APPENDIX X
RMV Ongoing Management Measures

The purpose of *Appendix X* is to define the management measures that have been consistent with high levels of Covered Species populations and biodiversity and that would be committed to by RMV as part of its IA obligations.

Ongoing management measures would be a Covered Activity within lands designated for future inclusion in the Habitat Reserve in order to contribute to maintaining baseline conditions for Conserved Vegetation Communities that provide habitat supporting Covered Species on RMV lands. The term "baseline conditions" refers to conditions that characterize Conserved Vegetation Communities at the time the NCCP/MSAA/HCP is approved and that provide habitat supporting Covered Species. Ongoing management measures which contribute to maintenance of the baseline conditions include invasive species control and grazing management practices set forth in the GMP. The estimated conservation acreage of Conserved Vegetation Communities present in RMV Habitat Reserve dedication areas reviewed in *Chapter 13, Table 13-19A* will vary over time as vegetation communities expand and contract in response to natural successional changes and stochastic events such as floods, fire and precipitation cycles. Changes in the distribution, type and quality of vegetation communities may result from individual events such as a fire or major flood or may result from longer term influences such as California's 10-20 year climate cycles and larger scale influences such as global warming or other climate change. Coastal sage scrub, chaparral, and riparian vegetation communities in particular, are subject to variation. Thus, the concept of vegetation communities "baseline conditions," while based on current estimates and mapping, also includes any acreage changes over time resulting from natural events and improvements in vegetation mapping (changes in our understanding of the distribution, type and quality may result from more precise aerial photography and ground truthing - *e.g.*, revisions to vegetation community mapping that resulted from the delineation of USACE and CDFG jurisdictional areas). RMV's obligations would be to carry out the management practices summarized in this subsection so as to not cause changes in baseline conditions and to continue grazing and invasive species control practices that have proved beneficial, or at least neutral, over the past.

RMV intends to continue its invasive species control program on areas designated for future inclusion in the Habitat Reserve until such time as the HRMP is initiated, as set forth in *Part III*, the IA, at which time HRMP management per *Part V, Appendix J* (Invasive Species Control Plan) will replace RMV ongoing invasive controls. Northrop Grumman also performs invasive controls on their lease area. In the event Northrop Grumman terminates its lease, RMV will extend its ongoing invasive controls program to the current Northrop Grumman lease area until such time as the HRMP is initiated, as set forth in *Part III*, the IA. The specific contribution of these management measures towards a particular Covered Species is set forth in *Chapter 13* and

summarized here. RMV also intends to continue grazing management on areas designated for future inclusion in the Habitat Reserve in accordance with *Appendix G*, Grazing Management Plan. The overall effects of grazing, both positive and negative, on Covered Species and Conserved Vegetation Communities are discussed in *Chapter 13, Section 13.2.4.d* and briefly summarized here.

1. Invasive Species Control within Ladera Open Space

By contract with a private firm specializing in the restoration of native vegetation communities and control of invasive species with these communities, RMV, on behalf of DMB Ladera, has conducted an annual artichoke control program within the Ladera Open Space since 2002.

The primarily method of control is herbicide treatment using glyphosate (*e.g.*, Round-up Pro or Rodeo) and clopyralid (*e.g.*, Transline). Herbicide treatment is conducted only when weather conditions are conducive to effective uptake of the herbicide by the target species (*e.g.*, ambient temperatures between 65 and 85 degrees Fahrenheit, and when plants are at the specified growing stage), and when wind conditions are such that herbicide drift is minimized (5 mph or less). No herbicide treatment during rain conditions is permitted. Treated plants or stumps are not disturbed until the applied herbicide has had time to take effect per the manufacturer's instruction.

A two-stage herbicide application is used in the Ladera Open Space. All artichoke plants are treated using a foliar spray application method using either a manual method (*i.e.*, backpack applicators) or a mechanical method (*i.e.*, boom sprayer attached to a rubber wheeled tractor) depending on access, topography and level of infestation. For plants at the rosette stage, clopyralid is applied at the recommended concentration. For plants at the bolt stage, glyphosate is applied at the recommended rate. Careful monitoring by the contractor is required to determine the optimal time to change herbicides.

In the 2002-2003 season RMV spent $135,830 for this program, in 2004-2005 RMV spent $151,653. Average annual costs for this program are $71,871.

2. Invasive Controls Within Rancho Mission Viejo

Using in-house personnel with experience in the recognition and control of invasive species, RMV conducts an annual control program on the Ranch. The primary target for the control program is artichoke thistle; however, pampas grass, tamarisk and giant reed are also treated on an opportunistic basis when adjacent to artichoke thistle.

The method of control generally is the same as described above for the Ladera Open Space. Due to the aerial extent of RMV, a single application of glyphosate is applied at the recommended rate. All artichoke plants are treated using a foliar spray application method using backpacks/ or hoses from ATV mounted spray tanks depending on access, topography and level of infestation.

Average annual cost for this program is $100,000.

3. Invasive Controls Within Northrop Grumman Lease Area

In compliance with conditions required by the U.S. Army Corps of Engineers through a 404 permit (Special Conditions 1 & 2, 404 Permit #199915591-RLK) Northrop Grumman contracts with a private firm for the annual control of invasive species in their lease area, with an emphasis on Cristianitos Creek and surrounding uplands. The primary targets for this control program are artichoke thistle, sweet fennel, giant reed, tamarisk, Canadian thistle, Italian thistle, pampas grass, and tobacco tree.

The primarily method of control is herbicide treatment using glyphosate (*e.g.,* Round-up) using the same methods as described above for Ladera Open Space and RMV. Generally treatment starts in January-March and ends in June-July. All target plants are treated using a foliar spray application method using backpacks or hoses from truck mounted spray tanks depending on access, topography and level of infestation.

Average annuals costs for this program are $10,000 to $25,000.

4. Benefits to Covered Species from Invasive Species Control Programs

Part I, Chapter 13 and *Part V, Appendices J* (Invasive Species Control Plan) and *E* (Covered and Planning Species Accounts and Conservation Analyses) describe the benefits of ongoing invasive controls and grazing management to the Covered Species. The following is a brief summary of this information. According to *Part I, Appendix J*, "Invasive exotic plant and animal species adversely affect native habitats, sensitive species, and valuable crops worldwide. The adverse impacts occur because invasive exotic species outcompete native species for valuable resources, invasive exotic animals often act as predators upon native species, and in some instances invasive exotic plants can cause type changes within entire ecosystems, altering fire or hydrologic regimes" (p. 1).

As noted above the following upland species are controlled by RMV and Northrop Grumman with a primary focus on artichoke thistle, sweet fennel, Canadian thistle, Italian thistle, and tree tobacco. Removal of these species, particularly artichoke thistle, benefits Covered Species like the California gnatcatcher and grasshopper sparrow and other scrub birds and grassland species

by allowing for areas previously occupied by the thistle to become established with native coastal sage scrub or grasslands used for nesting and foraging. Covered native plants like the state- and federally-listed thread-leaved brodiaea and CNPS List 1B many-stemmed dudleya benefit from artichoke thistle eradication in that they will not have to compete against this aggressive invasive species for valuable resources such space, water, and soil nutrients.

In riparian areas the opportunistic removal of giant reed, pampas grass, and tamarisk allows native vegetation to reestablish, providing for expanded and enhanced breeding and foraging habitat for Covered Species such as least Bell's vireo, southwestern willow flycatcher, and raptors such as the white-tailed kite and Cooper's hawk. Removal of thes invasive species also benefits reptile and amphibian Covered Species such as southwestern pond turtle, western spadefoot toad, and arroyo toad, along with improved aquatic environments for native fish species.

5. Grazing Management

The following is a summary *of Part I, Appendix G,* the Grazing Management Plan, which describes the ongoing basic practice of managing grazing on RMV by monitoring and responding to levels of dry residue matter (RDM), practicing rotational grazing and managing stocking rates.

- Dry Residue Matter

RMV has grazed cattle on its property since 1882. Since that time, RMV has practiced a rotational grazing pattern that takes into account available water, forage productivity and a desire to maintain an average of 25 precent RDM for "natural" or "unimproved" pastures. The 25 percent RDM has been proven over time to sustain cattle grazing while at the same time contributing to high biodiversity on RMV lands, as evidenced by the presence of many special-status wildlife and plant species.

- Rotational Grazing

Generally cattle are grazed in the natural southern pastures (South 40, Sierra, Rinconada, Cristianitos, Gabino and Talega) from October to May to take advantage of the break of season through peak production of annual grasses. In late May or early June cattle are moved from the southern pastures to the northern pastures in the Chiquita and Gobernadora sub-basins (*i.e.*, Lower Chiquita, Lower Gobernadora, Vineyard and Bull Pasture) and McFadden pasture and remain there until late September to take advantage of the barley stubble. From May through most of September, the southern pastures "rest." From October through most of May the natural areas of the northern pastures rest, while the alluvial valleys of Lower Chiquita, Bull Pasture, Lower Gobernadora and the Vineyard are re-planted with barley. Allowing a rest or fallow

period is a well established agricultural practice, the benefits of which are documented in the literature. On RMV, these periods of rest are essential for the production of the next grazing seasons forage, particularly in the natural southern pastures. During the transition from the southern pastures to the northern pastures in May or June, cattle are held temporarily in River Pasture while adjustments to the herd size are made. On average, the herd size is reduced by 25 percent during this transition time. In late September, cattle are returned to the southern pastures.

- Existing Stocking Rates

Stocking rates on RMV vary according to the availability of water, the productivity of forage and the RMV 25 percent RDM standard. Generally speaking, in an average rainfall year, the RMV cattle herd averages approximately 500 head during the southern pasture grazing season (October – May), distributed as follows: Talega 50 head, Gabino 125 head, Cristianitos 125 head, Rinconada 60 head and Sierra 100 head. As discussed above the herd is reduced by 25 percent during the transition from the southern pastures to the northern pastures, resulting in approximately 400 head being distributed in the northern pastures between June and September as follows: McFadden 30, Chiquita Pastures 270 head and Vineyard, Bull Pasture, Lower Gobernadora 100 head (combined). In circumstances where a series of below average rainfall years significantly affect the production of forage in the southern pastures and the 25 percent reduction in stocking rates cannot achieve the 25 percent RDM standard, RMV brings cattle to the irrigated pastures and feedlots in Cow Camp and/or ships cattle to other RMV owned property in northern California or out of state to affect a temporarily higher stocking rate reduction.

- Configuration of Pastures

A summary of the fencing and water supply for the pastures is also provided.

  - Chiquita Pastures

The actively grazed portion of the Chiquita Pastures is enclosed by a four-strand barbed wire fence located below Tesoro High School for the northern boundary, along Chiquita Ridge for the western boundary and the west side of Gobernadora Creek for the eastern boundary. Internal fencing to separate cattle from other uses, such as the orchards, the Chiquita wetland mitigation sites and the wastewater treatment plant also divides the pasture. Fencing along San Juan Creek for the River Pasture forms the southern boundary of the actively grazed portion of Chiquita Pastures. Water is provided by a cattle trough in the lower part of the pasture and via Chiquita Creek.

- Gobernadora Pastures

Three separate fenced pastures collectively called the Gobernadora pastures occur in the Gobernadora sub-basin: Vineyard, Bull Pasture and Lower Gobernadora. Each pasture is described separately below.

(a) The Vineyard

The Vineyard Pasture is enclosed by four-strand barbed wire fence. Internal fencing excludes cattle from GERA. Water is provided by cattle troughs and via Gobernadora Creek (outside of GERA).

(b) Bull Pasture

Bull Pasture is enclosed by four-strand barbed wire fence. The RMV property perimeter fence is its northern boundary, its eastern boundary is fenced along Gobernadora ridge, its southern boundary shares a fence with the Lower Gobernadora pasture and its western fence is shared with the Chiquita Pasture. Water is provided by a cattle trough.

- Lower Gobernadora

Lower Gobernadora shares fences with Vineyard and Bull Pasture to the north, Horse Pasture and Nick's Pasture to the east along Gobernadora Ridge, River Pasture to the south and Lower Chiquita pasture to the west along Chiquadora Ridge. The wetland revegetation area, GERA, is fenced to exclude cattle. Water is provided by a cattle trough.

- River Pasture

River Pasture shares fences with Horno, Lower Chiquita, Lower Gobernadora and Horse Pasture to the north; and Sierra, Rinconada, Cristianitos and Gabino to the south in the San Mateo Watershed. Water is provided via San Juan Creek and a water trough when the creek is dry.

- South 40

South 40 is fenced along Ortega highway. Water is provided via a water trough.

- Sierra Pasture

Sierra Pasture is fenced along Prima Deshecha Landfill, La Pata Avenue, Ortega Highway and shares fencing at the ridgeline with Rinconada Pasture. Cattle are also excluded from the Ranch House by fencing. Water is provided via a water trough.

- Rinconada Pasture

Rinconada Pasture is fenced along Ortega Highway, Cristianitos Road, the boundary with Prima Deshecha Landfill and Sierra Pasture. The Donna O'Neill Land Conservancy boundary is fenced to exclude cattle. Water is provided via water troughs and the mining pond associated with the ONIS operation. Although cattle are not specifically excluded from the ONIS operation, the lack of available forage in the active mine area acts as a deterrent to wandering cattle.

- Cristianitos Pasture

Cristianitos Pasture is fenced along Ortega Highway, Cristianitos Road, Talega Pasture and the Cristianitos/Gabino ridgeline. Citrus/avocado areas in Cristianitos are also fenced to keep cattle out. Water is provided via three defunct mining ponds and water troughs.

- Gabino

Gabino Pasture is fenced along Ortega Highway, south of Gabino Creek where it shares a common fence with the Talega Pasture and at the RMV boundary with Riverside County (perimeter fence). Water is provided via Jerome's Lake, water troughs and Gabino Creek (when water is available).

- Talega

Talega pasture is fenced along the boundary with MCB Camp Pendleton, the RMV boundary, the Northrop Grumman lease area and shares a common fence with Gabino and Cristianitos pastures. Water is provided via Talega Creek (where inside the RMV boundary fence) and water troughs.

6. Benefits to Covered Species from Grazing Management

An often-cited review article by Fleischner (1993) concluded that livestock grazing, especially in the arid west, is virtually exclusively deleterious to environmental health, and therefore should be terminated in nearly all circumstances. Brussard *et al.* (1994) took issue with that conclusion, warned that the premise was faulty, and, importantly, that Fleischner's treatment of the issue was

biased in its presentation of both the standing literature and then current knowledge. Certainly, ample examples exist that show that grassland ecosystems that are overgrazed, especially during periods of stress from drought, can be negatively impacted and that overgrazed grasslands frequently manifest reduced biomass and native plant species diversity. However, at lowest levels, grazing can have inconsequential effects on native plant and animal species diversity, some of which could not even be measured. At low, but consequential levels, grazing can be selective and beneficial to biodiversity, serving to reduce biomass and the likelihood of devastating wildfire, reduce thatch with benefits to native grasslands and reduce populations of undesired non-native plants that may compete with desired native species.

On RMV, the existing grazing management regime of a 25 percent RDM standard, stocking levels based on this 25 percent RDM standard, and a rotational grazing pattern historically has proven to be compatible with extensive species occupation of the Ranch (see *Figures 25-R* through *30-R* and *Figures 34-R* through *40-R*). For most Covered Species, light to moderate grazing effects range from non-significant adverse effects (*e.g.*, riparian and woodland nesting species) to likely net positive effects (*e.g.*, grasshopper sparrow). The determination that grazing has a non-significant adverse effect on a particular species is in large part based of the documented presence of that species in areas that have been historically grazed at light to moderate levels. For example, severe over-grazing has been documented to have a clear adverse effect on riparian nest habitat for a number of neotropical migrants such as yellow warbler (*e.g.*, Taylor and Littlefield 1986). The light/moderate grazing regime on the Ranch has not had this effect on species such as the least Bell's vireo, yellow-breasted chat and yellow warbler. These species have persisted in fair numbers locally in Chiquita and San Juan creeks under the low/moderate grazing regime in these areas. Although habitat quality may not be optimum for these species in grazed areas, the light/moderate rotational grazing regime on the Ranch clearly has not precluded these species and is not expected to in the future under existing grazing practices.

For some aquatic species, such as the arroyo toad and the Riverside and San Diego fairy shrimp, there is a clear link between grazing and potential impacts on the species. For the arroyo toad cattle-related impacts are identified as potential stressor (see *Part V, Appendix E* – Arroyo Toad Conceptual Stressor Model) through trampling of egg masses or decreases in water quality. For toads occupying Cristianitos Creek, this is not an issue as cattle cannot access lower Cristianitos Creek where breeding is most likely to occur due to fencing of Cristianitos and Talega pastures. Since Talega Creek is largely located outside RMV on Camp Pendleton, no significant impacts to toads are anticipated. In River Pasture where the majority of toad breeding appears to be focused, *i.e.*, east of the existing Cow Camp crossing (see *Figure 173-M*), cattle are not currently grazed and thus do not present a potential impact. Upon dedication of this area to the Habitat Reserve, the GMP requirements for seasonal exclusions would apply. Although potential cattle-related impacts to toads in Gabino Creek and San Juan Creek west of the existing Cow

Camp crossing may occur, they will not be any greater than under current conditions that support toads in these locations. Similarly, cattle-related impacts may occur to the occupied Radio Tower road vernal pools supporting fairly shrimp prior to dedication to the Habitat Reserve at which time the GMP seasonal exclusions would apply. However such potential impacts will not be any greater than under current conditions that support fairy shrimp in these vernal pools.