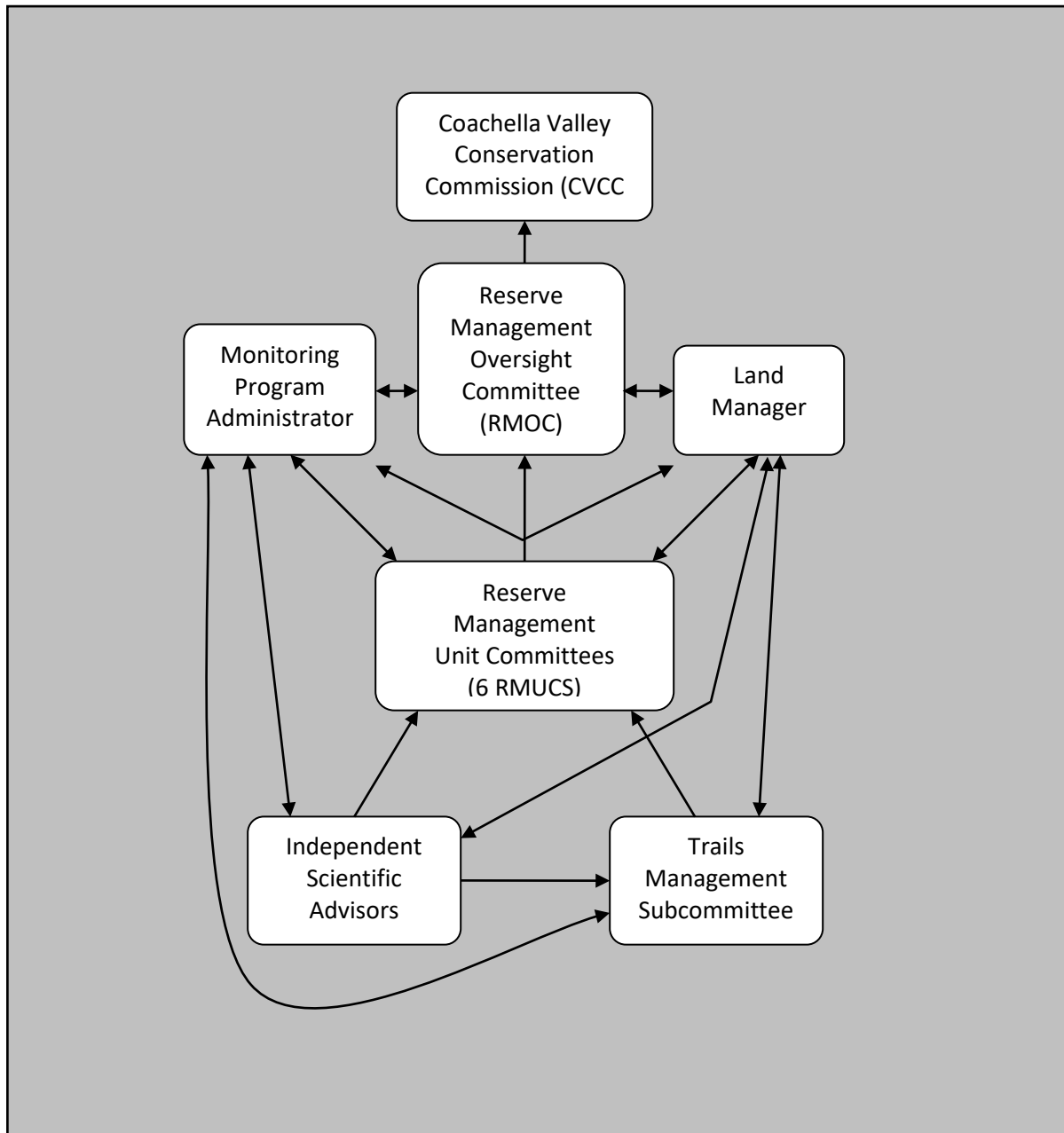
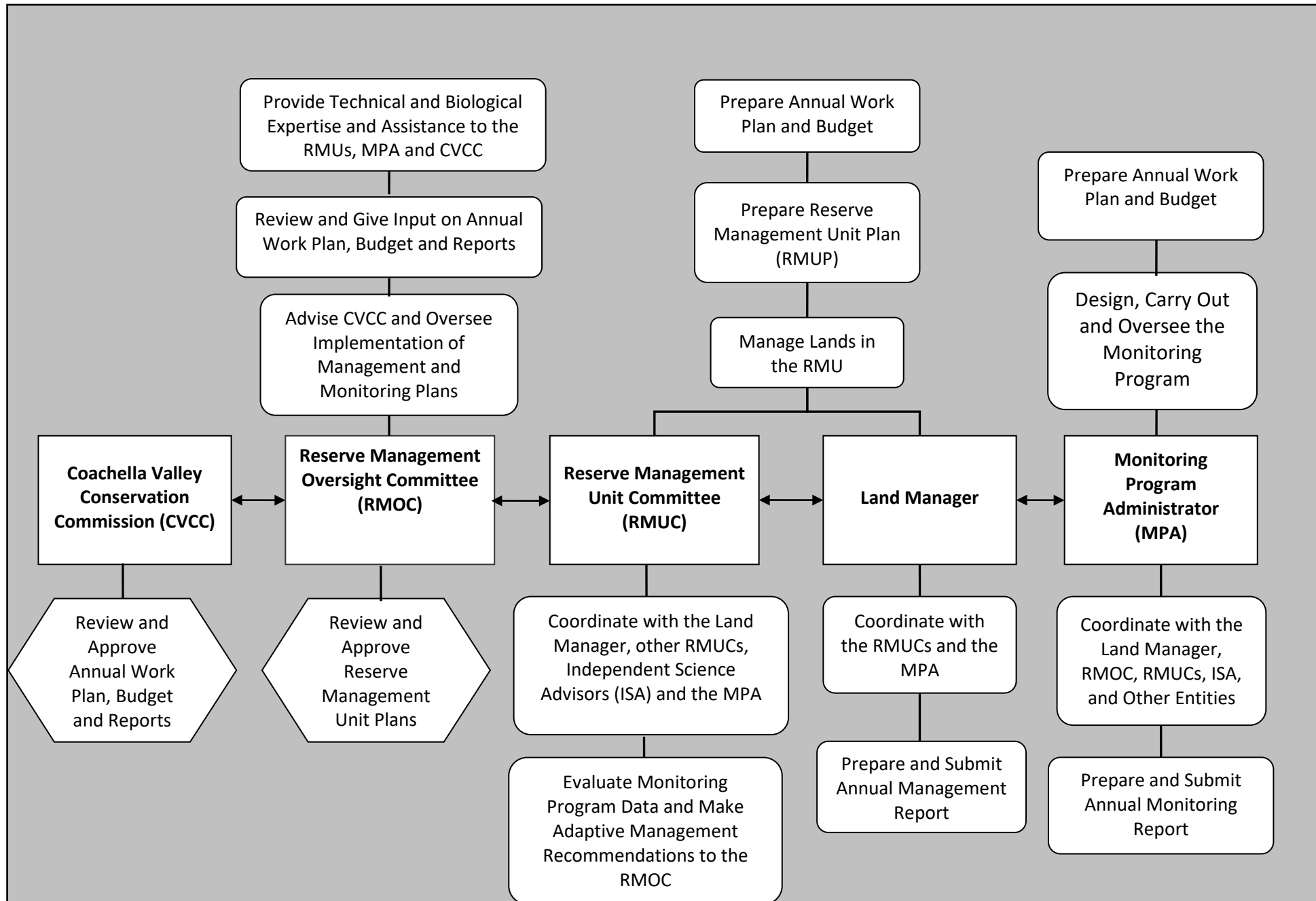


Figure 1-2: Organizational Responsibilities for the Monitoring and Management Program



1.2 Reserve Management Unit Background

The Dos Palmas Conservation Area, RMU 4, consists of approximately 25,380 acres located on the east side of the Salton Sea. Figure 2-1 Dos Palmas RMU depicts the location and boundaries of RMU 4. The Dos Palmas Conservation Area stretches generally from the Salton Sea on the west to the Chocolate Mountains Aerial Gunnery Range on the east, and the Coachella Canal on the north, where it is also contiguous with RMU Unit 3, Desert Tortoise and Linkage, and Mecca Hills/Orocopia Mountains, and to the CVMSHCP boundary, the county line with Imperial County on the south. This RMU includes the Dos Palmas Area of Critical Environmental Concern (ACEC) managed by BLM, the Oasis Springs Ecological Reserve managed by CDFG and a portion of the Salton Sea State Recreation Area, managed by State Parks. Several other entities also own land for conservation purposes in this RMU. The ownership in the RMU as of the end of 2009 is depicted in Figure 2-2.

Implementing all of the Conservation Objectives and Required Measures delineated in the CVMSHCP is a fundamental obligation of the Permittees acting through the CVCC, and, therefore, provides key guidance as to management of the RMU. Land Managers and interested parties are referred to the following sections of the CVMSHCP for information regarding the identified topics. The Conservation Area section includes information on Covered Species, natural communities, land ownership, Conservation Objectives and Required Measures.

Dos Palmas Conservation Area – Section 4.3.19

Current Management – Section 8.2.3, Reserve Management Unit 4

Adaptive Management – Section 8.2.4.

General Ongoing Management – Section 8.2.4.1

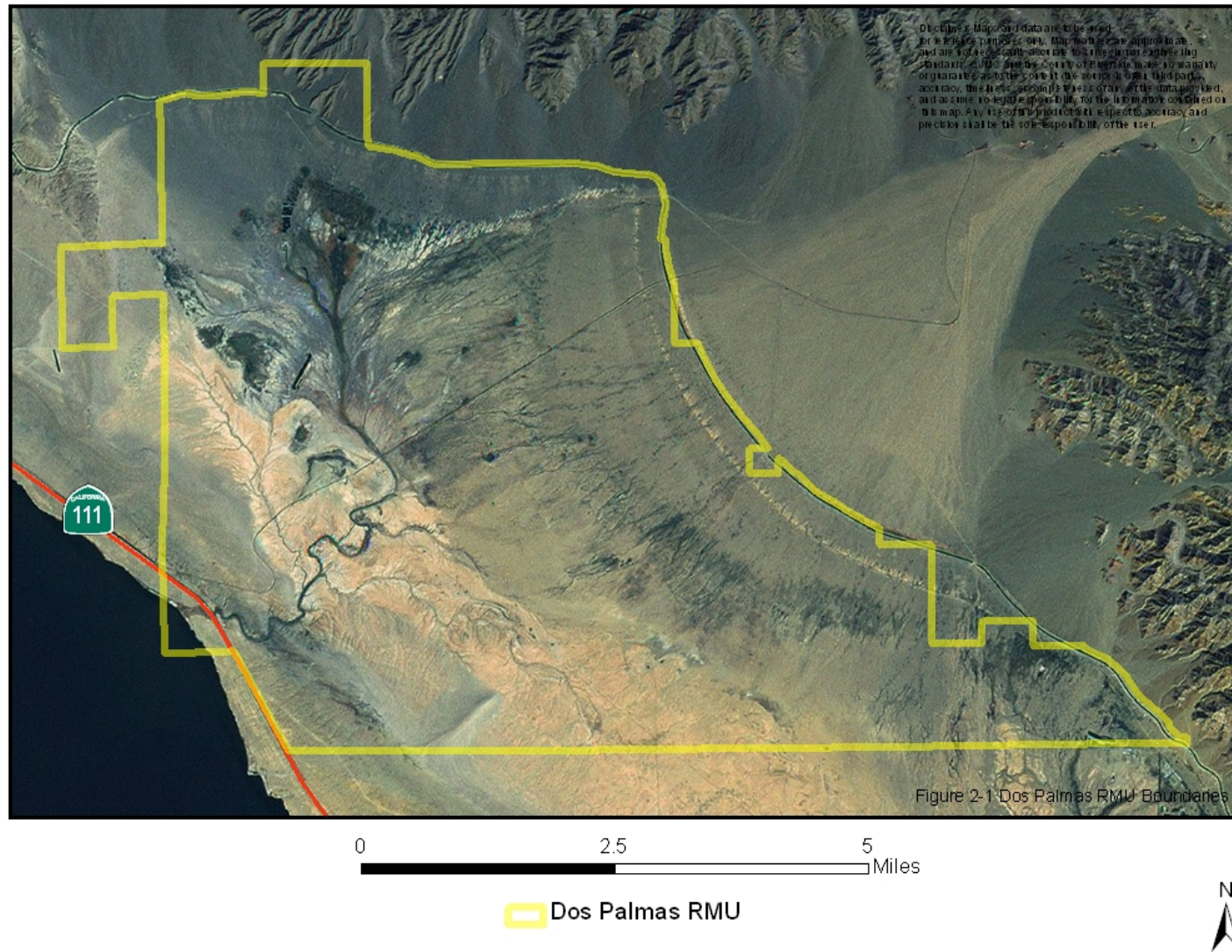
Monitoring for the MSHCP Reserve System – Section 8.3

1.3 Current Management, Monitoring, and Public Access

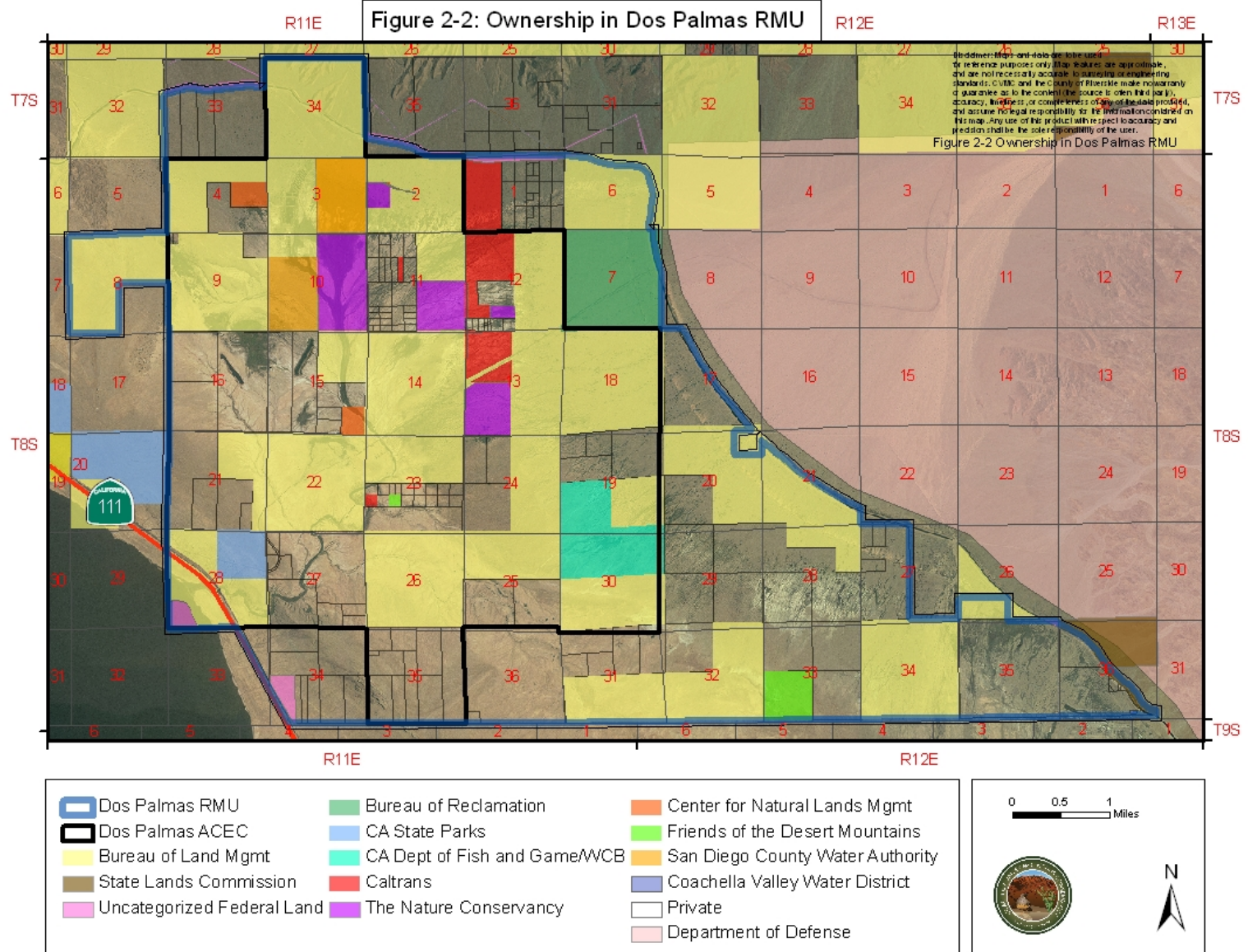
Coachella Valley Conservation Commission

The CVCC currently owns no land in this RMU and, thus, is not involved in any management activities at present. Several other entities own land for conservation purposes in this RMU but do not actively manage it. The areas within this RMU that currently have some level of management are described in Appendix I.

Figure 2-1: Dos Palmas RMU Boundaries



Reserve Management Plan for Dos Palmas RMU



2.0 Threats, Stressors, other Management Issues, and Recommended Management Measures

There are a number of potential threats which could affect the Covered Species and natural communities found in the Dos Palmas Reserve Management Unit. The natural stochasticity (randomness) of weather events, long-term climatic trends, and anthropogenic stresses can all have impacts. Section 8 of the CVMSHCP includes Threats Models for a number of the community assemblages. These models list threats and impacts they can have on communities and species. Current and potential threats to the RMU and preventative and coordinated measures to address those threats are discussed in detail below. The threats are presented in order of severity to reflect that some threats have the potential to impact Covered Species so severely that the CVMSHCP's Conservation Goals and Objectives for a species might not be met if the threat is not adequately addressed. The severity of these threats dictates that they receive priority in the allocation of management resources by both CVCC and other land management entities, thus emphasizing the importance of cooperation and coordination among all management entities, as well as a close working relationship between the managers and the monitoring team to ensure that the nature of the threats are well understood and the efficacy of management actions is assessed so that adaptive management occurs. Responsibility for implementation of the management actions listed in this section will be the combined responsibility of the Land Manager, the other Reserve Management Unit Committee members and where applicable, the Monitoring Program Administrator (MPA). It should be noted that the threats and stressors discussed below are those known at present. Over time other issues may emerge and the degree of severity associated with current threats may change; thus, this plan must be regarded as dynamic and the RMUC should, in conjunction with adaptive management, ensure that the RMUP evolves as needed.

2.1 Invasive Species

Invasive species occur in several natural communities within the Dos Palmas RMU, being most prevalent in riparian, marsh, and aquatic habitats. Invasive species put pressure on the species, communities, and ecosystems of Dos Palmas RMU, and in some cases they may pose a significant threat to them. They cause impacts through, competition, predation, physical alteration of the environment, or a combination of these and other factors.

The biological attributes of a number of the invasive aquatic species in the Dos Palmas area are summarized in Table 4-1 of a draft report, *Invasive Species Management Options for the Dos Palmas Area of Critical Environmental Concern*, prepared by Jones and Stokes (now ICF International). This report can be found at [\[Add hyperlink.\]](#)

Management Goal: Prevent the establishment of new infestations of invasive plants and animals and reduce or eliminate current infestations.

Specific recommendations for preventative and coordinated response management measures for individual invasive species or similar groups of invasive species e.g., invasive

fishes, are given below. However, there are general measures, applicable to all invasive species, which can help prevent their introduction and establishment or their future spread if already established. They are:

Recommended Management Actions:

1. Develop a coordinated program for the detection and control of new infestations of invasive species as part of the Annual Work Plans, including a requirement for the use of standards for cleaning and handling equipment, gear and supplies, to help prevent the spread of invasive species. A useful resource may be <http://www.invasivespeciesinfo.gov/aquatics/prevention.shtml>.
2. Conduct ongoing surveys/inspections for new infestations of invasive plants, animals, and pathogens (the frequency will need to be determined based on past experience and current conditions). Surveys should be for both previously undetected species, e.g., buffleggrass (*Pennisetum ciliare*) and new infestations of established species.
3. Control newly detected infestations of invasive plant species to prevent their establishment.
4. Document infestations and related control efforts, including collecting a standard set of data and submitting it for inclusion in the GIS database for the RMU and the CVMSHCP area.
5. Document invasive species control efforts/treatments including collecting standardized data and submitting it for entry into the GIS database for the RMU and the CVMSHCP area.
6. Clean (or replacing when applicable) all equipment, gear, and supplies prior to moving from one location to another during the conduct of management and monitoring activities.

Tamarisk/Salt Cedar (Tamarix spp.)

The deciduous species, *Tamarix ramosissima*, and *T. chinensis* and *T. parviflora*, collectively known as salt cedar, are highly invasive. They can displace native riparian trees such as mesquite, cottonwood, and willows; and stands of mature trees can effectively prevent the re-establishment of native species due to shading, elevated salinity, and other possible factors such as changes to soil biota. Large dense stands of salt cedar may consume more water than equivalent stands of native cottonwoods and other native species, potentially causing ground water levels to drop and less surface water to be available. Salt cedar may also promote more frequent and intense fire in some areas. Another species of tamarisk, *Tamarix aphylla*, known as athel tamarisk, is also present in the RMU in smaller numbers in various locations. While not known to be as invasive in the CVMSHCP area, its effects on the environment, where present, can be similar to those of salt cedar.

BLM is actively controlling salt cedar in the Salt Creek watershed of the Dos Palmas Area of Critical Environmental Concern (ACEC), and CDFG has completed limited control activities in the Oasis Springs Ecological Reserve. These control efforts combined with periodic inspections for new infestations will help prevent the further spread of salt cedar and athel tamarisk in the Salt Creek watershed. BLM is working with other entities including the CDFG,

CNLM, the Southern Low Desert RC&D, private property owners, and the San Diego County Water Authority (SDCWA) to take a systematic approach to tamarisk control in the northern and western portions of the Salt Creek watershed of the RMU. CDFG staff assisted BLM in applying for and obtaining a grant from the Wildlife Conservation Board (WCB) to control tamarisk; the SDCWA, as part of its required mitigation for the Coachella Canal lining has provided funds to the BLM to control tamarisk and restore native vegetation. Other opportunities may include additional grants from the WCB and potentially in lieu fees for impacts to desert riparian areas from renewable energy projects. The CVCC will assist the RMUC members in obtaining future grant funds, and CVCC staff, as available staff and resources permit, will coordinate control and survey efforts with the other managing entities as appropriate.

Recommended management actions are:

1. Develop and maintain a map of the extent of current infestations and conduct annual inspections to locate and control new infestations. The *Draft Monitoring Protocols for the Desert Wetland Communities and Covered Species* report, prepared by C.W. Barrows, M.F. Allen, J.T. Rotenberry, & R.A. Redak, University of California Center for Conservation Biology, 30 June 2009, discuss metrics for use in such monitoring. This report can be found at [\[ADD HYPERLINK\]](#)
2. Identify, prioritize, and treat infestations of tamarisk in the RMU, prioritizing the Salt Creek mainstem and Oasis Springs Reserve areas. Remove Athel tamarisk at Oasis Springs Reserve and other areas as needed and appropriate. This cooperative approach would maximize the effectiveness and efficiency of control efforts. Control mechanisms include mechanical and chemical treatments. Where feasible, the Land Manager and the RMUC should recruit volunteers through schools, Scout programs, and community groups to assist with this effort. The Land Manager and the RMUC should also explore the potential to coordinate with the Sheriff's Department and the courts to use individuals in alternative sentencing programs and/or the use of appropriate inmates.
3. Evaluate whether there are locations where it may be important to enter into agreements with private land owners to remove tamarisk. Where feasible the Land Manager and the RMUC member entities should pursue approvals and funding.
4. Re-treat re-growth in treated areas.
5. Re-vegetate with native species in treated areas as needed.
6. Consider prescribed fire as an initial treatment in some areas (to facilitate access to infested areas) and follow-up with additional treatment actions.
7. A collaborative approach between the RMUC and the MPA to evaluate different treatment options could also help to advance control efforts.

Sahara mustard

Brassica tournefortii (Sahara Mustard) can successfully compete with native annual forbs and grasses to the extent that there is very little growth and reproduction of native annuals in areas favorable to Sahara mustard in years when it is abundant. The loss of native annuals and a concomitant loss of native insects which utilize native forbs and grasses could affect populations of lizard species including the flat-tailed horned lizard by reducing their food

supply. In the past, Sahara mustard was typically only abundant in the Coachella Valley during years of above average annual rainfall, allowing native plants to recover in other years. In recent years, including spring 2010, Sahara mustard has been abundant during years with average rainfall (Cam Barrows, personal communication). This trend is of concern to scientists and land managers, for if it continues, large areas of the Coachella Valley could lose much of its native annual vegetation. Type conversion to Sahara mustard and associated non-native annuals, e.g., red brome and common Mediterranean grass can occur. Also, Sahara mustard can form a physical or visual barrier to wildlife. Dense stands of Sahara mustard growing around burrowing owl burrows may prevent them from having sufficient sight distance to spot and avoid predators.

Sahara mustard infestations have been located in several areas of the RMU. No control efforts have been initiated to date. Early season applications of a non-specific herbicide, glyphosate, may be an effective management tool.

Recommended management actions are:

1. Map the extent of current infestations, and conduct annual inspections to locate and control new infestations. The *Draft Monitoring Protocols for the Aeolian Sand Communities and Covered Species* report, prepared by C.W. Barrows, M.F. Allen, J.T. Rotenberry, & R.A. Redak, University of California Center for Conservation Biology, 4 May 2009, discusses metrics for use in such monitoring. This report can be found at [\[ADD HYPERLINK.\]](#)
2. Identify, prioritize, and treat infestations of Sahara mustard in the RMU. This approach would increase the effectiveness and efficiency of control efforts. Hand pull mustard before plants set seed where this method of control is feasible. Recruit volunteers through schools, Scout programs, and community groups to assist with this effort. Explore the potential to coordinate with the Sheriff's Department and the courts to use individuals in alternative sentencing programs and/or the use of appropriate inmate crews, e.g., those provided by the California Department of Forestry and Fire Protection.
3. A collaborative approach among the RMUCs for the Dos Palmas and Valley Floor RMUs and the MPA to evaluate different treatment options could also help to advance control efforts, particularly in regards to assessing the efficacy and impacts of herbicide use.
4. Develop experimental programs using herbicides as soon as mustard plants germinate and before native annuals do. If this method proves successful and does not adversely impact Covered Species or the natural communities, target specific areas for treatment in annual work plans.
5. Monitor the experimental research focused on identifying an appropriate biological control agent for Sahara mustard and periodically assess the potential to use a biological control agent. As appropriate, the RMUC can make recommendations to the RMOC regarding the feasibility of employing any agent or conducting any research in the Dos Palmas RMU.
6. Evaluate whether collection and storage of seeds of any native species is warranted as a contingency if Saharan mustard cannot be adequately controlled for many years and native species in some areas might not be able to produce seeds for the natural seed bank for an extended period of time.

Cattails (Typha spp.)

Cattails are a desirable habitat element for exotic species including crayfish. They can also be invasive, reducing available habitat for pupfish and other native aquatic species. For this reason, it may be desirable to remove or reduce them in some areas. This could be accomplished in combination with dewatering to control invasive aquatic animals. Because cattails are also a habitat element for Yuma clapper rail, California black rail, and other marsh birds, potential impacts to them will need to be assessed prior to cattail removal. Possible control techniques include mechanical removal, herbicides, and prescribed fire.

Recommended management actions are:

1. Map areas within the Dos Palmas system where cattails are present (or desired) as a component of the habitat and areas where they do or may occur but are not desired as a component of the habitat.
2. Where cattails are desired as part of the habitat, the Land Manager, develop management actions as part of the Annual Work Plans to maintain cattail stands in the appropriate condition (this may include cutting, prescribed fire or other means).
3. Where cattails are not desired, incorporate the appropriate removal actions into their Annual Work Plans (depending on the potential impacts, hand removal, mechanical removal, herbicide application, or prescribed fire may be suitable control methods).

Buffelgrass (Pennisetum ciliare)

Buffelgrass is a drought-tolerant, warm-season, perennial grass which reaches 1.5 feet in height and 3 feet in width. Inflorescences are brown to purplish. It is similar in appearance to fountain grass. Buffelgrass is an invasive species in the Sonoran Desert. Although it is drought tolerant, its spread into the Colorado Desert may be limited to areas which receive significant monsoon rains. However, it is thought to have the potential to become established in riparian areas of the Colorado Desert (USGS). Buffelgrass grows densely and crowds out native plants of similar size. Competition for water can weaken and kill larger desert plants. Its dense roots and ground shading prevent the germination of native plant seeds. Until recently, there were no reports of buffelgrass in the Coachella Valley; however, several specimens were recently discovered in Indio (USGS).

Recommended management actions are:

1. Managers and field staff will familiarize themselves with the characteristics of this species so that it can be searched for and controlled, if found, as part of coordinated periodic surveys for new infestations of invasive plant species.

Invasive Aquatic Plants

There may be the potential for giant salvinia (*Salvinia molesta*) or other invasive aquatic plants to invade some of the aquatic habitats of the Dos Palmas RMU. This and other

invasive plants can form dense mats that block sunlight and reduce oxygen levels.

Recommended management actions are:

1. Properly clean gear and equipment before entering a new aquatic system, conduct regular inspections for infestations, and implement removal efforts if they are detected. Those removal efforts are likely to include mechanical removal and chemical control methods as feasible based on the sensitivity of the site(s) in question, and the specifics should be defined in the annual work plans.

Other Riparian Vegetation

Date palms are present at the Oasis Springs Reserve and to some extent in the Dos Palmas ranch area, and this species impacts the desert pupfish by using significant volumes of water and attracting predators such as raccoons to the area.

Recommended management actions are:

1. Incorporate removal of these trees as a high priority action in the Annual Work Plans for Oasis Springs and other areas as needed and appropriate. If feasible, the trees will be offered for removal for landscape purposes at no cost under the RMUP.

Invasive aquatic animals

Each species known to occur in the RMU is described below. Because many of the preventative and coordinated response measures involve the same actions and techniques, they will be discussed for the entire group at the end of this subsection.

Crayfish (*Procambarus clarkia*)

Crayfish were accidentally and deliberately introduced into California. Several different species are reportedly found in the Salt Creek watershed. Crayfish can pose a serious threat to other aquatic species. They compete with and prey on a variety of native fish, amphibians and snails. They may also cause a significant reduction in the number of macro invertebrates.

Invasive Fish

There are a number of different non-native fish species found in the aquatic habitats of the Dos Palmas RMU, including mosquitofish, *Gambusia affinis*; sailfin and shortfin mollies, *Poecilia latipinna* and *Poecilia Mexicana*; and Tilapias, *Tilapia* spp. Each of these species poses a threat to pupfish. The threat may be in the form of competition, predation, interference with reproduction, or a combination of these factors.

Rio Grande Leopard Frog (*Lithobates berlandieri*) and Bullfrog (*Rana catesbeiana*)

Both the Rio Grande leopard frog and bullfrog are reported to be in some aquatic areas in the Salt Creek Watershed, such as the main marsh. Both species prey on pupfish and pupfish eggs at one or more stages of their life cycle. In addition, the tadpoles compete for food, particularly in the case of bull frogs. Salinity levels may potentially limit dispersal of these frogs.

New Zealand Mudsail (*Potamopyrgus antipodarum*)

New Zealand mudsnails (NZMS) occur in the Coachella Canal. NZMS is a highly invasive species tolerant of desiccation. It can reduce food resources and populations of native macroinvertebrates. They are very difficult if not impossible to eradicate once they become established in an aquatic system.

Melania (*Melanoides tuberculata* and *Melanoides granifera*)

These snails directly compete with both juvenile and adult pupfish for forage resources and they may also prey on pupfish eggs. They are common in many ponds in the Salt Creek area, often indicated by a virtual absence of algae.

Asian clam (*Corbicula fluminea*)

Asian clams are minor competitors with pupfish for food. According to the Invasive Species assessment prepared by ICF for the CVCC they are fairly common in the in the aquatic areas of the Dos Palmas ACEC.

Recommended management actions are:

1. There are several preventative measures which have been or could be implemented cooperatively by RMUC member entities to prevent the introduction and spread of invasive aquatic animals. They include:
 - Limiting Public Access to Aquatic Habitats – Aquatic habitats in the RMU are generally not accessible by vehicle. Visitors must walk to these areas from parking areas at trailheads. Continuing to limit access in this way reduces the likelihood of visitors introducing exotic game fish and/or aquarium specimens. Consideration should be given to prohibiting or restricting fishing and swimming and posting signs accordingly.
 - Public Education - Interpretive panels at trailheads and other facilities in the RMU, brochures, presentations to school and community groups, and other initiatives aimed at informing the public of the impacts of invasive exotic species could be effective in reducing the potential for new infestations.
 - Surveys for Invasive Species - Regular surveys by management and monitoring personnel for new infestations of invasive aquatic species and subsequent control, if feasible, could help to prevent their establishment and/or spread.

- Properly cleaning gear and equipment before entering a new aquatic system – Snails, including New Zealand mudsnails can be unintentionally transported by people, as can exotic plants and pathogens.
2. Currently there are no ongoing efforts to control invasive aquatic species in the Dos Palmas RMU (BLM and CDFG, personal communication). Future efforts should involve a coordinated response including the managing entity or entities, CDFG, and the USFWS (to address listed species issues), and the Monitoring Program Administrator (to develop and/or evaluate monitoring protocols and to evaluate monitoring results). Where water bodies are connected directly, control efforts should be coordinated to work from the upper end of the watershed in a downstream direction to the maximum extent feasible. The Report prepared by ICF, *Invasive Species Management Options for the Dos Palmas Area of Critical Environmental Concern*, lists a number of potential control techniques for invasive aquatic species including trapping; water management, a control technique that alternatively inundates and desiccates habitat; and pesticides. Each of these methods may have applicability for some species and circumstances.

Trapping

As stated in the ICF invasive species report, trapping could potentially be used at Dos Palmas against frogs, tadpoles, crayfish, and the larger mollies and tilapia, all of which can be caught in traps that have a mesh size too coarse to confine pupfish. In addition to trapping, fishing has proven to be an effective technique for reducing crayfish numbers. Due to the inability of most trapping techniques to secure juveniles, trapping would at best control, rather than eradicate, invasive species. However, by reducing predation and competition on pupfish and other native fauna, including macroinvertebrates, trapping and/or fishing may benefit the aquatic systems sufficiently at Dos Palmas to incorporate it into the ongoing management program. Widespread trapping of crayfish could have potential adverse effects on Yuma clapper rail and California black rail populations. As such, the monitoring component of a pilot crayfish trapping or fishing program should include development and implementation of measures to evaluate its effects on rails. In addition, per the CVMSHCP, if trapping of crayfish takes place in Yuma clapper rail habitat, the establishment of other suitable prey for the Yuma clapper rail will need to be evaluated.

Dewatering

Desiccating targeted areas by temporarily dewatering them is expected to be highly effective in controlling invasive exotic species; however, it is also effective against pupfish and other native aquatic species, so care must be taken when choosing sites; close cooperation with the Wildlife Agencies would also be necessary. In a cooperative effort between BLM and CDFG, this technique will soon be employed in two areas of the Dos Palmas RMU; at one of the S Ponds and at the Barn Ponds. The operation will be timed so that the ponds will be fully desiccated during the late summer or early fall to achieve high pond-bottom sediment temperatures to ensure the death of all invasive aquatic species, and to ensure that pupfish have completed their breeding cycle. The few remaining pupfish in the Barn Ponds will be salvaged by a CDFG biologist for restocking – possibly in the S Pond which will be drained. It

is recommended that this initial dewatering effort be closely monitored for efficacy, and if it proves successful, that this method be considered for use in other suitable locations.

Clearing of vegetation such as cattails in combination with dewatering may be indicated in situations where the goal is to restore pupfish populations because it is not a habitat requirement for pupfish whereas a number of invasive species, including crayfish depend on cattails for habitat. Yuma clapper and California black rails also utilize cattails, so potential effects to them will need to be evaluated when considering cattail removal. As discussed above, a systematic evaluation of cattails as a component of the habitat will be made prior to any cattail removal efforts.

Pesticides

The use of pesticides that would be effective against invasive fish or mollusks would also kill native fishes, mollusks and aquatic arthropods. Also, given the numerous springs and seeps at Dos Palmas, it is not likely that pesticides could achieve the extirpation of target invasive species. A previous unsuccessful attempt to eradicate invasive fish species in the Salt Creek using Rotenone, prior to the area being purchased for conservation (Ron Nordman, BLM, personnel communication) provides some evidence that pesticides are not likely to work in widespread application. However, in some cases, a targeted application of pesticides might be effective. For example, pesticides might be used to treat small areas of residual water from springs or seeps in an area which has otherwise been dewatered, if other methods, such as trapping were not feasible. The limited application of pesticides will be maintained as a potential management tool, but their use will be limited to occasions when all other options have been determined to be infeasible and adequate precautions have been taken to protect native species.

Recommended management actions are:

1. Conduct pilot trapping, and dewatering experiments in the Salt Creek Watershed to determine their effectiveness and feasibility.
2. If possible, incorporate the removal of cattails in one or more of the experiments.
3. In addition to monitoring the species control efforts, include a native species monitoring component to determine the effects of the experiments on pupfish, Yuma clapper rail¹ and California black rail.
4. Incorporate limited applications of pesticides in combination with dewatering if other control measures, such as netting or trapping, are not feasible. If trapping and dewatering experiments are successful, consider them for use in other areas.

¹ If control of crayfish in Yuma clapper rail habitat is necessary for any reason, the establishment of other suitable prey for the Yuma clapper rail shall be evaluated.

Invasive Terrestrial Animals

Burros

Burros have been reported in the Dos Palmas RMU. They compete with other animals for food and water (McKnight 1958). As a result, desert tortoise, deer, and other wildlife could be negatively affected by their presence. Burros could also cause impacts to riparian, marsh, and aquatic habitats including consumption of vegetation, erosion of stream banks, increases in water turbidity, and pollution from fecal matter.

Recommended management actions are:

1. Early detection and removal of burros is the best way to prevent them from causing significant impacts to the RMU. This could be achieved through coordinated, ongoing surveys for burros and burro sign, and their prompt removal if detected. Removal of burros would be coordinated through the Riverside County Department of Animal Services and BLM. The BLM does not allow burros to occupy public lands within the RMU and can provide proven capture methods and adoption options for the animals removed.

Feral Dogs and Cats

Domestic pets pose a potential threat to wildlife in the Dos Palmas RMU. For example, loose dogs and cats can impact burrowing owls by digging out the nest and removing the chicks (Point Reyes Bird Observatory) and dogs can harm tortoises or their burrows (USGS). While the occurrence of loose or feral domestic animals is currently low in the RMU due to its overall remoteness, future development along its boundaries could increase the level of this threat. Section 4 of the CVMSHCP includes Land Use Adjacency Guidelines. Guideline 4.5.6, Barriers, includes project design requirements such as the incorporation of barriers in project designs to, among other things, minimize domestic animal predation.

Recommended management actions are:

1. If future development occurs within the boundaries of or adjacent to the RMU, the RMUC should work with the CVCC and the Permittee during the environmental review process to ensure that Land Use Adjacency Guideline 4.5.6 is followed and to provide recommendations specific to it. Additional recommendations, such as providing homeowners with brochures about living adjacent to a reserve (including information about pets) and using Covenants, Conditions and Restrictions (CC&Rs) for multiple dwelling developments, will be incorporated as appropriate.

Cowbirds

Cowbirds, while native to North America, are not native to the Coachella Valley, and this species may be supported in the area by a variety of human actions. Golf courses and horse stables are two activities with known potential to enhance cowbird populations in the Coachella Valley. As nest parasites, they do not raise their own chicks but instead lay their

eggs in the nests of other species. These host species raise the cowbird chick rather than their own offspring, thus impacting productivity of the parasitized species. Because cowbirds have not yet been identified as a problem for Covered Species in this RMU, coordination between monitoring and management will be necessary to assess the current status.

Recommended management actions are:

1. Initiate periodic surveys of nesting birds within the Dos Palmas system to determine if cowbird nest parasitism is causing unacceptable impacts to covered bird species.
2. Initiate a cowbird trapping in riparian areas found to have unacceptable levels of nest parasitism.

Muskrats

CDFG has reported that muskrats occur in some pond areas and may impact Covered Species.

Recommended management actions are:

1. Initiate periodic surveys to determine if muskrats are causing unacceptable impacts to any Covered Species.
2. Initiate a muskrat control program if necessary.

2.2 Threats to Hydrological Regime/Processes

Maintaining hydrological systems is essential to the conservation of several natural communities in the Salt Creek watershed of Dos Palmas RMU and to the Covered Species which depend on them. Historically, the water source for Salt Creek was natural surface runoff and upwelling of groundwater along the San Andreas Fault. Construction of the Coachella Canal and subsequent leakage of water from it added additional water and subsequent riparian and wetland habitat where this water surfaced. The recent lining of the Coachella Canal eliminated the leakage from the canal. The Coachella Canal Lining Project included specific mitigation requirements to monitor water levels throughout the core of the Dos Palmas/Salt Creek wetland system, provide supplemental water to the system as needed to maintain extant wetland and riparian habitats, offset the impacts of the canal lining upstream by creating additional wetlands, and control exotic species to maintain the pre-lining habitat functions and values. An interconnected system of water pipes, valves, and recharge basins has been developed to provide aquifer recharge and water supply to the various wetlands areas in the RMU impacted by the canal lining or created in response to canal lining impacts. That system is undergoing testing in early 2011 and a long-term monitoring, operations, and maintenance plan will be developed to ensure the system's ongoing efficacy. Decisions will also be made as to what entities will be involved in the long-term monitoring, operations, and management. Funding for it is expected to be provided as part of the mitigation obligations of SDCWA. Future prolonged drought could exacerbate any lining induced changes. The RMUC will be responsible for identifying additional measures to

maintain the hydrological functions and values should historical climate cycles or more extreme climate cycles triggered by climate change result in deficits to those functions and values.

Management Goal: Maintain essential hydrological processes to support Covered Species and Natural Communities.

Recommended management actions are:

1. Monitor water levels and flows and the condition of marsh and riparian vegetation, in close cooperation among BLM, CDFG, the United States Fish and Wildlife Service (FWS), and the Coachella Canal Lining Committee to prevent the degradation and loss of aquatic, marsh, and riparian habitats.
2. CVWD or its successor or designee will continue to monitor the hydrological function of the RMU as provided for through the Coachella Canal Lining Project. As noted above, for this and the following measures, different entities may ultimately be involved in the long-term monitoring, operations, and management of the infrastructure created to ensure the ongoing functioning of the hydrological processes. Funding for it is expected to be provided as part of the mitigation obligations of SDCWA.
3. CVWD (or its successor or designee) will continue to implement mitigation measures associated with the Coachella Canal Lining Project, including water delivery and removal of invasive plant species.
4. Through the above actions, CVWD (or its successor or designee) will ensure adequate water delivery up to 4,850 acre-feet/year from the Coachella Canal through the lining project's infrastructure to maintain wetlands and riparian species throughout the Salt Creek system.
5. Provide technical assistance in these efforts to ensure proper mitigation of the effects of the canal lining.
6. As conditions warrant, the RMUC should develop additional management actions to address hydrological deficits resulting from causes other than the canal lining. Such actions could include drilling additional/deeper wells, modifying the delivery system to achieve greater benefits, and/or additional invasive species removal to reduce water demand.

2.3 Climate Change and Habitat Fragmentation

Climate change is an issue for the entire Colorado Desert including the Coachella Valley. Trends and predictions indicate that the area is gradually becoming more arid. The ability to move north to higher latitudes or up in elevation in response to this change will be essential for many species' prospects for persistence over time. In the Coachella Valley, areas in the northwest end of the Valley are cooler and wetter due to coastal influences in the Banning Pass area. Thus the ability of species to move northwest will be important. This need is being borne out by changes in the distribution of some species in response to recent climate change, including the Coachella Valley Jerusalem cricket (Cam Barrows, personal communication).

Prior to the construction of the Coachella Canal in the 1940s, the area comprising the Dos Palmas RMU was somewhat separated from other desert habitats due to the presence of the Salton Sea to the west and desert mountain ranges and hills to the north and east. However, this separation was not complete. The desert mountain ranges were, at most, only an impediment to the movement of the majority of species, and a major wash entering the area from the east provided connectivity, as did desert lands to the northwest and south. The construction of the Coachella Canal in the 1940s, north and east of the Dos Palmas RMU, caused significant habitat fragmentation. It forms nearly a complete barrier to the movement of many terrestrial species of animals.² Internal fragmentation has also occurred. A railroad runs roughly east-west through the RMU and a number of dirt roads crisscross it.

The isolation of Dos Palmas from surrounding desert land likely has little effect on bird species, particularly those that fly long distances, such as neo-tropical migrants which use its riparian habitats as 'stepping stones' (stop-over habitat). However, the Dos Palmas RMU is somewhat isolated in regards to the desert pupfish. Currently, the mouth of Salt Creek is not open to the Salton Sea, precluding the exchange of individuals from that broader population to that within the RMU and vice versa. This may result in inbreeding, founder effects, and genetic drift within the RMU population.

Development adjacent to or within the Dos Palmas RMU could result in indirect environmental effects. Commonly referred to as edge effects, they may include noise, lighting, drainage, intrusion of people, and the introduction of invasive plants and non-native predators such as dogs and cats. While there is currently only a small amount of development adjacent to or within the RMU, a successful restoration effort at the Salton Sea or other factors could result in significantly more development in the future. Such development could exacerbate habitat loss and fragmentation. There are many private non-conservation parcels in the Dos Palmas RMU. If a number of them were developed, habitat loss and fragmentation could be substantial. For this reason, land acquisition for conservation is one of the most important measures to address this threat. Where development is proposed, The Land Manager and the other RMUC members will have the opportunity to work with the CVCC to ensure that future development proposals adhere to the Land Use Adjacency Guidelines and, when appropriate, make specific recommendations for measures and actions related to them.

Vulnerability to climate change in the marsh and riparian habitats of Dos Palmas RMU may be mitigated somewhat by ground water sources provided by upwelling along the San Andreas Fault. Upland species and communities, which depend on rainfall, may be affected as the RMU becomes more arid. Climate change is resulting in increased frequency and intensity of wildfire in many areas. Given that lightning-caused fires would be expected to be rare in Dos Palmas, fire frequency is not likely to change substantially due to climate change alone. However, with the spread of invasive plant species and the predicted higher temperatures in the context of public access, fire frequency may increase, and fires can be

² The canal has siphons that cross under larger washes at several points providing a limited connection to adjacent desert lands.

expected to increase in intensity when they do occur. Higher fire intensity would result in increased mortality of native plants and animals and facilitate or exacerbate biological invasions of exotic grasses and Sahara mustard.

Management Goal – Climate Change: Ensure that species have the ability to shift their range in response to the effects of climate change on habitat and the distribution of natural communities.

Management Goal – Habitat Fragmentation: Avoid or minimize the potential for and effects of habitat fragmentation from causes including infrastructure and other development in the Conservation Areas, and edge effects from adjacent development.

Recommended management actions are:

1. Coordinate closely with the Monitoring Program to ensure that adequate monitoring and research is carried out to inform management actions that may be needed to address the potential effects of climate change and to assess the efficacy of management actions that may be taken.
2. Provide input into the Joint Project Review process for projects in or adjacent to Conservation Areas to ensure that habitat fragmentation and edge effects are minimized.
3. Ensure that fencing that may be desirable to address other issues, such as off-highway vehicle trespass and dumping, provide for the movement of wildlife. Interior fences should be removed where appropriate to facilitate wildlife access and movement.
4. Restore and enhance natural communities/habitats as needed to counter the effects of past disturbance and loss and to minimize habitat fragmentation and maximize the ability of Covered Species to shift their range in response to the effects of climate change.
5. Re-vegetate areas where exotic vegetation has been removed when natural regeneration of native vegetation is not sufficient to provide the desired composition and cover.
6. Remove vegetation in pupfish habitat as necessary to maintain optimal habitat conditions.³ Evaluate the potential use of prescribed fire (including efficacy and feasibility) as a tool to periodically revitalize marsh habitats.
7. Implement periodic translocation of desert pupfish to and from the Dos Palmas RMU as called for by the CDFG and or FWS (a pupfish refuge management plan is currently being drafted by CDFG) to maintain healthy, genetically diverse pupfish populations.
8. Create new habitat where appropriate and/or required to support the Covered Species at the levels anticipated by the CVMSHCP.
9. The Coachella Canal crossings provide some level of connectivity for terrestrial species. Work with the canal operator, CVWD, to maintain and perhaps enhance connectivity at these crossings. Consider enhancements to the washes under which the canal siphons cross that would facilitate wildlife use and movement.

³ Sharon Keeney, a biologist with CDFG is developing a management plan for pupfish refuges in California which will include protocols for managing vegetation in pupfish habitat.

2.4 Wildfire Management

Management Goal: Prevent damaging wildfires that reduce the ability of the RMU to support Covered Species and Natural Communities.

Recommended management actions are:

1. Work with the applicable fire suppression agencies to develop a fire management plan for the RMU to address pre-suppression and suppression issues in consideration of the needs of Covered Species to the extent feasible.
2. Implement pre-suppression measures as called for in the Fire Management Plan, in particular in areas subject to the potential for repeated wildfires, as part of the Annual Work Plan activities.
3. Provide fire suppression agencies with maps and other information (including the Fire Management Plan when completed) prior to and during wildfire incidents.
4. Obtain training in the Incident Command System for the Land Manager, other RMU land managers and key staff as needed, as soon as their schedules allow.
5. Within 3 years of approving the RMUP, ensure that key personnel have received wild land firefighter training to enable them to provide onsite, real time advice to suppression personnel during wildfire incidents.
6. As feasible and appropriate, provide for staff to participate in the suppression of wildfires in the RMU as part of the resource allocation associated with the annual work plans. As feasible, this should include sending one or more RMUC land management representatives to wildfire incidents to provide information and assistance. If available, place one or more "Red Card" holding field observers with fire suppression agency field personnel (Division or Battalion Chiefs).
7. Include the development and implementation of post fire rehabilitation actions as part of the Annual Work Plans following fire incidents.
8. Evaluate the feasibility and efficacy of prescribed burning to reduce the potential for catastrophic wildfire and/or as a means of restoring and enhancing habitat. Conduct prescribed burns if they are determined to be beneficial.

2.5 Other Management Issues

A number of other management issues also occur in the Dos Palmas RMU. These include potential impacts from off-highway vehicle trespass, geocaching, dumping and hazardous materials, power and gas lines, and public use and access. The potential impacts of these, at least at present, are considered to be less severe than those of invasive species; climate change, habitat fragmentation, and wildfire; thus, these other impacts are accorded a lower management priority. This is not to say they should be ignored, but as management resources are allocated, priorities need to be considered. These issues are discussed below.

Off-Highway Vehicle (OHV) Trespass

Illegal OHV use occurs at various locations throughout the CVMSHCP area including Dos Palmas RMU. The managing agencies report several discrete locations in the RMU where unauthorized OHV use is a problem. They include Oasis Springs Ecological Reserve, and portions of the BLM Area of Critical Environmental Concern (ACEC). In addition, an analysis of high resolution aerial imagery of the RMU revealed a number of off-road vehicle tracks extending from the primary public access roads. One source of OHV trespass is an adjacent Limited Use Area on BLM land to the north of the RMU. Limited Use Areas require vehicles to remain on designated routes which may include roads, trails, and washes. The Limited Use Area is fairly popular with OHV users and it is the only place in the greater Coachella Valley where significant legal OHV riding opportunities exist. Riders are often directed to this location from elsewhere in the Coachella Valley by land managers and law enforcement personnel, including members of the OHV Task Force. In addition, the number of OHVs using this area may increase in the future because portions of it, known as the Drop 31 area, are being considered for designation as a County OHV open riding area. Natural communities and species in upland areas are vulnerable to this OHV travel because much of the RMU lacks substantial natural barriers that limit the activity to the designated areas to the north.

OHV use may impact individual members of some Covered Species directly by running over them or crushing their burrows, and indirectly by degrading habitat through impacts to vegetation, erosion, noise, potential introduction of exotic species. Significant use in some areas could cause habitat fragmentation.

Recommended management actions are:

1. Develop and periodically update a map of the most severe impact areas.
2. Prioritize areas for active management as described in the following measures for incorporation into the Annual Work Plans.
3. Install and maintain perimeter fences and gates where needed, to prevent unauthorized vehicle use that can result in wildlife mortality and habitat degradation.
4. Post and maintain boundary/regulation signs at key locations along property lines including pedestrian and vehicle access points.
5. Install directional and regulatory signs as needed on access roads to assist visitors and reduce off-road vehicle travel.
6. Inventory access roads and, where feasible, re-route and/or close those which are redundant and/or causing significant resource impacts.
7. Install barriers to preclude access to closed routes and/or add vertical mulching to obscure previously used unauthorized routes to discourage future use.
8. Install additional visitor information kiosks and interpretive panels at trailheads and access points where needed. The Land Manager and the RMUC member entities should also outreach to local communities, including North Shore, to try to educate local ORV users about the resource values of the RMU and the importance of protecting them.
9. Maintain, and increase as needed and as resources allow, regular law enforcement patrols of the Dos Palmas RMU as part of the Annual Work Plans.

Geocaching

The website www.geocaching.com lists a number of geocache sites within the Dos Palmas RMU, including two in the Bat Cave Buttes, one at the Oasis Springs Ecological Reserve, and several along the Coachella Canal. Geocaching enthusiasts may cause impacts to natural communities and species when establishing or navigating to geocache sites on foot or by vehicle, or by including food or other items that could pose a hazard to wildlife.

Recommended management actions are:

1. Work with other RMUCs to develop a draft CVMSHCP area-wide geocaching policy for consideration by the RMOC.
2. Contact the geocaching website in the interim and request that current geocache locations in the RMUs be removed from the website.
3. As part of a future Annual Work plan, the RMUC should evaluate current geocache sites, to determine if they are causing impacts to natural communities or Covered Species and need to be removed or if these or alternatives sites are acceptable for this activity without causing such impacts.

Dumping and Hazardous Materials

Dumping is not widespread in the RMU due to its relative isolation from population centers. However, it does occasionally occur in some areas. One example is along the access road to the Dos Palmas ACEC (Ron Noordman, BLM, personal communication). BLM staff has been cleaning up the dumpsites in this area. The potential exists for a hazardous materials spill or release in the southwest corner of the Dos Palmas RMU from a vehicle travelling on Highway 111 or from a train travelling along the adjacent railroad track. If the currently inactive railroad track which bisects the RMU were to be reactivated, the potential for a spill would increase.

Recommended management actions are:

1. Include specific measures in their annual work plans to prevent and respond to dumping, including the strategic placement of fencing and barricades, signing, and communication between and within agencies about dumping issues, including communication between law enforcement personnel and Riverside County Code Enforcement.
2. Organize periodic cleanup events as needed involving volunteers from the local community could to clean-up and help prevent dumping and to build a local constituency in support of the RMU.
3. For hazardous material spills, work with the County of Riverside Hazardous Materials Response (HAZMAT) Team to ensure that the appropriate contingencies are in place for incidents involving hazardous materials as part of the first annual work plan. The HAZMAT team possesses the necessary technical expertise and capability to mitigate hazardous spill emergencies.
4. The Land Manager and current RMUC agency personnel should attend Hazardous Materials Awareness training as soon as their schedules allow, and new staff should receive this training within their first year. Note that California Water Environment

Association (CWEA) offers classes on source control and HAZMAT. Evaluate whether RMUC members would benefit from obtaining a 40Hr HAZMAT certificate.

Power and Gas Lines

There are approximately 33 miles of high voltage electrical transmission lines in the interior or along the boundary of the Dos Palmas RMU. See Figure 2-3. They pose a potential threat in the following ways: 1) they provide perches for raptors which could be used to prey on Covered Species such as the flat-tailed horned lizard, 2) raptors perching on the power lines could potentially be electrocuted, 3) a downed power line could be the ignition source for a wildfire, and 4) maintenance or repairs within the right-of-way could cause direct or indirect impacts to species or natural communities. A one mile long stretch of a gas line traverses the southwest corner of the RMU. As with electrical transmission lines, maintenance activities could result in environmental impacts. In addition, its rupture could result in an explosion and possibly a wildfire, resulting in impacts to communities and species.

Recommended management actions are:

1. Work cooperatively with the relevant utility companies to ensure that utility response plans for addressing the threats posed by power lines and gas lines appropriately consider the needs of Covered Species and Natural Communities, and to provide all personnel with the names and numbers of the relevant utility company contacts in the event a problem, such as a gas leak or downed or arcing power line/transformer, is detected. Measures to avoid and mitigate potential impacts from ongoing operations and maintenance of power and gas lines may include:
 - Modifying specific fuels under the power lines to reduce the potential for wildfire.
 - Modifying the power poles to discourage raptors from perching.
 - Identifying sensitive resources, if any, under (or in the case of the gas line, on top of) the utility lines and incorporating site-specific measures to avoid, minimize, and mitigate impacts to them during maintenance and repairs.

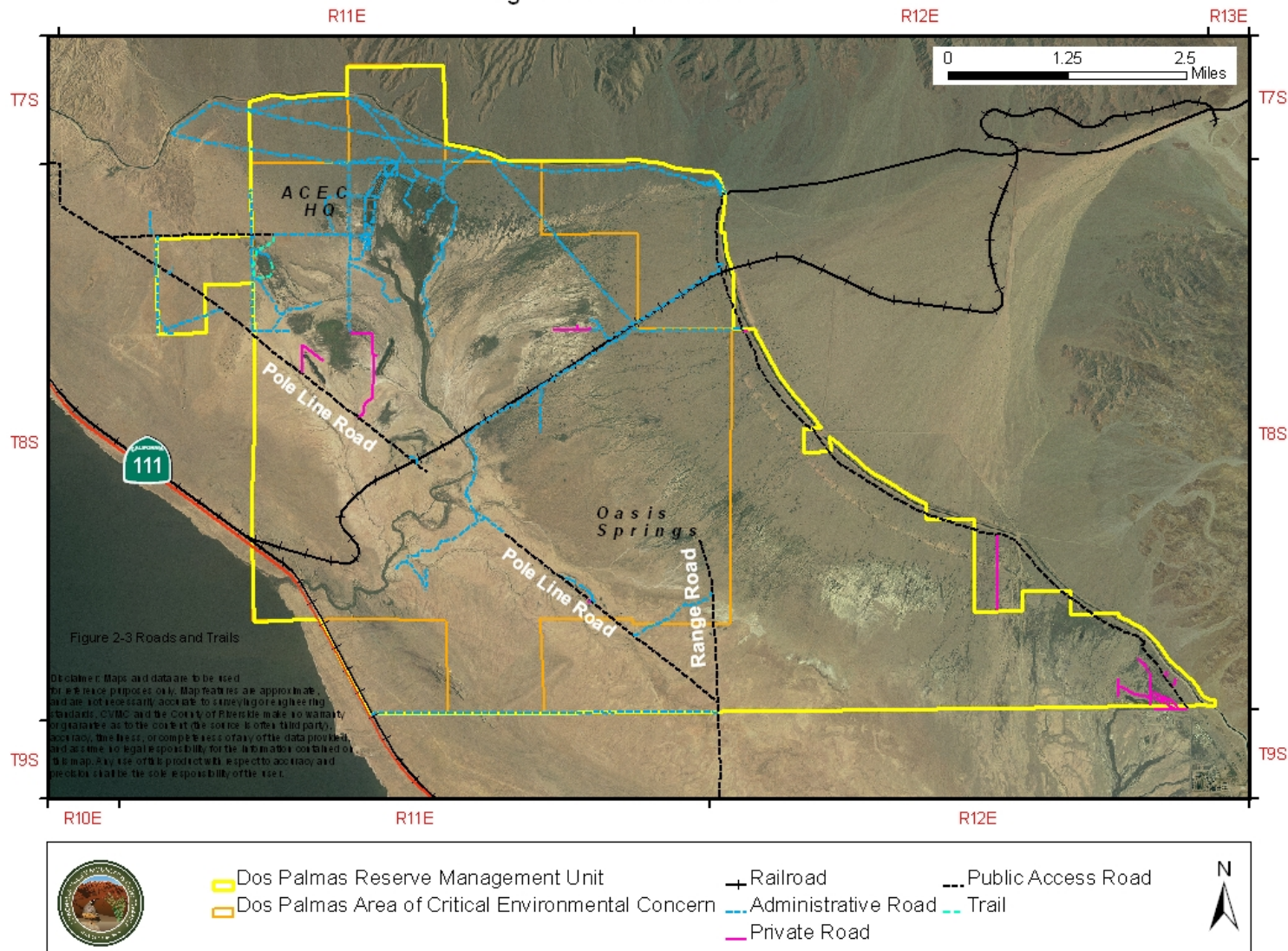
Public Access and Recreation Activities

Existing public uses at Dos Palmas RMU include hiking, photography, bird watching, picnicking, and similar activities. Hunting, fishing, and swimming currently occur in some areas. BLM, through its rule-making process, is considering prohibiting or restricting fishing and swimming to protect sensitive resources. Vehicles are permitted on a number of the established dirt roads. Springs, ponds and other water features are generally not accessible to the public by vehicle; they must walk in to reach these water features from nearby parking at trailheads. In addition to those activities which are currently allowed, there may be additional opportunities for passive recreational activities. Generally, though, new opportunities are expected to be limited due to the vulnerability of some of the natural communities to disturbance and invasive species infestations.

Figure 2-3 illustrates the RMU road and trail system. There are approximately 65 miles of dirt roads, including those on the RMU boundary and in its interior. Some of the roads provide public access, others provide access to private dwellings and facilities, and yet others are limited to administrative use. Some may be the result of illegal off-road vehicle use. There are four primary access roads open to the public. From the west, visitors can access the western part of the RMU and the ACEC off Highway 111 via Parkside and Desertaire, two Riverside County maintained roads. The eastern part of the RMU, including Oasis Springs Reserve, can be accessed from Range Road, which intersects Highway 111 in Imperial County. Range Road is approximately 6 miles long. It travels north entering the RMU after about 4 miles and ending at Oasis Springs Ecological Reserve. Range Road intersects another primary access road, "Pole Line" road, shortly after entering the RMU. Pole Line road travels northwest into the RMU toward Salt Creek. It becomes very rough as it nears Salt Creek and does not cross it. The last primary access road is a connection to the Bradshaw trail, a historic route popular with off-highway vehicles (OHVs). This road enters the RMU near its southeast boundary. It parallels the entire eastern edge of the RMU intersecting Bradshaw trail near the RMU's northeast corner. There are branches off each of the primary access roads. Some of these branches are established dirt roads; others appear to be created by OHV users. The established dirt roads are intended primarily for administrative purposes but there is some public use.

Hikers are generally allowed on all BLM land within the Dos Palmas RMU; Equestrian use is not prohibited per se, but sensitive areas are a concern and riders need to make advance arrangements for access to the Dos Palmas ranch area. Public vehicle access is limited, and where permitted, it is restricted to designated routes. The road leading to the Dos Palmas ranch area is gated and locked along the northern boundary of Section 9, limiting access into the Dos Palmas ranch facilities, Dos Palmas Oasis, and the artificial ponds to administrative purposes. As shown in Figure 2-14: Dos Palmas RMU Existing and Proposed Facilities, there is a parking area for visitors at the San Andreas Oasis trailhead and there is a picnic area further to the east at the Barn Ponds. Hiking trails within the ACEC include about 0.5 miles leading to the San Andreas Oasis and about 0.25 miles through one of the old agriculture fields to access the wildlife ponds. In addition, maintenance roads and unmaintained maintenance vehicle tracks are also open for hiking/walking; there are an estimated 20 miles of roads/vehicle tracks throughout the northwest part of the ACEC. BLM lands elsewhere in the ACEC are not as well monitored as the land in the vicinity of the ranch house, ponds, and San Andreas Oasis, but motorized vehicle use on BLM lands in these areas is restricted to designated roads. A caretaker does live on site to provide a presence. There is also a BLM ranger whose territory includes Dos Palmas, but because their overall patrol territory is quite large, the amount of time they can spend patrolling the ACEC is limited. There is no organized environmental education program and there are no docents, but occasionally a BLM staff person or the caretaker will escort a group to do some environmental education, birding, or volunteer work. BLM does not record public visitation to the ACEC. Anecdotally, Jill J. Beckmann, Natural Resource Specialist for Dos Palmas, reports that in most of the year "there is almost always at least one car in the parking lot whenever I go down there, but in the summer, visitor use is quite low."

Figure 2-3: Roads and Trails



A single dirt road, Range Road, provides access to the Oasis Springs Ecological Reserve. The road ends at a dirt parking area near the actual oasis. Visitors are allowed to walk in to the oasis from the parking area. Upland game hunting is permitted in the Reserve with the exception of areas immediately adjacent to a water source (Eddy Konno, CDFG, personal communication). There are no organized events for the public other than occasional staff led volunteer projects. Non-law enforcement personnel occasionally visit the Ecological Reserve to perform maintenance activities. Fish and Game Warden patrols are infrequent due to the large size of their patrol areas and to current personnel vacancies.

With the exception of dirt roads which provide access to some of the other Reserve Lands, there are no other developed public use facilities in the RMU. There is some public use of these areas, including OHV travel and Geocaching.

The uses described above are generally considered by the CVMSHCP to be conditionally compatible, allowable uses; the plan does not specifically list swimming or fishing, but like other “passive recreational activities,” they cannot be allowed in a manner which causes adverse impacts to Reserve Lands. Riparian, aquatic, and marsh communities and associated species are particularly vulnerable to environmental impacts associated with recreation, including the intentional or unintentional introduction of invasive species and habitat degradation from physical alteration, litter, and pollutants. This presents a challenge, because many visitors are attracted to the water features of Dos Palmas RMU, particularly where swimming and/or fishing is possible. Maintaining or locating facilities close to water and/or continuing to allow fishing and swimming will likely increase the risk of unacceptable impacts to Covered Species and these communities.

Section 7.3.4.2 of the CVMSHCP, Guidelines for Public Access and Recreation on Reserve Lands, defines passive recreational uses as including hiking, bird watching, photography, mountain biking, horseback riding, picnicking, scientific research, and hunting. To be considered compatible, these uses must not adversely impact Reserve Lands and cause only minimal disturbance to biological resources. The Guidelines for Public Access and Recreation provide 1) Criteria for the Siting and Design of Trails and Facilities, and 2) Guidelines for Public Use and Maintenance. These criteria and guidelines were developed to regulate the covered access activities in order to provide sufficient protection for natural and biological resources on Reserve Lands.

Management needs related to public access and use include law enforcement, public education and interpretation, and facility maintenance. Currently BLM has limited staff onsite to maintain facilities and interact with visitors. As described in Section 6.4, BLM, CDPR and CDFG have a limited number of law enforcement officers who patrol their lands in the RMU as part of a larger patrol responsibility. Currently, there are no staff stationed onsite specifically to provide public education and interpretation services. With the addition of the appropriate facilities, current staffing levels may be adequate to manage the existing levels of public use. However, if public use increases over time or significant new uses or programs are added, such as environmental education and regular volunteer events, it will be necessary for one or more of the reserve managers to add additional staff.

Management Goal: Provide for public use (including maintaining existing levels of public use and access with facilities such as trailheads and parking lots) in a manner that is consistent with the conservation goals and objectives of the Coachella Valley Multiple Species Habitat Conservation Plan and ensures public safety on Dos Palmas RMU lands.

Recommended management actions are:

1. Include regular law enforcement patrols of the Dos Palmas RMU in annual work plans.
2. Coordinate law enforcement among CVCC, BLM, CDPR, CDFG, Riverside County Sheriff, Riverside County Code Enforcement, and the OHV Task Force, including patrol responsibilities and procedures, as part of the first Annual Work Plan.
3. Ensure that the existing agreement between CDPR and BLM, which provides for state park peace office patrols in the ACEC in exchange for BLM ranger patrols on state park lands in the Indio Hills, should be maintained and reflected in the Annual Work Plans.
4. As part of the first Annual Work Plan, use the Guidelines for Public Access and Use to evaluate current public uses for consistency with the CVMSHCP Conservation Goals and Objectives. If a use is found to be inconsistent, develop an alternative to maintain the use and ensure its consistency if feasible (e.g., modification or seasonal restriction), or prohibit that use in the future. This may include limiting or prohibiting fishing, hunting and/or swimming in specified areas to protect covered and other special status species and, in the case of hunting, to ensure public safety. Once the recommendations are adopted, the individual agencies and entities would codify them through their internal rule making processes.
5. Within 3 years of the approval of the RMUP, using the initial list of facilities as a baseline, identify any new facilities needed to make the activities compatible under the guidelines. Facilities include structures, roads and trails, trailheads, picnic areas, visitor information kiosks, interpretive panels and signs. From these evaluations, a comprehensive Public Access and Use program should be developed. As appropriate, the RMUC members should incorporate the relevant elements of the Public Access and Use program into their individual land use management plans, and the needed resources to manage those uses should be identified in the Annual Work Plans.
6. Use the Guidelines for Public Access and Use to evaluate new public use and access proposals from the Trails Subcommittee, other entities, or private individuals, and make a recommendation as to whether or not the Public Access and Use program should be amended to include them. Should additional uses be included, identify the needed resources to manage those uses in the Annual Work Plans.
7. Consult with the Trails Management Subcommittee when considering the location of new trails and trailheads.

Proposed Facilities

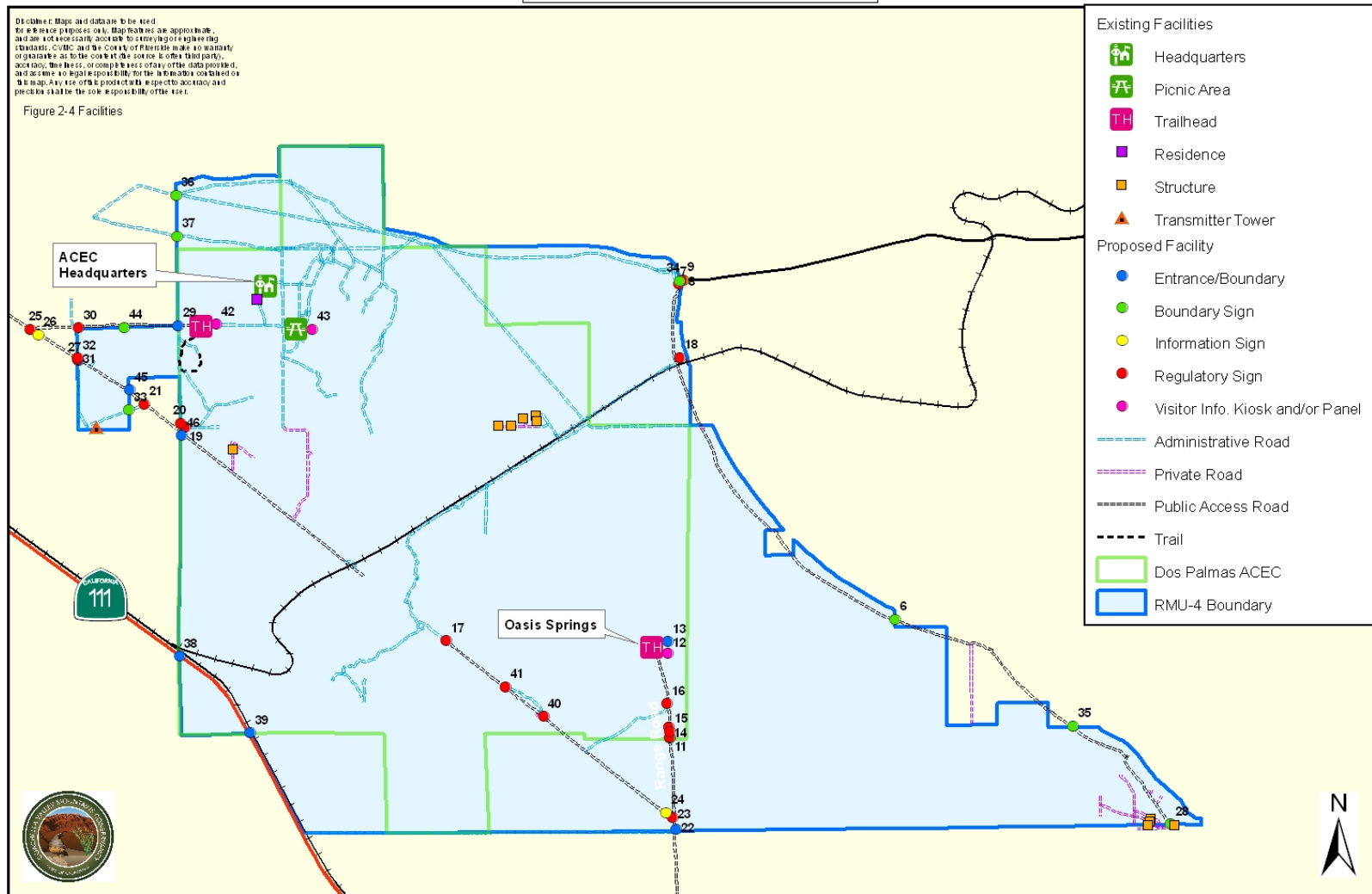
An initial list of proposed facilities is included in this plan (See Table 2-1 and Figure 2-4). Note: The number and location of signs in Table 2-1 is approximate; the final determination should be made after field surveys are conducted by the Reserve Managers.

Table 2-1: Proposed Facilities

ID	Type	Description	Owner
6	Sign	Regulatory	BLM
7	Sign	Regulatory	BLM
8	Sign	Information	BLM
9	Sign	Regulatory	BLM
10	Sign	Boundary	BLM
11	Sign	Regulatory	BLM
12	Kiosk and Interpretive Panel(s)	Visitor Information	CDFG
13	Sign	Entrance/Boundary	CDFG
14	Sign	Regulatory	BLM
15	Sign	Regulatory	BLM
16	Sign	Regulatory	BLM
17	Sign	Regulatory	BLM
18	Sign	Regulatory	BOR
19	Sign	Regulatory	BLM
20	Sign	Regulatory	BLM
21	Sign	Regulatory	Private
22	Sign	Entrance/Boundary	BLM
23	Sign	Regulatory	BLM
24	Sign	Road Ends	BLM
25	Sign	Regulatory	BLM
26	Sign	Road Ends	Private
27	Sign	Entrance/Boundary	BLM
28	Sign	Boundary	Private
29	Sign	Entrance/Boundary	BLM
30	Sign	Regulatory	BLM
31	Sign	Regulatory	BLM
32	Sign	Regulatory	BLM
33	Sign	Boundary	BLM
34	Sign	Boundary	BLM
35	Sign	Boundary	BLM
36	Sign	Boundary	BLM
37	Sign	Boundary	BLM
38	Sign	Entrance/Boundary	BLM
39	Sign	Entrance/Boundary	BLM
40	Sign	Regulatory	IID ROW
41	Sign	Regulatory	IID ROW
42	Interpretive Panel(s)	Visitor Information	BLM
43	Interpretive Panel(s)	Visitor Information	BLM
44	Sign	Boundary	BLM
45	Sign	Entrance/Boundary	BLM
46	Sign	Entrance/Boundary	BLM

Reserve Management Plan for Dos Palmas RMU

Figure 2-4: Existing and Proposed Facilities



3.0 Processes and Structure for Management, Adaptive Management, and Integration with Monitoring.

The preceding section identifies the recommended management actions by threat/stressor for the Dos Palmas RMU. More specific management goals, actions, and priorities, including thresholds for success, should be determined each year and listed by agency and entity in the Annual Work Plan, recognizing that the number and prioritization of management actions will change over time as a result of changing conditions. To ensure the success of projects, the Annual Work Plan should identify and commit staffing and funding (to the extent possible) to those projects which will require multi-year funding to complete, including initial and follow-up actions. The outcome of each planned action should be reported in the Annual Report for the RMU.

While the management plan is intended to be comprehensive for the RMU, it is recognized that each participating agency and entity will be responsible for its implementation on the Reserve Lands which they manage. As such, implementation will be affected by each agency's and entity's mission, mandates (as defined by applicable regulations, land use plans and other documents), and the amount of resources, i.e., staffing and funding, they have available.

Implementation of a comprehensive plan for the entire RMU will provide an opportunity to reinforce and build upon the existing close coordination and cooperation in management of the reserve lands within the RMU. As additional Conservation Lands are acquired by CVCC and other agencies and entities, management of these lands will be the responsibility of the acquiring entity, but should be integrated with the management of Existing Conservation Lands such that the entire RMU is addressed comprehensively. The RMUC will play a crucial role in providing a mechanism for the Land Manager and RMUC member entities to coordinate and collaborate in developing and implementing their respective annual work plans.

Linking the Monitoring Program with Adaptive Management actions will inform reserve managers of the status of Covered Species, natural communities, and Essential Ecological Processes, as well as the effectiveness of management actions, in a manner that provides data to allow informed management actions and decisions.

The Monitoring Program Administrator (MPA) is responsible for coordinating with reserve managers to facilitate the exchange of Monitoring Program data. Likewise, the Land Manager has the responsibility to facilitate the exchange of information regarding all completed and proposed management and Adaptive Management actions.

Facilitating Adaptive Management is a primary reason for coordination between the monitoring and management programs. The essence of Adaptive Management is the integration of design, management, and monitoring to test assumptions systematically in order to adapt and learn. An active Adaptive Management strategy utilizes an experimental approach to address the need for new knowledge about the nature of a threat, or the affect

of a variable, or a new active management strategy or to reduce uncertainty about an ecological question.

New and modified management actions will periodically be necessary as indicated by the results of the Monitoring Program in regard to unanticipated changes in the needs of species, natural communities, and ecological processes. They will also be necessary in response to information from the monitoring program about the effectiveness of current management techniques and actions. The Adaptive Management Conceptual Model from Section 8-5 of the CVMSHCP is shown in Figure 3-1 below. It illustrates the Adaptive Management process.

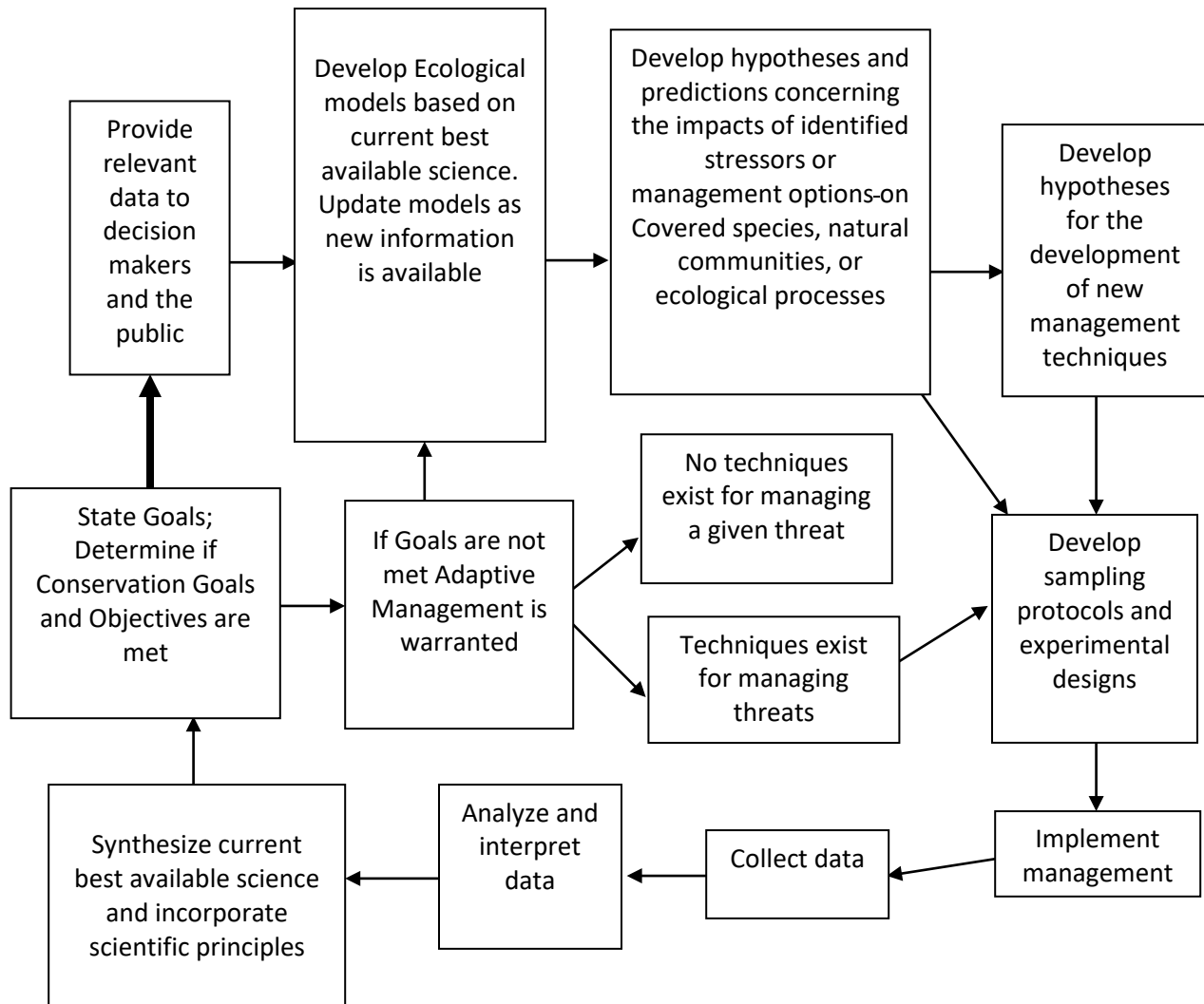
Goal: Provide for an ongoing, dynamic system of information gathering and exchange between the MPA and the RMUC (the Land Manager and Reserve Managers) to facilitate close coordination between the Management and Monitoring programs, including the identification, implementation, and evaluation of Adaptive Management Measures.

Recommended actions are:

1. The Land Manager and the MPA should coordinate on a regular basis to ensure an adequate two-way flow of information regarding information being generated by the Monitoring Program, the results of various management actions, and information and research needs. The Land Manager can coordinate with the RMUC member entities to ensure the full flow of information.
2. Coordinate with the MPA to evaluate the efficacy of Adaptive Management actions and associated experiments; both those which are proposed and those which have been implemented.
3. In addition to the preceding informal collaboration, the MPA, Land Manager and the Reserve Managers should discuss the results of the Annual Monitoring and Management efforts at an RMUC meeting. Based on the results they should:
 - Identify a list of needed Adaptive Management actions, experiments to test alternative responses, and associated monitoring needs.
 - Identify current research needs and make recommendations for their implementation.
 - Evaluate current Adaptive Management measures for further use or modification.
 - Develop a list of Adaptive Management recommendations for the Annual Management and Monitoring Work Plans.
 - Review the Threats Models and make recommendations for their updating.
4. Finalize their Adaptive Management recommendations and submit them to the RMOC for review and approval.
5. Per Section 8 of the CVMSHCP, as needed, or every 5 years, the RMOC may empanel a group of Independent Science Advisors (ISAs), which will, in coordination with the MPA, provide scientific expertise and recommendations on specific reserve management and monitoring issues. This process will help to ensure that the best available scientific information and methods are employed in the Monitoring and Management programs, including Adaptive Management.

6. The CVMSHCP provides for a research component that will be funded and implemented by the Permittees. Research needs will evolve over time and will be identified by the same process used to evaluate monitoring and management protocols and results.

Figure 3-1: Adaptive Management Conceptual Model



4.0 Responsibilities for Implementation

The CVCC, its Land Manager, and the other Reserve Management Unit Committee members (Reserve Managers) are responsible for the implementation of the Reserve Management Unit Plan. This commitment to collaboratively manage Reserve Lands is articulated in the CVMSHCP, and in the pending Memorandum of Understanding for Management of the Reserve Management Units. Specific responsibilities and commitments for each year will be articulated in the Annual Work Plan.

4.1 Work Plan and Schedule

The Land Manager, in coordination with the RMUC, will prepare an Annual Work Plan to be reviewed and commented on by the RMOC, and then submitted to the CVCC for budget approval. The Annual Work Plan will specify CVCC's responsibilities and identify anticipated actions by other RMUC member entities. Appendix II contains an Annual Work Plan template. The Annual Work Plan will describe the conserved lands, the potential threats and proposed management prescriptions, a work schedule for management actions, and a budget. It will be outcome based, with each agency and entity setting measureable management goals.

4.2 Personnel, Equipment, and Supplies

Each of the RMUC members is expected to provide personnel, equipment and supplies to implement the management actions identified in the RMUP. The specific contribution of each member should be delineated in the Annual Work Plan. It should be noted that the term "Reserve Manager" used in this document refers to RMUC member agency staff other than the CVCC. As identified below, CVCC management staff are referred to as "Reserve Land Manager" and "Assistant Reserve Manager".

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The CVMSHCP Management Program Budget identifies the following personnel and categories of equipment and supplies:

Personnel (for the entire Reserve System)

- Reserve Land Manager
- Assistant Reserve Manager (4)
- Ranger-Warden (2)
- Field Crew Labor (contract)
- Administrative Assistant (0.25-0.5)

Equipment and Supplies

- Site Protection and Maintenance
- Habitat Maintenance and Restoration
- Field Equipment and Supplies
- Office Equipment

A line item budget amount is associated with each position and with each equipment and supply category. Initially, only one Assistant Reserve Manager is funded, with the additional three positions phased in over time.

A portion of the CVCC staff, equipment, and supply resources will be dedicated to the Dos Palmas RMU. This will occur as the CVCC acquires Conservation Lands in the RMU and/or if it becomes a partner in one or more cooperative management efforts. The amount of CVCC staffing, equipment, and supplies necessary to implement the Dos Palmas RMUP will be determined over time as lands are acquired and partnership opportunities become available.

Other Agencies and Entities

Staffing levels for BLM, CDFG, CDPR and CNLM are expected to vary over time depending on the management needs of the plan and the ability of each agency and entity to contribute to meeting them.

See Appendix III for a three year management cost estimate for the RMU. It includes personnel equipment, and supply estimates for each management action.

4.3 Law Enforcement

Three agencies with land management responsibilities in the RMU have law enforcement personnel: BLM, CDPR and CDFG. In addition, the Riverside County Sheriff and Code Enforcement have jurisdiction over private lands. The law enforcement capability of the three agencies in the RMU varies. CDPR has personnel on staff at the Salton Sea State Recreation Area, BLM has a contingent of rangers responsible for patrolling BLM lands within the South Coast, Palm Springs Field office, including the Dos Palmas ACEC, and CDFG has a game warden based in the El Centro area. Patrol areas can be very large, particularly in the case of the CDFG warden, making it difficult to provide a regular patrol presence in the RMU. Position vacancies and the inability to fill them in a timely manner due to budget constraints and other factors can aggravate the problem. BLM law enforcement personnel patrol the Dos Palmas ACEC at least weekly. In addition, the BLM has an agreement with CDPR for State Park peace officers to patrol BLM lands in the Dos Palmas area in exchange for BLM rangers' patrolling State Park lands in the Indio Hills (RMU 1).⁴ This type of cooperation can help leverage available law enforcement resources.

As stated above, the CVMSHCP provides for the funding of two ranger/warden positions. It is anticipated that a portion of their time will be dedicated to patrolling the Dos Palmas RMU in coordination with other agencies with law enforcement responsibilities in the area. See Appendix III for a three-year management cost estimate for the RMU, including an estimate of law enforcement costs.

⁴ CDPRs ability to participate in this agreement has been limited in recent times due to unfilled vacancies resulting from the States' fiscal crisis.

4.4 Program Cost Estimates

An accurate determination of the program costs for the life of the plan is not possible due to unknown factors, including the ultimate acreage and composition of the Reserve Lands which will be managed by the CVCC and its partners, and to uncertainties concerning future conditions, e.g., the number and extent of threats and stressors. A cost estimate of near term costs, those expected in the next 3 years, can be found in Appendix III. This portion of the plan will be reviewed and revised by the RMUC every three years to reflect current management needs and costs.

4.5 Funding for Implementation

CVCC Reserve Lands

The Permittees (CVCC) will fund the annual costs for the Monitoring and Management Program, and Adaptive Management for the 75-year term of the Permits. During the 75-year term of the Permits, an endowment will be established to fund the Monitoring Program, the Management Program, and Adaptive Management in perpetuity. Funding sources for CVCC's obligations include but are not limited to:

- Local Development Mitigation Fees
- Fees on the importation of waste into landfills in Riverside County
- Transportation project mitigation
- Mitigation for regional infrastructure projects
- Eagle Mountain Landfill Environmental Mitigation Trust Fund⁵

Table 5-3b in Section 5 of the CVMSHCP provides revenue and expenditure projections for the 75 year life of the plan. Due to the recent economic downturn, funding amounts for monitoring and management are less than projected.

Other Conservation Lands

The CVCC through the Land Manager and the reserve managers, i.e., BLM, CDFG, CDPR and CNLM have agreed to cooperatively manage the Dos Palmas RMU consistent with the Conservation Goals and Objectives of the CVMSHCP. A cooperative and collaborative approach should result in greater management efficiency by eliminating redundancy and providing the opportunity to pool resources. It should also create funding opportunities through the grant application process that might not otherwise be available, e.g. grant funds which are targeted to Natural Communities Conservation Planning areas.

Goal: Cooperatively manage the Dos Palmas RMU consistent with the Conservation Goals and Objectives of the CVMSHCP.

⁵ The Eagle Mountain Landfill was expected to provide a significant source of management funds; however, the landfill project may not occur, in which case CVCC will have to identify or develop replacement funding sources.

Recommended actions are:

1. As part of their annual budgeting process, the Reserve Managers should coordinate with the Land Manager to identify management funding needs and responsibilities for the coming year. This information may be used by Reserve Managers to make their respective annual funding requests. Their annual management budget for the RMU and the associated goals, outcomes, and targets, will be included in the Annual Work Plan.
2. Every three years the Land Manager and the Reserve Managers will develop a cost projection, for managing the RMU over the next (following) three years.
3. Utilize the three year management cost estimate and subsequent revisions to help obtain funding for implementation by providing information which can be used in advance budget planning and the preparation of competitive grant applications.

Grants

A number of grant opportunities are available which could potentially provide management funding. They include but are not limited to:

- Wildlife Conservation Board Grants
- Cal-Fire Vegetation Management Grants
- California Recreational Trails Program Grants
- California Off-Highway Motor Vehicle Recreation Division Grants
- CDPR (State Parks) Stewardship Grants (Internal to CDPR)
- North American Wetlands Conservation Act Grants
- U.S. Neotropical Bird Conservation Act
- National Fish and Wildlife Foundation Grants⁶

Detailed information about grant opportunities can be found in Appendix IV

It is recommended that the RMUC, with the Land Manager serving as coordinator, meet at least annually to identify grant opportunities and timing, to determine grants it wishes to pursue and to assign responsibility for grant preparation and receipt.

4.6 Partnership Opportunities

There are a number of partnership opportunities in Dos Palmas, some of which are already in place. Current partnerships include:

- BLM, CDFG, and CNLM are working cooperatively to control tamarisk in the Salt Creek Watershed. CDFG helped BLM obtain a \$610,000 grant from WCB for the project.
- RMUC members BLM, CDFG, CDPR, and CNLM are signatories to a Memorandum of Understanding for the Low Desert Weed Management Area “to promote and

⁶ These grants are targeted to specific areas, natural communities, and species, so they may or may not be applicable to the Dos Palmas RMU in a given year.

formalize cooperative relationships necessary for effective management, coordination, and implementation of noxious weed program.” As part of that cooperative effort, the Southern Low Desert Resource Conservation and Development Program (RC&D) Weed Management Area group, worked with the BLM, CNLM, and CDFG to apply for a \$75,000 North American Wetlands Conservation Act (NAWCA) grant to control tamarisk on private property in the Salt Creek Watershed, having secured permission for treatment from the largest private, non-conservation private property owner.⁷

- The BLM recently partnered with teachers and students from the Palm Springs Unified School District, other volunteers, and the inventor of an innovative waterbox which collects and delivers rainwater to individual plants to re-vegetate areas where tamarisk has been removed.
- The BLM has partnered with researches from Cal-State LA to study the hydrology of Dos Palmas ACEC, research which yielded valuable management information.
- The Coachella Canal Lining Project mitigation program has resulted in coordination and a large partnership of agencies intent on seeing the project through to completion, including by solving various associated environmental problems by conducting on-going research and mitigation efforts.

In cooperative efforts in the future, the RMUC could:

- Apply for additional invasive species control grants including from the California Department of Agriculture, NAWCA, or other entities in partnership with the Southern Low Desert RC&D and other entities.
- Partner with various entities including Riverside County Community Improvement Department, waste disposal companies, and non-profit conservation groups to sponsor volunteer clean ups in the RMU.
- Organize additional volunteer events including invasive species control, e.g. Sahara mustard and tamarisk, and planting native vegetation.
- Work with the OHV task force to focus some of its time on illegal off-road vehicle use in the RMU.
- In coordination with the MPA, partner with universities or other entities to conduct applied and basic research with the purpose of obtaining information useful to management.
- Pool funds between its members for signing, fencing, and other items.
- Share equipment and/or personnel to maintain facilities, monitor resources, patrol the RMU, and accomplish larger projects.

⁷ The grant application was not approved but may be resubmitted in 2010.

The CVCC is working with the LDWMA to become a signatory to the LDWMA MOU and participate in related activities such as invasive species control grant applications.

4.7 Data Storage and Analysis

The collection and storage of data in a manner which facilitates its easy retrieval and analysis is crucial to the success of both the monitoring and management programs. It should enable managers and wildlife agencies to evaluate the efficacy of conservation measures, and to develop and implement Adaptive Management measures as needed.

Section 8.6 of the CVMSHCP, Data Storage and Analysis, addresses data management, including database consolidation, data handling and storage, data availability, and data compilation and analysis.

Key aspects of the data management program for land managers in the RMU are anticipated to be the development of standard and comprehensive data forms which facilitate the collection of consistent and robust data, and the ability to easily retrieve the data for analysis to assist in the development and evaluation of management actions.

The CVCC has applied for grants to fund the development of a robust, standardized database for the CVMSHCP. CVCC staff will work with the MPA, the Land Manager and the other members of the RMUC, the RMOC, and other entities to develop the reserve management and monitoring portion of the database.

Goal: Develop a land management database which is integrated with the monitoring database, which provides open access and easy data retrieval and transfer, which contains an easy to use field user interface, and which complies with applicable standards, e.g., the North American Invasive Plant Mapping Standard.

Actions:

1. Develop a land management database which is integrated with baseline and monitoring data and which provides for robust data queries and analysis.
2. Develop standardized data entry formats and forms for field personnel.
3. Identify who is responsible for data management tasks.
4. Identify the process for access to and communication of data.

4.8 Reporting

An Annual Report will be prepared by the Land Manager in cooperation with the other Reserve Managers which summarizes management activities in the previous year. It will include completed and proposed management actions, including Adaptive Management actions. It will also discuss any significant issues encountered during implementation of the management program. This will be incorporated in the CVCC's Annual Report.