



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

Valley Floor Reserve Management - Unit 1

Reserve Management Unit Plan

Conservation Areas:

Cabazon, Stubbe and Cottonwood Canyons, Whitewater Canyon, Snow Creek/Windy Point, Highway 111/I-10, Whitewater Floodplain, Upper Mission Creek/Big Morongo Canyon, Willow Hole, Long Canyon, Edom Hill, Thousand Palms, West Deception Canyon, Indio Hills/Joshua Tree National Park Linkage, Indio Hills Palms, and East Indio Hills Conservation Areas.



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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 Valley Floor RMU, which is one of the 6 RMUs identified in the CVMSHCP. An RMU may be comprised of just one or multiple Conservation Areas identified in the CVMSHCP. The Valley Floor Reserve Management Unit (RMU 1) consists of the Cabazon, Stubbe and Cottonwood Canyons, Whitewater Canyon, Snow Creek/Windy Point, Highway 111/I-10, Whitewater Floodplain, Upper Mission Creek/Big Morongo Canyon, Willow Hole, Long Canyon, Edom Hill, Thousand Palms, West Deception Canyon, Indio Hills/Joshua Tree National Park Linkage, Indio Hills Palms, and East Indio Hills Conservation Areas, totaling approximately 140,900 acres which are located principally on the floor of the Coachella Valley.

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 will 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 RMUs among the various entities involved through the establishment of a Reserve Management Unit Committee (RMUC) for each RMU, as well as a Reserve Management Oversight Committee (RMOC). 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 Making Process for the Monitoring and Management Program

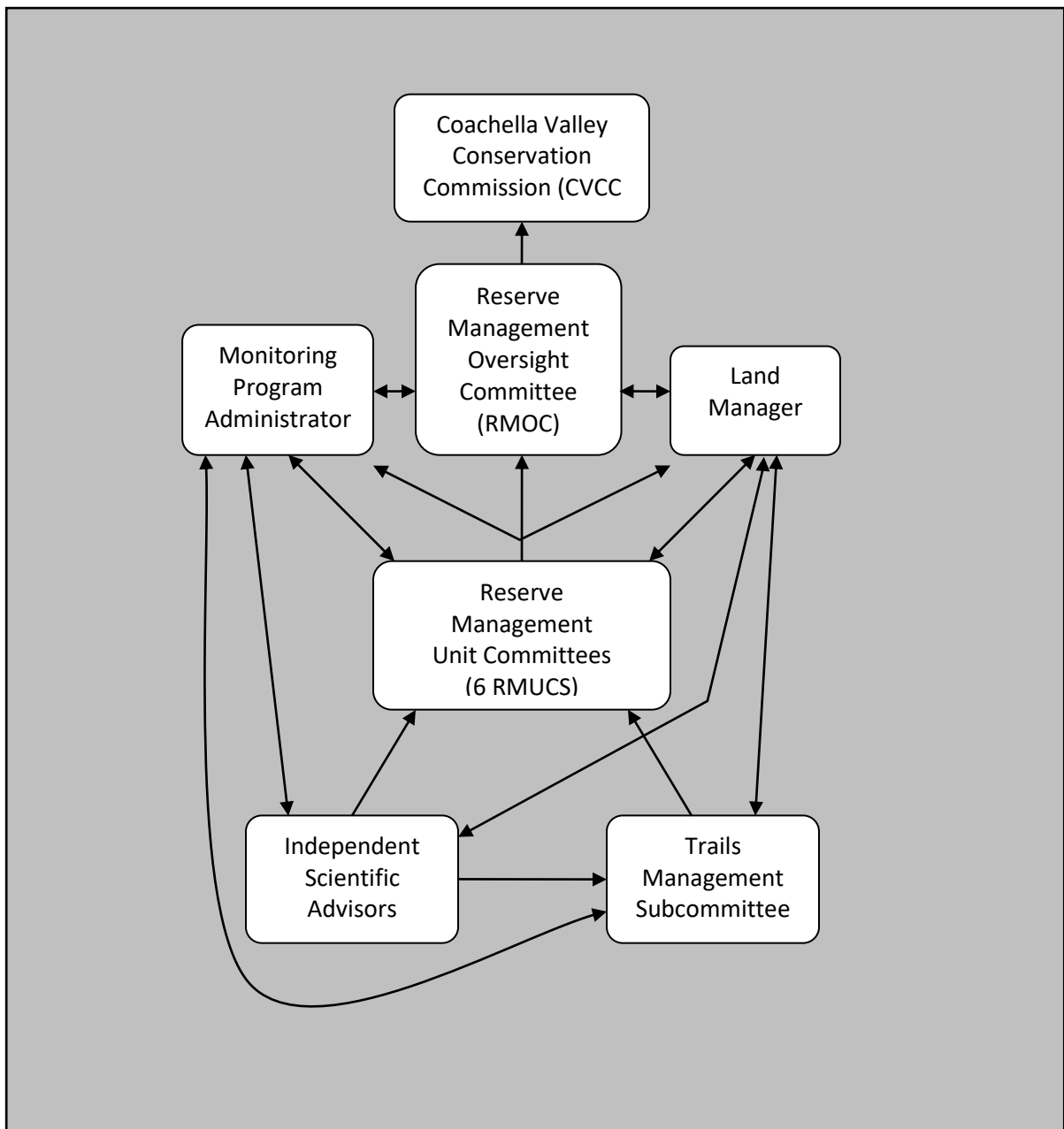
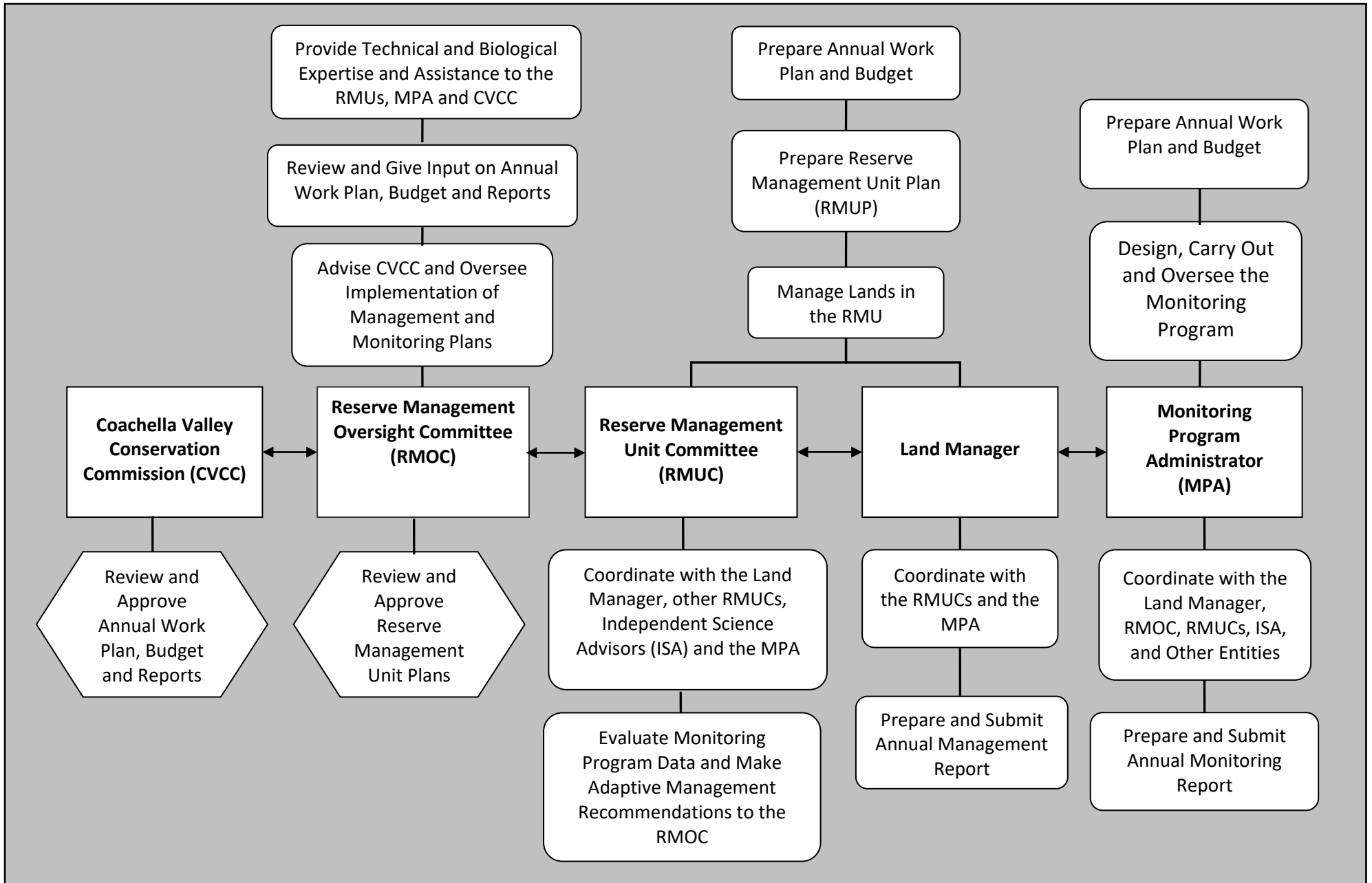


Figure 1-2: Organizational Responsibilities for the Monitoring and Management Program



1.2 Reserve Management Unit Background

Figure 1-3 depicts the location and boundaries of RMU 1. The Valley Floor RMU stretches generally from the western boundary of the CVMSHCP area in Cabazon east to the east end of the Indio Hills, and from the toe of slope of the San Jacinto Mountains in the Snow Creek area north to the toe of slope of the San Bernardino and Little San Bernardino Mountains and, in some cases, into the mountains north to the San Bernardino County line. This RMU includes portions of the BLM and USFS San Gorgonio Wilderness; the BLM Morongo Canyon Area of Critical Environmental Concern (ACEC); the BLM Whitewater Canyon ACEC; a portion of the Santa Rosa and San Jacinto Mountains National Monument, the original Coachella Valley Fringe-toed Lizard Preserve, which includes BLM ACEC lands, CDFG Ecological Reserve lands, USFWS National Wildlife Refuge lands, and State Parks lands, as well as lands owned lands owned or managed by the Center for Natural Land Management (CNLM) and lands owned by the Nature Conservancy and managed by CNLM; the Willow Hole-Edom Hill Preserve/ACEC; the Whitewater Floodplain Preserve (part of the original CVFTL Preserve system, these are lands owned by CVWD); the CDFG Sky Valley Ecological Reserve; additional State Parks lands managed as part of the Indio Hills unit. Several other entities also own land for conservation purposes in this RMU, including Devil's Garden Riverside County Regional Park; The Wildlands Conservancy's Mission Creek Preserve and Whitewater Preserve; and other lands owned by the Coachella Valley Mountains Conservancy, the Friends of the Desert Mountains, and CNLM. The ownership in the RMU as of the end of 2010 is depicted in Figure 1-4.

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 sections include information on Covered Species, natural communities, land ownership, Conservation Objectives and Required Measures.

Cabazon Conservation Area – Section 4.3.1

Stubbe and Cottonwood Canyons Conservation Area – Section 4.3.2

Whitewater Canyon Conservation Area – Section 4.3.3

Snow Creek/Windy Point Conservation Area – Section 4.3.4

Highway 111/I-10 Conservation Area – Section 4.3.5

Whitewater Floodplain Conservation Area – Section 4.3.6

Upper Mission Creek/Big Morongo Canyon Conservation Area – Section 4.3.7

Willow Hole Conservation Area – Section 4.3.8

Long Canyon Conservation Area – Section 4.3.9

Edom Hill Conservation Area – Section 4.3.10

Thousand Palms Conservation Area – Section 4.3.11

West Deception Canyon Conservation Area – Section 4.3.12

Indio Hills/Joshua Tree National Park Linkage Conservation Area – Section 4.3.13

Indio Hills Palms Conservation Area – Section 4.3.14

East Indio Hills Conservation Areas Conservation Area – Section 4.3.15

Current Management – Section 8.2.3, Reserve Management Unit 1

Adaptive Management – Section 8.2.4.

General Ongoing Management – Section 8.2.4.1

Monitoring for the MSHCP Reserve System – Section 8.3

In addition to the Conservation Objectives and required Measures delineated in the above referenced sections of the CVMSHCP, there are Permit Conditions that pertain specifically to the Valley Floor RMU. These are:

23. Use of the Management Contingency Fund under Section 8 of the Plan shall include addressing the following sand-dependent species priorities: 1) funding of activities addressed in Special Permit Term and Condition #24; 2) development and implementation of an invasive species management plan that assesses the status of and threats from invasive species, identifies knowledge gaps, and addresses control of invasive plant species (e.g, Saharan mustard) in Snow Creek/Windy Point, Thousand Palms, Whitewater Floodplain, and Willow Hole Conservation Areas; and, 3) funding of other sand-dependent species/habitat related Special Permit Terms and Conditions. The invasive species management plan shall be developed within 3 years of Permit issuance in coordination with the Wildlife Agencies; this management plan shall be implemented beginning in year 4 post-Permit issuance. The Management Contingency Fund may supplement, but not replace, the Monitoring and Management Program budget.
24. For Coachella Valley Fringe-toed Lizard, Coachella Valley Round-tailed Ground Squirrel, Palm Springs Pocket Mouse, and Coachella Valley Milkvetch, to ensure that a minimum of three (3) viable populations (long-term persistence of self-sustaining populations) within Core Habitat for these species is maintained, or if necessary reestablished and maintained, the following measures shall be implemented:
 - a. The CVCC shall manage and enhance modeled Core Habitats for these species to provide for persistent and sustainable populations and essential ecological processes, including broader patterns of sand transport and deposition in the Whitewater Floodplain and maintenance of sand transport and deposition in all Core Habitats to the maximum extent practicable (e.g., sand fencing as appropriate in any of the Conservation Areas and restoring mesquite in Thousand Palms Conservation Area) to achieve the Conservation Objectives for these species in the Plan.
 - b. The CVCC shall assess the animal species identified above to determine the presence of persistent and sustainable populations and essential ecological processes within

- the Core Habitats. This assessment shall be completed within three years of Permit issuance using methods developed jointly by the CVCC and Wildlife Agencies.
- c. Specific studies shall be conducted as part of the baseline monitoring for the Coachella Valley milkvetch to assess: viability of seed bank, substrate affinities, micro-habitat requirements, seed dispersal, pollination ecology, and impacts of invasive species within the Core Habitat areas to ensure that the appropriate measures to support long-term conservation of this species are identified. These studies shall be completed within 5 years of Permit issuance using methods developed jointly by the CVCC and Wildlife Agencies.
 - d. The CVCC shall develop long-term management strategies for each of these species that identify specific monitoring approaches (e.g., the use of probabilistic population estimates, relativistic population indices, and/or assessments of effective population size) and management actions (including actions to address habitat as described in a) above) that will be implemented and a specific time line for implementation to ensure a minimum of 3 viable populations including adequate distribution to support long-term viability of the populations within Core Habitat areas. These management strategies shall be completed and provided to the Wildlife Agencies for their concurrence within 5 years of Permit issuance for the animal species and 7 years for the CV milkvetch.
 - e. Within 6 months of their completion, implementation of the measures associated with the management strategies shall begin through incorporation into the applicable Reserve Management Unit Plan(s) and Adaptive Management Program. Any changes to the Covered Species and Natural Communities Conservation Goals and Objectives and Required Measures for the Conservation Areas that include Core Habitat for each of the species identified above shall be submitted to the Wildlife Agencies for review and approval within 8 years of permit issuance and incorporated into the Joint Project Review process as appropriate.
26. CVCC and the Land Manager, through the land management program, shall identify and document implementation and compliance with the Land Use Adjacency Guidelines and work with the landowners and appropriate jurisdictions to address these concerns. This information shall be included in the Annual Report to the Wildlife Agencies and the Permittees.

1.3 Current Management, Monitoring & Public Access

The CVCC began acquiring land in this RMU soon after final approval of the CVMSHCP in October 2008. Prior to that, the Coachella Valley Association of Governments acquired approximately 1,591 acres as mitigation for transportation projects. CVCC has acquired approximately 1,680 acres since initiating its acquisition program. Approximately 2,525 acres acquired by CNLM with CVFTL mitigation fees and other funding sources have been (or are being) transferred to CVCC pursuant to the terms of the CVMSHCP, and approximately 734 acres of land acquired by the Friends of the Desert Mountains have been conveyed to CVCC for management, with an additional 682 acres intended to be conveyed in 2011. CVCC has

management responsibility for all of the foregoing. This acreage will increase as CVCC continues to implement its acquisition program. CVCC has not undertaken specific management actions to date, except for ensuring that any hazardous materials and other debris are removed from properties before it acquires them. CVCC's management activities in the future will be guided by this RMUP.

FIGURE 1-3: Location and Boundaries of Reserve Management Unit 1

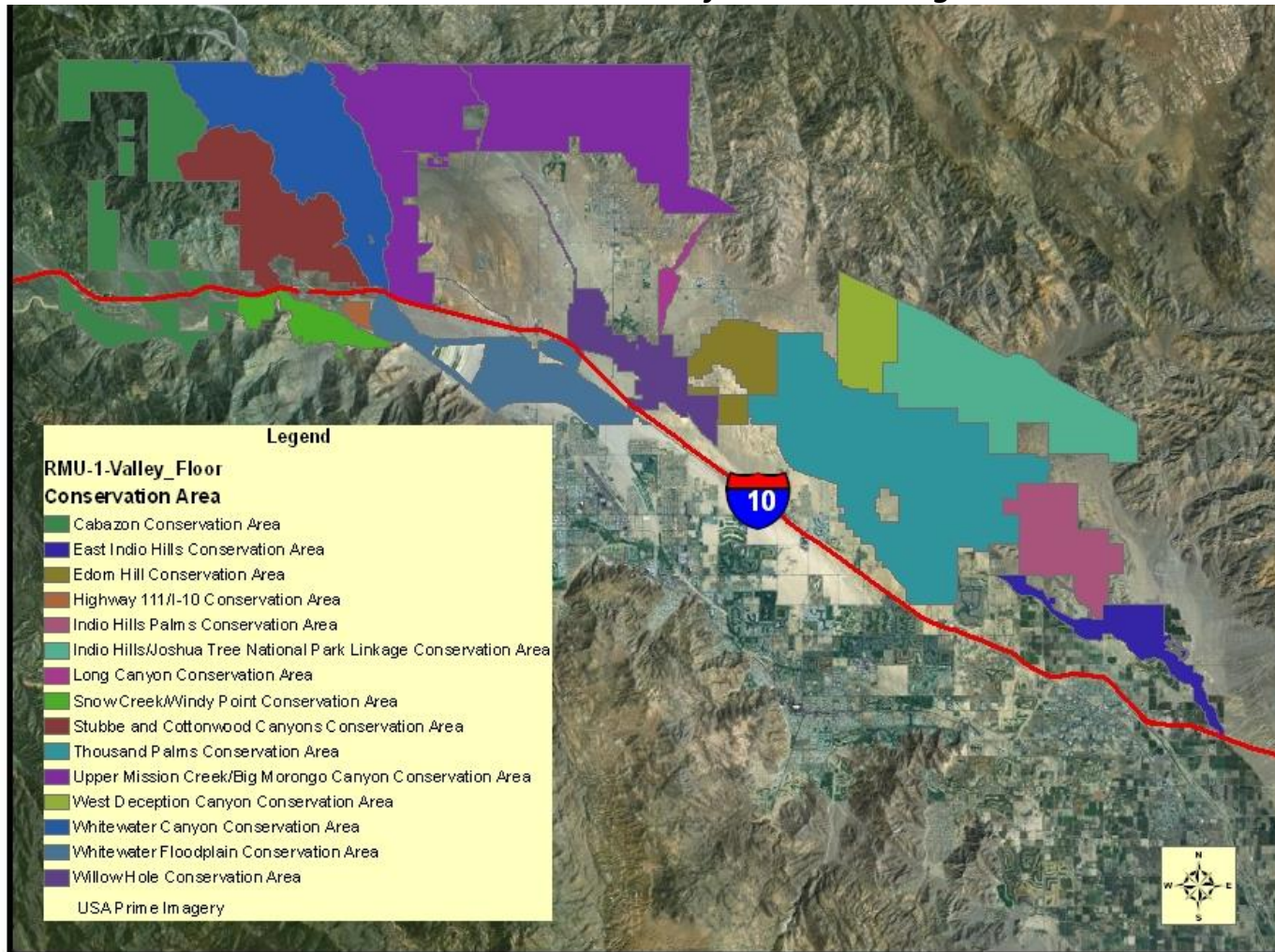
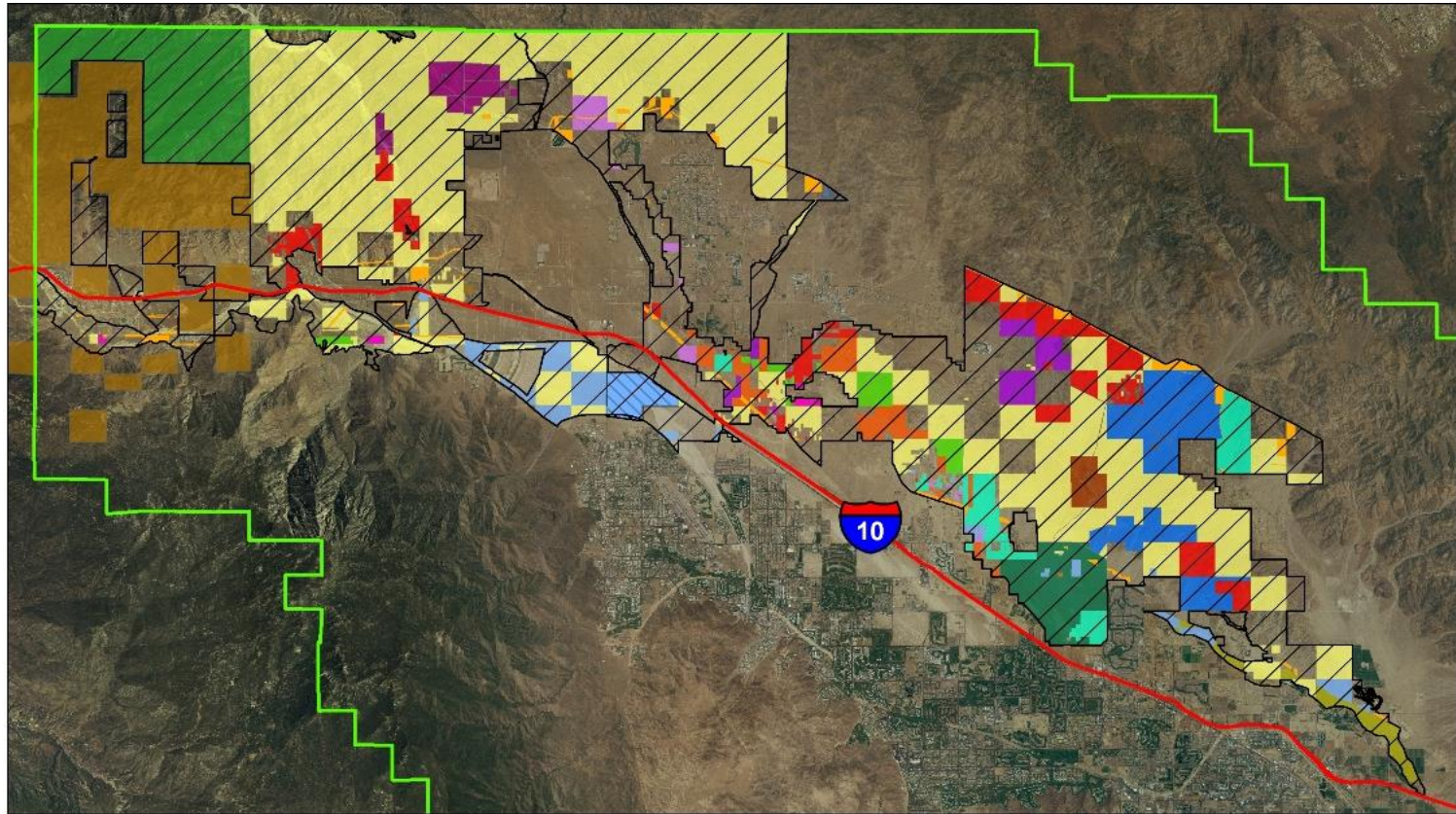


FIGURE 1-4: Ownership within Reserve Management Unit 1



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

There are a number of potential threats which could affect the Covered Species and natural communities found in the Valley Floor Resource 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 the impacts they can have on communities and species. Current and potential threats to the RMU and preventative and coordinated actions to address those threats are discussed in detail below. The threats are presented in order of severity to reflect that some 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. 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. Unless otherwise stated, recommended management actions would be developed and carried out cooperatively by the Land Manager and the Reserve Managers. The MPA would also participate where indicated.

2.1 Invasive Species

Invasive species occur in several natural communities within the Valley Floor RMU. Invasive species put pressure on the native species, communities, and ecosystems of the Valley Floor RMU, and can cause impacts through competition, predation, physical alteration of the environment, or a combination of these and other factors. The threats from invasive species, especially at present Sahara mustard, fountain grass, and tamarisk, 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.

Management Goal: Prevent the establishment of new infestations of invasive plants and animals and reduce or control current infestations. Specific management actions are recommended for current infestations for the species delineated below.

The following general actions, applicable to all invasive species, can help prevent their introduction and establishment or their future spread if already established. They are:

1. 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 will be for both previously undetected species and new infestations of established species.
2. Develop a coordinated program for the detection and control of new infestations of invasive species as part of the Annual Work Plans and to develop or identify and require the use of standards for cleaning and handling equipment, gear and supplies, to help prevent the spread of invasive species.
 3. Document infestations, including collecting a standard set of data and submitting it for inclusion in the GIS database for the RMU and the CVMSHCP area.
 4. 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.
 5. Develop and ensure implementation of standards for preventing spread of invasive species between sites such as cleaning (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 to avoid transfer of invasive plant propagules.

Sahara mustard

The most serious threat is from *Brassica tournefortii* (Sahara mustard). It successfully competes 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 could have significant effects on herbivores such as desert tortoise, by reducing the amount and diversity of their food supply. 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. Sahara mustard also poses a threat to native ecosystems in several other ways. 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 drier years. Sahara mustard has been abundant during years with average rainfall since the 1970s (Dr. Cameron 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 and, ultimately, perennial vegetation. Dune stabilization and the consequent loss of habitat for blow-sand ecosystem species including Coachella Valley fringe-toed lizard is also of significant concern. Historically, fire either did not occur in many areas of the Coachella Valley, or it occurred at a very low frequency and intensity. Because native vegetation, did not evolve in the presence of fire, it can experience high mortality during wildfires, with slow or no recovery. After fire events, type conversion to Sahara mustard and associated non-native annuals, e.g., red brome (*Bromus rubens*) and common Mediterranean grass (*Schismus barbatus*) can result. There are currently insufficient data to determine whether or not the spread of Sahara mustard and other invasive species may increase the frequency or intensity of wildfire by creating stands of fuel between native shrubs. Sahara mustard can also form a physical or visual barrier to wildlife. For example, it may be difficult if not impossible for juvenile reptiles, such as desert tortoise, to move through dense stands of Sahara mustard.

Recommended management actions are:

1. Ensure that a map of the extent of current infestations is developed, 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. [link to report](#)
2. Cooperate in research and monitoring to determine if the spread of Sahara mustard and other invasive species may increase the frequency or intensity of wildfire by creating stands of fuel between native shrubs.
3. Identify, prioritize, and treat infestations of Sahara mustard in the RMU. This approach would increase the effectiveness and efficiency of control efforts. A collaborative approach between the RMUC 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. Because of the extent and severity of infestation in the Valley Floor RMU, at the sites identified as most critical, removal by hand or other mechanical means of removing mustard plants before they set seed should be implemented. 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 inmates.
5. The Land Manager and the RMUC member entities should consult with the Riverside County Transportation Department and other entities that maintain roads and other facilities to assess the desirability and feasibility of maintaining roads and facilities prior to Sahara mustard plants setting seed to minimize the dispersal of seeds into adjoining areas. The Land Manager and RMUC should also work with the Transportation Departments on the review and implementation of BMPs that prevent the spread of invasives along roadways. Consideration should also be given to the potential for spraying an appropriate herbicide to eliminate mustard along roads.
6. Cooperatively develop and implement experimental programs using herbicides as soon as mustard plants germinate, which is typically before native annual germination. 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.
7. The Land Manager will coordinate with the MPA regarding experimental research into identifying an appropriate biological control agent for Sahara mustard, and keep the RMUC informed. The RMUC will periodically assess the potential to use a biological control agent.
8. 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.

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*, commonly known as athel tamarisk, is also present in various locations within the RMU. While not as invasive, its effects on the environment can be similar to those of salt cedar.

Recommended management actions are:

1. Develop a map of the extent of current infestations and conduct annual inspections to locate and control new growth. 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. www.cvmshcp.org/Management%20and%20Monitoring/20090630_Draft_Desert_Wetland_Protocols.pdf
2. The Land Manager should contact the Vegetation Branch Chief from Joshua Tree National Park and other agencies regarding information about *Tamarix aphylla* hybridizing with other tamarisk species at low levels, and investigate this issue further with other agencies.
3. Identify, prioritize, and treat infestations of tamarisk in the RMU. Map treatments and document the control methods used. This approach will increase 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 mechanical removal efforts ONLY unless appropriately trained and certified to handle herbicides. 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.
4. Evaluate whether there are locations where it may be important to enter into agreements with private land owners to remove tamarisk.
5. Re-treat re-growth in treated areas.
6. Re-vegetate with native species in treated areas as needed.
7. Consider the use of prescribed fire as an initial treatment in some areas (to facilitate access to infested areas) and follow-up with additional treatment actions.
8. The RMUC and the MPA will collaborate to evaluate different treatment options that could also help to advance control efforts.
9. Conduct outreach to other private conservation landowners (non-permittees) to coordinate invasive removal efforts in the RMU.

Fountain grass (Pennisetum setaceum)

Spreading from developed areas where it is used as an ornamental planting, fountain grass primarily occurs in canyon sides and bottoms growing in association with native perennials.

Fountain grass is not as prevalent on the valley floor as in the Santa Rosa and San Jacinto Mountains RMU; it is currently at a manageable level on the valley floor and implementing measures to control this species before it becomes more established should be a high priority.

Fountain Grass and Purple Fountain Grass [Pennisetum setaceum and Pennisetum setaceum 'rubrum'(cuprea)]

Fountain grass exhibits rampant reseeding behavior and should not be used in landscaping. While 'rubrum' is not as invasive as the parent species lower levels of spread occur, therefore landowners are not recommended to plant either variety. Once an individual of fountaingrass is planted or otherwise established, it quickly produces seedheads which last all year long. Wind gently teases seeds out of the seed heads, distributing them across large expanses of land, thus one plant is a sufficient enough seed bank to infest a whole neighborhood, crowding out more desirable species and generating costly removal.

Good substitute clumping grasses are the native species *Muhlenbergia rigens* or *Stipa speciosa*. Neither are invasive and both are drought tolerant in desert habitat while still showing attractive seed heads.

Mediterranean steppegrass (Stipa capensis)

This species, also known as twisted-awned speargrass, is an annual grass. First reported by A. C. Sanders, G. K. Helmkamp, P. J. MacKay, et al., in Chino Canyon, according to the California Invasive Plant Council it is already spreading rapidly in the Palm Springs area and has the potential to be a serious fire hazard. Through competition it has the potential to decrease the abundance of native forbs, and facilitates more intense and frequent fires affecting native perennial shrubs, and its sharp florets can injure animals. This species is also found on the lower slopes of the San Jacinto Mountains in RMU 6.

Recommended management actions are:

1. Develop a map of the extent of current Mediterranean steppegrass infestation and conduct annual inspections to locate new infestations.
2. With the MPA, evaluate the extent of the threat of Mediterranean steppegrass to species and communities.
3. The RMUC and MPA will work cooperatively to develop and implement control measures, as needed, and document and map control efforts.

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. Buffelgrass's 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 as part of coordinated periodic surveys for new infestations of invasive plant species, and controlled where/if found. .

Cranesbill [Erodium cicutarium]

Cranesbill is native to Eurasia and has become widespread throughout the United States. It is found mostly in disturbed soils, grasslands and shrubland. While somewhat innocuous, it can use valuable resources such as moisture and nutrients thus depriving the desirable native plants. *Oenothera caespitosa*, evening primrose, would be a good substitute and is a good pollen source for night flyers such as bats. Blue gramma grass, *Boutelloua gracilis* would also work well.

The Bromes [*Bromus sp.*]

Bromus sp. are grasses introduced to the United States as potential cattle feed but proved to be a paltry nutrient source and were rejected by cattle. However, the species spread aggressively in natural systems, replacing nutrient rich native grasses and today serve as a prime fuel source for wildfires. It has proven costly to control and summer drying of the plant material annually contributes to fuel load reduction needs. The "foxtail" seeds are also detrimental to animal life and the sharp seeds pierce ears and intestines when accidentally ingested. Indian Rice Grass, *Achnatherum hymenoides* would be a good substitute and provides nutritious as well as attractive seeds. Blue gramma grass, *Boutelloua gracilis* would also work well.

Mediterranean Grass [Schismus barbatus]

Mediterranean Grass is native to Eurasia and Africa and tends to propagate itself in dry, open and generally disturbed areas. It will aggressively displace more desirable native species. Blue gramma grass, *Boutelloua gracilis* would be a good native substitute.

Recommended management actions are:

1. Develop a map of the extent of current fountain grass infestations and conduct annual inspections to locate and control new infestations.

2. Identify, prioritize, and treat infestations of fountain grass in the RMU. Map treatment areas and document control methods. This approach will increase the effectiveness and efficiency of control efforts. Control mechanisms include mechanical and chemical treatments. Where 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 inmates.
3. Cooperatively work to re-treat re-growth in treated areas.
4. Cooperatively work to re-vegetate with native species in treated areas as needed.
5. The RMUC and the MPA will work collaboratively to evaluate different treatment options to advance control efforts.
6. The Land Manager will conduct outreach to The Wildlands Conservancy (TWC) to coordinate efforts in the Whitewater Canyon and Mission Creek areas, where TWC manages two preserves.
7. Work with cities to identify ways to prevent use and establishment of fountain grass in landscaping. Provide a list of alternative grass species.

Other plant species

While not as significant as the species described above, several others should also be addressed at a reduced level with management of the Valley Floor RMU at least during the initial period of program establishment.. Species that currently impact natural communities and Covered Species to a lesser extent include giant cane (*Arundo donax*) and Bermuda grass (*Cynodon dactylon*), which impact wetlands areas.

Recommended management actions are:

1. The Land Manager and RMUC member agency staff will familiarize themselves with the characteristics of these species so that they can be identified and their occurrences mapped.
2. Discuss in conjunction with the development of annual work plans, the potential to conduct control activities either in conjunction with or separately from efforts to control Sahara mustard and tamarisk.

Invasive Aquatic Plants

There may be the potential for invasive aquatic plants to invade some of the aquatic habitats of the Valley Floor RMU. Invasive aquatic 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.
2. 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.

Cowbirds

Cowbirds, while native to North America, are not native to the Coachella Valley, and this species may be supported by a variety of human actions occurring in the area. Golf courses and horse stables are two venues supporting 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. Since cowbirds have not yet been identified as a problem for Covered Species in the Valley Floor 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 wetland and riparian areas of the Valley Floor RMU to determine if cowbird nest parasitism is causing unacceptable impacts to covered bird species.
2. As needed, implement cowbird trapping in riparian areas found to have unacceptable levels of nest parasitism.

Feral Dogs and Cats

Domestic pets pose a potential threat to wildlife in the Valley Floor RMU. Loose dogs and cats can impact burrowing owls by digging out nests and removing chicks (Point Reyes Bird Observatory), and they are known to prey on wildlife. Dogs can harm tortoises and disturb tortoise burrows (USGS). The occurrence of loose or feral dogs in packs is an increasing problem in the RMU; 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 minimize domestic animal access and predation.

Recommended management actions are:

1. If future development occurs within the boundaries of or adjacent to the RMU, it is recommended that the RMUC work with the CVCC and the Permittee during the environmental review process to provide specific recommendations and ensure that Land Use Adjacency Guideline 4.5.6 is followed. 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, should be incorporated as appropriate.
2. Determine whether trapping or other control methods are appropriate.
 3. Identify opportunities for educational outreach about impacts of dogs and cats on wildlife.

2.2 Threats to the Hydrological Regime & Processes

One of the primary hydrological threats to ecosystem health in this RMU is the potential lowering of the groundwater table north of the fault dunes in the Willow Hole Conservation Area. A reduction in subsurface water availability may negatively impact mesquite growing along the dunes. In some areas large patches of mesquite are decadent or declining; in other areas patches are healthy and vigorous. The reasons for this variability are not clearly known. The CVMSHCP in Sections 8.4.1.3.2 and 10.2.7.2 requires monitoring of groundwater levels, research to determine the role of groundwater levels in the decline of mesquite in this area as well as recruitment of young mesquite plants, and a research program to determine the feasibility of a mesquite hummocks restoration strategy, if necessary. Necessary management actions would be determined as a result of the monitoring and research.

Another significant threat is hydrological alterations to the Whitewater, Mission Creek, Little San Bernardino Mountains and San Jacinto Mountain tributaries. Reductions or stoppage of water flows (both surface and subsurface) have the potential to negatively affect sand transport as well as hydrological processes supporting sand transport and subsurface water availability.

Management Goal: Maintain essential hydrological processes to support Covered Species and Natural Communities with the primary targets of maintaining adequate groundwater levels and sand source/transport mechanisms.

Recommended management actions are:

1. Coordinate with the MPA regarding the monitoring and research described above and inform the RMUC member entities of the results.
2. The Land Manager and the RMUC member entities should identify and implement any necessary management actions to maintain or enhance the mesquite hummock natural community along the fault dunes.
3. Consult with the USGS, Coachella Valley Water District, Metropolitan Mission Springs Water District, Metropolitan Water District, Coachella Valley Resource Conservation District and Natural Resources Conservation Service regarding resources on soils and groundwater issues.
4. Flood control planning, operations and maintenance should avoid or mitigate hydrologic alterations that will impact critical sand source/transport functions.

2.3 Climate Change and Habitat Fragmentation

Climate change is an issue for the entire Colorado Desert including the Coachella Valley. If habitat in the central and eastern portions of the valley becomes less favorable for some of the Covered Species, the Conservation Areas in the western and northwestern portions of the Coachella Valley will become more important for the survival of these species; thus, their ability to move northwest could become critical. Populations need to be provided with room for an adaptive response mechanism in order to cope with habitat changes that are associated with climate change. The biggest need for a successful response mechanism will be the ability of a population to change its geographical distribution. The Coachella Valley Jerusalem cricket is one example of a species which will need to shift its geographical distribution in response to climate change. (Dr. Cameron Barrows, personal communication). Phenomena such as habitat fragmentation would exacerbate the effects of climate change by limiting species' ability to move to more suitable habitat. Climate change may also increase the frequency and intensity of wildfire. 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. The threat from climate change, exacerbated by potential habitat fragmentation and wildfire, has 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 CVMSHCP delineates Biological Corridors and Linkages which are intended to connect core habitat areas for various species and allow for the movement of species as they respond to the effects of climate change. Because these corridor areas include potential narrowed "choke points" they would be most susceptible to habitat fragmentation from new or expanded infrastructure, in particular roadways but also other development within Conservation Areas and edge effects from development adjacent to the Conservation Areas.

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. Develop list of guidelines/recommendations to minimize edge effects that can be considered by CVCC in the Joint Project Review process for projects in or adjacent to

- Conservation Areas to ensure that habitat fragmentation and edge effects are minimized, especially in Biological Corridors and Linkages.
3. Ensure that fencing that may be desirable to address other issues, such as off-highway vehicle trespass and dumping, provides for the movement of wildlife.
 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.

2.4 Fire Management

Fire management involves pre-suppression/prevention, fire suppression, and fire incident rehabilitation activities. Prescribed burning may be a component of pre-suppression/prevention and may also be used as a habitat restoration and enhancement tool. Although prescribed burns may not be appropriate for much of RMU 1, there may be limited areas where it may have efficacy.

Management Goal: Prevent damaging wildfires that reduce the ability of the RMU to support Covered Species and Natural Communities and evaluate and use prescribed fire in specified areas if determined appropriate

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, especially dispatch personnel, with maps and other information (including the Fire Management Plan when completed) prior to and during wildfire incidents.
4. The Land Manager and other Valley Floor RMU land managers will seek training in the Incident Command System as soon as their schedules allow.
5. Ensure that RMUC member agencies provide resource advisors that are familiar with the area and available to incident command team.
6. The RMUC member entities will 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. This will include sending one or more appropriately trained RMUC land management representatives to wildfire incidents to provide information and assistance.
7. The Land Manager and the RMUC member entities should 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.
9. Ensure that fire agencies have access to gates and other barriers. Also, facilitate transfer of GIS information, land ownership information, maps, land management policies, and other information related to fire area.

2.5 Off-Highway Vehicle Trespass

Illegal off-highway vehicle (OHV) use occurs at various locations throughout the CVMSHCP area including the Valley Floor RMU. The managing entities report several discrete locations in the RMU where unauthorized OHV use is a problem. The most heavily impacted areas are the Snow Creek/Windy Point Conservation Area, the Willow Hole Conservation Area, and the Edom Hill Conservation Area. Unauthorized OHV use also occurs to a lesser extent in the Cabazon, Stubbe and Cottonwood Canyons, Whitewater Canyon, Highway 111/I-10, Whitewater Floodplain, Upper Mission Creek/Big Morongo Canyon, Thousand Palms, West Deception Canyon, Indio Hills/Joshua Tree National Park Linkage, and East Indio Hills Conservation Areas.

OHV use may impact individual members of some Covered Species directly by running them over 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. Periodically update a map of the most severe impact areas.
2. Prioritize areas for active management as described in the following actions.
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.
9. Maintain, and increase as needed and as resources allow, regular law enforcement patrols of the Valley Floor RMU as part of the Annual Work Plans.
10. Conduct outreach activities where/when appropriate to increase awareness of covered species in areas frequented by OHV users.

2.6 Public Use and Access

Although the main goal of the MSHCP Reserve System is to protect biological resources, another objective is to provide recreational and educational opportunities, while providing adequate protection for the biological resources. Public access is important because it affords an opportunity to experience and appreciate the natural environment that is being protected. By increasing awareness and appreciation for the natural resources within the MSHCP Reserve System, local residents and visitors can learn the importance of practicing environmental stewardship. However, public access must be consistent with conservation goals and objectives of the CVMSHCP.

The primary public access component on Reserve Lands will be trails. In addition, trails, trailheads, interpretive facilities and passive recreational activities that do not adversely impact Reserve Lands and cause minimal disturbance to biological resources are also Allowable Uses on Reserve Lands. Care must be taken in designating trail use to avoid conflicts between user groups. In order to provide sufficient protection for natural and biological resources on Reserve Lands, policies and guidelines have been developed to regulate the covered public access activities described above. These guidelines are separated into two categories: (1) Siting and Design and (2) Operations and Maintenance, and may be found in Section 7.3.4.2 of the CVMSHCP.

The CVMSHCP also explicitly recognizes as compatible activities a system of trails on the Thousand Palms Preserve, and the Pacific Crest National Scenic Trail that traverses the western end of the Valley Floor RMU in the Snow Creek/Windy Point, Stubbe and Cottonwood Canyons, Whitewater Canyon, and Upper Mission Creek/Morongongo Canyon Conservation Areas. The Northern Coachella Valley Trails Plan, authored by the Coachella Valley Mountains Conservancy for the Friends of the Desert Mountains, is the most recent comprehensive trail development plan for the Indio Hills/Thousand Palms portion of the RMU. The Plan provides an overview and context for trail planning efforts conducted by several entities and lays out 26 distinct trail segment alternatives and 19 trailhead alternatives with associated recommendations. The potential trails and trailheads in the plan were identified through coordination with the Wildlife Agencies and land managers in order to avoid or minimize impacts to Covered Species and other sensitive areas. This plan is the recommended guide for future trail and trailhead construction in the Valley Floor RMU for the area that it covers.

The NCV Trails Plan area falls completely within the MSHCP area, thus any trail and trailhead projects resulting from it, on lands owned or under the jurisdiction of Permittees under the Plan, will be will be subject to its requirements.

Under the MSHCP, trail and trailhead projects outside the Santa Rosa and San Jacinto Mountains Conservation Area, including the NCV Trails Plan area are considered Covered Activities and Conditionally Compatible. Projects following the criteria and procedures

outlined in the CVMSHCP (see above) and within the jurisdiction of an entity permitted under the Plan should be in compliance with the respective Endangered Species Acts.

CVCC also intends to establish a more formal and controlled trail access leading into the Big Morongo Canyon Preserve on its property APNs 671-210-004 and/or 671-210-001 based on consultation with the Trails Committee, BLM and the Southern California Gas Co.

It should be noted that the federal agencies within the MSHCP area are not Permittees under the plan, and trail and trailhead projects on their land are not Covered Activities. As such, proposed projects will be subject to federal environmental review and approval processes. The BLM, the largest federal land owner in the NCV Trails Plan area, has agreed to manage its lands consistent with the conservation goals and objectives of the MSHCP. Therefore, it is anticipated that the MSHCP Guidelines for Public Access and Recreation of Reserve Lands will be applicable.

Other existing uses in the Valley Floor RMU include hiking, photography, bird watching, picnicking, and similar activities, especially on The Wildlands Conservancy's Whitewater and Mission Creek Preserves, and to a lesser extent in the Morongo Canyon ACEC. Hunting and fishing are allowed in some areas. Vehicles are generally not permitted on unpaved roads in the RMU unless they are designated as a public right of way. Unauthorized uses currently occur or have occurred on Reserve Lands as well, including OHV use (discussed previously) and target shooting.

Management Goal: Provide for public access and use of Reserve System lands consistent with the conservation goals and objectives of the CVMSHCP and ensuring public safety.

Recommended management actions are:

1. Prioritize the recommended trails and trailheads outlined in the Northern Coachella Valley Trails Plan for development as funding allows.
2. As part of the first Annual Work Plan, inventory and, using the Guidelines for Public Access and Use in the CVMSHCP, evaluate current public uses for consistency with the CVMSHCP Conservation Goals and Objectives. If a use is found to be inconsistent, the RMUC should develop an alternative to maintain the use and ensure its consistency if feasible (e.g., modification or seasonal restriction), or should prohibit that use in the future. This may include limiting or prohibiting some activities in specified areas to protect covered and other special status species and to ensure public safety. Once the recommendations are adopted, the individual and entities should codify them through their internal rule making processes.
3. Using the initial list of facilities as a baseline, within 3 years of the approval of the RMUP, 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.
4. Use the Guidelines for Public Access and Use to evaluate new public use and access proposals 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, the needed resources to manage those uses should be identified in the Annual Work Plans.
 5. Include regular law enforcement patrols of the Valley Floor RMU in the annual work plans.
 6. Ensure appropriate coordination of law enforcement between CVCC, BLM, CDPR, CDFG, USFWS, 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.
 7. 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.
 8. Develop a draft CVMSHCP area-wide geocaching policy for consideration by the RMOC. The Land Manager will contact the geocaching website in the interim and request that current geocache locations in the RMUs be removed from the website. As part of a future Annual Work plan, the RMUC should evaluate current geocache sites, determine if they are causing impacts to natural communities or species, and identify these or alternatives as sites that could be used for this activity that do not result in impacts to Covered Species or Natural Communities. The website www.geocaching.com lists a number of geocache sites within the Valley Floor RMU. Geocaching enthusiasts may cause minor impacts to natural communities and species when establishing or navigating to geocache sites on foot or by vehicle.

Management needs related to public access and use includes law enforcement, public education and interpretation, and facility maintenance. As described in Section 4.3, 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 is no staff specifically tasked with providing public education and interpretation services. With the addition of the appropriate facilities such as trailheads and kiosks, 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.

2.7 Other Management Issues

Dumping and hazardous materials

Illegal dumping is a common occurrence in the Valley Floor RMU, especially along rural dirt roads where the activity is not easily observed. Generally the level of habitat disturbance resulting from illegal dumping is much less than that from invasive species or OHV trespass,

except for the deposition of hazardous materials (HAZMAT), including tires. HAZMAT items have significant impacts which affect both the immediate habitat and, when left unchecked for several years, groundwater quality and resulting habitat quality down-flow from the source of the pollution. Depending on the items left on site, illegal dumping has also been known to attract greater concentrations of ravens, coyotes, and dogs, which prey on wildlife, including Covered Species. Aside from the environmental and ecological detriments, dumping is aesthetically displeasing and landowners, including RMU entities, are responsible for removing the material regardless of how it came to be there. Cleaning up dumping can be costly, especially if hazardous materials that require special disposal are involved, so resources used to prevent dumping, such as fencing, signage, gating, and patrol, are likely to be cost-effective in the long term. It is important to avoid a public perception that the Reserve Lands are dumping grounds that constitute public nuisances and eyesores.

An additional hazardous materials threat arises from the potential for a spill along a rail or road transportation corridor through the RMU. The Land Manager and RMUC should be prepared to assist in minimizing the damage caused by any such spill and clean-up measures.

Management Goal: Maintain the Reserve Areas free of general dumping and hazardous materials through prevention and quick clean-up of materials that are dumped on Reserve Lands.

Recommended management actions are:

1. When the CVCC acquires land within Conservation Areas it requires that the land is delivered in clean condition, free of dumping and hazardous materials. The CVCC Acquisitions Manager cooperates with landowners to ensure that all land being acquired is inspected and cleaned up, as necessary. A database maintained by CVCC tracks where dumping has occurred and been cleaned up. When RMUC member entities or other conservation interests acquire land, a comparable policy is followed. The Land Manager and the RMUC member entities will utilize the CVCC database and coordinate with the Acquisitions Manager as appropriate to identify areas where fencing, gating, or other barriers, and signage should be installed to prevent further dumping on lands brought into the Reserve System.
2. Include actions in annual work plans to prevent and respond to dumping, including the strategic placement of fencing and barricades, signing, and communication between and within entities about dumping issues, including communication between law enforcement personnel and Riverside County Code Enforcement.
3. Pursue periodic cleanup events involving volunteers from the local community to address dumping that may have occurred despite prevention efforts and to build a local constituency in support of the RMU. The Southern Low Desert Resource Conservation & Development Council has a "Clean Communities" program which addresses illegal dumping with volunteer cleanups. There may be some potential for partnership and assistance.
4. Identify other cleanup programs such as tire and community clean-up programs through Riverside County Code Enforcement and other programs.

5. 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. 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.
6. The Land Manager should regularly communicate with the railroad company for any initial and subsequently updated contingency plans and copies should be disseminated to the RMUC members. The roles of RMUC members, the Land Manager and the railroad should be reviewed and updated annually.

Power and gas lines

There are many miles of high voltage electrical transmission lines in the interior or along the boundary of the Valley Floor RMU. 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 Coachella Valley fringe-toed lizard, flat-tailed horned lizard, or Coachella Valley round-tailed ground squirrel; 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. Many miles of high pressure gas lines also traverse portions of the RMU. As with electrical transmission lines, maintenance activities could result in environmental impacts. In addition, a rupture could result in an explosion and possibly a wildfire, resulting in impacts to communities and species.

Management Goal: Minimize the impacts of existing and potential new power lines and gas lines in the Valley Floor RMU.

Recommended management actions are:

1. Develop and maintain an inventory of transmission lines and high pressure gas lines in the RMU.
2. 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.
3. Meet with the utility companies to discuss and implement where feasible actions to avoid and mitigate potential impacts from ongoing operations and maintenance of power and gas lines that 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 actions to avoid, minimize, and mitigate impacts to them during maintenance and repairs.

Threats to sand transport

Aeolian Transport

The San Geronio – Whitewater and Mission Creek – Morongo Wash depositional areas are the fundamental source areas of aeolian sand that maintain lizard habitat in downwind reserve areas. The construction of infiltration galleries at the west end of the Whitewater Reserve has reduced the amount of sand available for aeolian transport both by trapping sand and reducing the total area of sand exposed to the wind.¹

Barriers to sand transport also exist in the form of fences and other structures that are not intentionally installed for the purpose of sand capture in key habitat areas. These barriers create sand ‘shadows’ in some cases, which has been shown to degrade habitat for several Covered Species. Invasive species, as mentioned in section 2.1, also have a significant negative impact on sand transport processes.

Fluvial Transport

In addition, the Cabazon, Long Canyon and West Deception Canyon Conservation Areas have been identified as key to fluvial sand transport. The Land Manager should work closely with the CVWD in their planning, implementation and maintenance of flood control and recharge facilities to ensure continued and enhanced sand transport processes.

Management Goal: Identify, restore, enhance and protect key sand transport locations and processes

Recommended actions:

1. Coordinate with CVWD in their planning, development and maintenance of key flood control and recharge facilities to minimize negative impacts to sand transport
2. Evaluate existing wind/sand fences, other structures and exotic species barriers (tamarisk wind/sand breaks) for their impact on sand transport processes and consider the need for changes in their configurations to reduce degradation of Covered Species’ habitat.
3. Coordinate with the County on road and other facility maintenance to minimize negative impacts caused by manmade and exotic species barriers.
4. Prioritize invasive species removal projects to coincide with areas identified as key sand transport areas.

Habitat Restoration and Enhancement

¹ Long-Term Sand Supply to Coachella Valley Fringe-Toed Lizard (*Uma inornata*) Habitat in the Northern Coachella Valley, California; USGS, 2002

In addition to the re-vegetation associated with the removal of invasive exotic plants, various habitat enhancement and restoration projects will be completed and maintained as part of the management program. They may include projects such as sand fence construction and maintenance for Coachella Valley fringe-toed lizard, construction and maintenance of burrowing owl nest boxes, the creation of additional patches of mesquite, and the creation of additional riparian or desert dry wash woodland where it occurred historically.

Management Goal: Identify, implement and maintain appropriate habitat enhancement and restoration projects.

Recommended management actions are:

1. On an annual basis, cooperatively identify and seek funding for habitat enhancement and restoration projects which will benefit covered species and communities, ecological processes, and connectivity.
2. Incorporate the maintenance of existing projects in annual budgets and work plans.

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 Valley Floor 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 (to the extent possible) 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 individual 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

effect(s) 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.

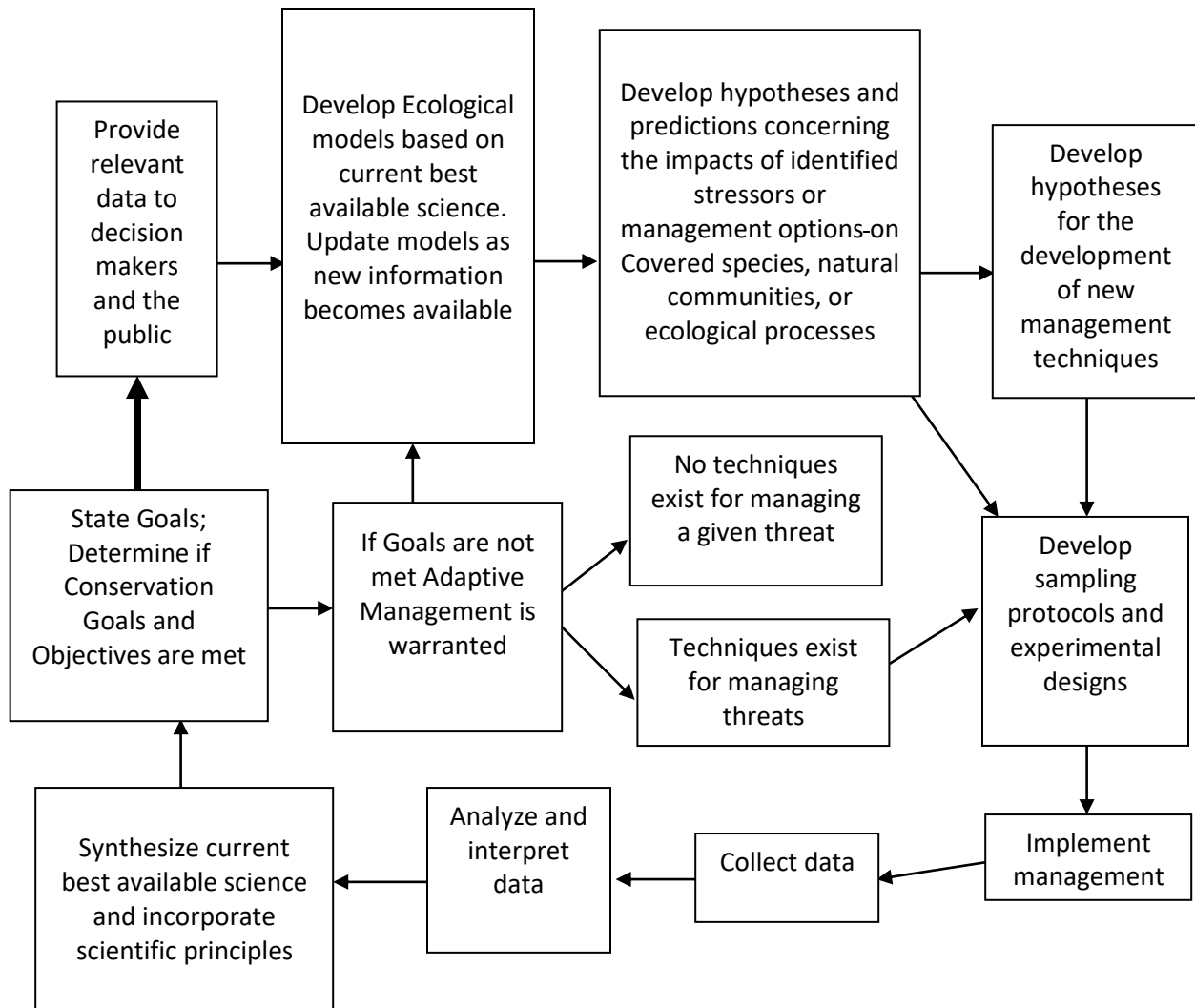
Goal: Provide for an ongoing, dynamic system of information gathering and exchange between the MPA and the RMUC (the Land Manager and Reserve Managers) to facilitate close coordination between the Management and Monitoring programs, including the identification, implementation, and evaluation of Adaptive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

Recommended actions are:

1. The Land Manager and the MPA will coordinate regularly 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. The Land Manager and the RMUC member entities will 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 will formally meet annually or more often as needed to discuss the results of the Annual Monitoring and Management efforts. 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 actions 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. The Land Manager, the other RMUC entities, and the MPA will 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 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 measurable 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 will be delineated in the Annual Work Plan.

Coachella Valley Conservation Commission

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 Valley Floor RMU. The amount of CVCC staffing, equipment, and supplies necessary to implement the Valley Floor 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, USFWS 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.

In upcoming years, a three year management cost estimate for the RMU will be created and include expenses for 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, USFWS 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 BLM lands within the Valley Floor RMU, 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 portions of the Valley Floor RMU 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).² 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 Valley Floor RMU in coordination with other agencies with law enforcement responsibilities in the area. The Land Manager should explore the establishment and use of CDFG Senior Volunteers. These are trained unpaid senior staff driving marked CDFG patrol vehicles to educate the public.

The three-year management cost estimate to be drafted will estimate law enforcement costs.

² CDPR's 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 Table 4-1. 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 Fund³

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

As stated in Section 6.1, the CVCC through the Land Manager and the reserve managers, i.e., BLM, CDFG, CDPR, USFWS and CNLM have agreed to cooperatively manage the Valley Floor RMU consistent with the Conservation Goals and Objectives of the CVMSHCP. A cooperative and collaborative approach will result in greater management efficiency by eliminating redundancy and providing the opportunity to pool resources. It will 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.

As part of their annual budgeting process, the Reserve Managers will coordinate with the Land Manager to identify management funding needs and responsibilities for the coming year. They will use this information to make their respective annual funding requests. Their

³ 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.

annual management budget for the RMU and the associated goals, outcomes, and targets, will be included in the Annual Work Plan.

The three year management cost estimate and subsequent revisions will also be used 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
- Dept. of Conservation Grants (specifically for a Watershed Coordinator)
- 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 Grants
- FEMA for storm related projects (e.g. road washouts)
- Section 6 – Cooperative Endangered Species Conservation Fund

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 the Valley Floor RMU, some of which are already in place. Current partnerships include:

- Coachella Valley Preserve management consisting of a partnership among CNLM, BLM, USFWS, CDPR, CDFG, and CVCC.
- BLM partnership with JTNP/NPS and the Living Desert to obtain native plants

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 Council, Low Desert Weed Management Area, USDA's Natural Resources Conservation Service, 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. Consider exploring “corporate partnerships”. Home Depot is reported to have a “Healthy Communities Grant Program” and each store can donate up to \$1,000 to local causes of their choice. Lowes may have similar programs which volunteers their employees’ time for community projects. If the project grant money goes through a non-profit, it may be tax deductible for the business which may be enticing.

Organize additional volunteer events including invasive species control, e.g. Sahara mustard and tamarisk, and planting native vegetation. Contact nearby Department of Defense (DoD) installations for possible availability of volunteers, equipment, and supplies. For example, the Army has BOSS (Benefit of Single Soldiers) which has previously volunteered to remove tamarisk in the High Desert.

- 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. DoD throws out or recycles rolls of barbed wire and T-post fence pickets after each unit rotation. It might be relatively easy for them to pass these materials onto another Federal agency through an MOU and then be used in the Reserve System.

- Share equipment and/or personnel to maintain facilities, monitor resources, patrol the RMU, and accomplish larger projects.

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 easy retrieval and analysis is crucial to the success of both the monitoring and management programs. It will enable managers and wildlife agencies to evaluate the efficacy of conservation measures, and to develop and implement Adaptive Management actions 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 that is integrated with the monitoring database, provides open access and easy data retrieval and transfer, which contains an easy to use field user interface, and complies with applicable standards, e.g., the North American Invasive Plan 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 Annual Report.

