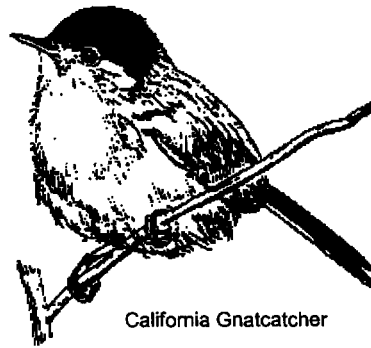

Habitat Management Plan for Natural Communities in the City of Carlsbad



Coast Live Oak



California Gnatcatcher



Orange-throated Whiptail

**DECEMBER, 1999
AS AMENDED**

**FINAL APPROVAL NOVEMBER, 2004
INCLUDING IMPLEMENTING AGREEMENT
AND TERMS AND CONDITIONS**

Habitat Management Plan for Natural Communities in the City of Carlsbad

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on the Habitat Management Plan.

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Habitat Management Plan for Natural Communities in the City of Carlsbad

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A. Introduction and Background

1. Purpose

The Habitat Management Plan for Natural Communities in the City of Carlsbad (Carlsbad HMP, "the Plan") proposes a comprehensive, citywide, program to identify how the City, in cooperation with federal and state wildlife agencies, can preserve the diversity of habitat and protect sensitive biological resources within the City while allowing for additional development consistent with the City's General Plan and its Growth Management Plan. In so doing, the Plan is intended to lead to citywide permits and authorization for the incidental take of sensitive species in conjunction with private development projects, public projects, and other activities, which are consistent with the Plan. These permits would be issued under the U.S. Endangered Species Act, the California Endangered Species Act, the California Natural Community Conservation Planning Act.

The Plan also is designed to serve the following additional functions:

1. Preserve wildlife and habitats as part of the City's permanent open space system and thereby be a component of the Open Space and Conservation Element of the City's General Plan;
2. Allow the City to construct public facility and infrastructure projects dictated by the City's Growth Management Plan;
3. Define the City's contribution to regional efforts to conserve coastal sage scrub (CSS) habitat and species under California's Natural Community Conservation Planning (NCCP) program. The Plan constitutes an Ongoing Multi-Species Plan (OMSP) that is consistent with NCCP guidelines;
4. Allow projects in the City to fulfill their federal and state Endangered Species Act (ESA) requirements for certain species through compliance with the HMP;
5. Constitute a habitat conservation plan (HCP), as described in Section 10(a)(1)B of the Endangered Species Act and Section 2835 of the California Endangered Species Act related to the NCCP Program, submitted with the City's application to the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) for authorization to take certain listed species; and
6. Constitute Carlsbad's Subarea plan within the North County Multiple Habitat Conservation Plan (MHCP).

Formal approval and adoption of the Plan will occur through issuance of Section 10(a) Permit and approval and execution of an Implementing Agreement between the City, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game. Private development projects would be treated as third party beneficiaries under the Implementing Agreement, which will authorize citywide permits for a term of 50 years, with a provision for extensions.

2. Goals and Objectives

The overall goal of the HMP is to contribute to regional biodiversity and the viability of rare, unique or sensitive biological resources throughout the City of Carlsbad and the larger region

while allowing public and private development to occur consistent with the Carlsbad General Plan and Growth Management Plan.

The specific biological objectives of the Plan are to:

- Conserve the full range of vegetation types remaining in the City, with a focus on rare and sensitive habitats;
- Conserve areas of habitat capable of supporting the HMP Species in perpetuity; and
- Maintain functional wildlife corridors and habitat linkages within the City and to the region, including linkages that connect gnatcatcher populations and movement corridors for large mammals.

The specific conservation objectives of the Plan are to:

- Maintain functional biological cores;
- Maintain functional linkages and movement corridors;
- Conserve rare vegetation communities;
- Conserve narrow endemic species and maintain populations of target species; and
- Apply a "no net loss" policy to the conservation of wetlands, riparian and oak woodland habitats.

The specific land use objectives of the Plan are to:

- Protect important wildlife habitats while allowing for orderly growth and development;
- Provide a menu of land use measures to protect and conserve habitat according to the Plan including standards relating to mitigation, open space dedications and density transfers;
- Provide a framework for coordinating and monitoring the protection and management of biological resources in natural open space; and
- Provide for the continued implementation of the Growth Management Plan, particularly the provision for ensuring adequate public facilities to serve new growth.

The specific economic objectives of the Plan are to:

- Minimize ESA-related mitigation costs to public and private projects;
- Allow continued economic growth and development in the City; and
- Minimize the overall cost of HMP implementation to the City and its residents.

3. Background

The City's interest in preserving sensitive habitat dates back many years. When the City adopted its first Open Space and Conservation Element of the General Plan in the mid-1970's, the element identified an interconnecting open space system that traversed the entire City. This plan provided for a system of greenbelts between development areas and the potential for an interconnected trail system, and at the same time it also set a foundation for allowing the possibility of linking areas for wildlife habitat connectivity. In the late 1980's the City appointed a Citizens Committee to review the Open Space Plan. A primary recommendation of the Committee was to make the protection of wildlife habitats and sensitive species an open space priority.

The City's continued commitment to the HMP dates back to November 1990, when the City Council authorized technical studies for a habitat conservation component for the Open Space and Conservation Element of the City's General Plan. Subsequently, several events defined a local, regional, and regulatory context for the HMP planning process. These events include:

1. The listing of the coastal California gnatcatcher and other species;
2. Initiation of the NCCP Coastal Sage Scrub (CSS) program;
3. Execution by the City of NCCP planning agreements with the USFWS, CDFG, and California Resources Agency;
4. Initiation of the North County Multiple Habitat Conservation Program (MHCP) as a sub-regional planning effort under the NCCP program;
5. USFWS and CDFG approval of impact mitigation and habitat conservation measures for individual development projects within the City; and
6. Preparation and revision of earlier drafts of the HMP.

4. Listing of the Gnatcatcher and Other Species

In 1993, the coastal California gnatcatcher was listed as threatened under the Federal ESA. This listing affected a wide range of public and private projects in the City, because a significant amount of gnatcatcher habitat exists in the City. To proceed, projects in areas with gnatcatchers would have to completely avoid "take" or seek Federal authorization. Several other species have been listed under the Federal or California ESA since the HMP process began. Currently, approximately 25 species that are listed, or proposed for listing, occur or are associated with habitats in the City.

5. NCCP Program

In 1991, the California NCCP Act was approved, and the NCCP CSS program was initiated in Southern California. In the initial phases of the program, process and conservation guidelines were developed, and the USFWS adopted a special rule regarding the gnatcatcher pursuant to Section 4(d) of the Federal ESA. This special rule exempts take of gnatcatchers during the interim period prior to approval of plans under the NCCP program provided it is consistent with NCCP process and conservation guidelines. In connection with the NCCP program and 4(d) rule, by informal, regional agreement, interim impacts in the San Diego region were

capped at 5% of the existing habitat within each jurisdiction participating in the NCCP program (165.7 acres in the City). This limitation has been in place since 1993.

6. Planning Agreements

In connection with the gnatcatcher listing and NCCP program, the City entered into memoranda of agreement (MOA) with USFWS and CDFG in 1991 and signed a NCCP agreement with the California Resources Agency in 1992. The MOAs expressed the City's intention to complete the HMP as part of its General Plan and, in the interim, to work cooperatively with USFWS and CDFG to address the impacts of individual projects on sensitive habitats such as CSS. The 1992 agreement enrolls the City in the NCCP program as an "Ongoing Multi-Species Plan" as defined in the NCCP process guidelines, (i.e., as a pre-existing conservation program whereby the objectives of the NCCP program can be substantially achieved). The agreement was supplemented in 1993 to clarify that the HMP is a Subarea Plan within the North County MHCP.

7. North County MHCP

The North County MHCP is a subregional NCCP planning effort that encompasses land within the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, Solana Beach and Vista. This Plan is being developed through a cooperative effort by the seven cities and the San Diego Association of Governments (SANDAG). Key tasks completed to date include: vegetation mapping of the subregion; compilation and analysis of data on species occurrence; preparation of draft biological goals, standards, and guidelines for preserve design; preliminary identification of biological cores and linkages for a subregional preserve system; delineation of a preliminary focus planning area within the cities for preserve design and the preparation of a draft Plan for public review and comment. Institutional arrangements and financing mechanisms for habitat management and acquisitions also will be developed under the MHCP to facilitate implementation of Subarea plans such as the HMP. As part of the preparation of the MHCP, the need for the conservation of a gnatcatcher biological core in the southern central portion of the MHCP including the county unincorporated area southeast of Carlsbad was identified. Carlsbad's participation in this core area is discussed in detail in Section D of the HMP. Completion of the MHCP, however, is not required for City, USFWS, or CDFG approval of the HMP.

8. USFWS and CDFG Approved Projects

Subsequent to initiation of the HMP, USFWS and/or CDFG have authorized certain projects in the City to take listed species and/or remove sensitive habitats, conditioned on implementation of specific conservation and mitigation measures. The projects include:

- Arroyo La Costa;
- Rancho Carrillo;
- Rancho Verde; and
- Villages of La Costa/Rancho Santa Fe Road (i.e., the projects covered by the Carlsbad Fieldstone Habitat Conservation Plan).

In the HMP planning process, the impacts of and mitigation for these projects are treated as follows:

1. For projects being phased over time, existing vegetation in the approved impact areas is treated as if it were already removed;

2. Onsite and offsite mitigation lands for the projects are treated as already conserved if the lands have been explicitly delineated;
3. The additional offsite mitigation to be provided under the Fieldstone HCP in one or more locations is treated as part of the contribution of the HMP; and

9. Preparation and Revision of Earlier Drafts

The first technical report for the HMP was completed in 1992 and provided the basis for a preliminary conservation strategy in 1993. Preparation of the draft HMP was coordinated with vegetation mapping and habitat evaluations conducted for the MHCP and completion of the Fieldstone/La Costa Associates HCP. This effort culminated in a public review draft of the HMP dated July 1994. Further refinement of the draft HMP was postponed until agreement could be reached between the City, CDFG, USFWS and Fieldstone on the Fieldstone/La Costa Associates HCP and the agencies could provide comments on the draft HMP and its relation to the MHCP. The Fieldstone/La Costa Associates HCP was approved in June 1995. City staff and consultants then met with the agencies and were advised of the agencies' concerns that the HMP needed additional detail regarding the amount and location of habitat proposed for conservation and more definitive guidelines for achieving conservation goals over time.

In response to comments on earlier drafts of the HMP and in connection with defining biological cores and linkages within the City as part of the MHCP, City staff and consultants met with landowners and project proponents to determine where general or detailed conservation plans for individual properties could be identified. These property-specific conservation proposals are in addition to the previously noted projects with agency approved plans. Following these meetings, the HMP data base and maps were revised to reflect updated vegetation information and the approved and proposed conservation areas within the City. The text of the HMP also was revised to reflect the changes and clarify what the HMP would do and how it would be implemented. The revised draft of the HMP was then submitted to the wildlife agencies as an agency review draft. The City and the wildlife agencies then began a very detailed and lengthy review and interaction process to determine amendments needed to the Plan to ensure consistency with applicable regulations and guidelines. This HMP document reflects that process.

B. Definitions

1. Abbreviations

ACOE	United States Army Corps of Engineers
AG	Agriculture
AM	Alkali Marsh
BEPA	Bald [and Golden] Eagle Protection Act
CALTRANS	California Department of Transportation
CB	Coastal Bluffs
CDFG	California Department of Fish and Game
CE	California endangered species
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CT	California threatened species
CHP	Chaparral
CLOW	Coast Live Oak Woodland
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CSC	California Species of (Special) Concern
CSS	Coastal Sage Scrub
EW	Eucalyptus Woodland
ESA	Endangered Species Act (Federal)
FE	Federally listed endangered species
FPE, FPT	Proposed for federal listing as endangered (E) or threatened (T)
FT	Federally listed threatened species
FWM	Freshwater marsh
G	Grassland
GIS	Geographic Information System
GMP	Growth Management Plan/Program
HCP	Habitat Conservation Plan
HMP	Habitat Management Plan
LFMZ	Local Facilities Management Zone
MBTA	Migratory Bird Treaty Act
MHCP	(North County) Multiple Habitat Conservation Program
MOA	Memorandum of Agreement
MSS	Maritime Succulent Scrub
NCCP	Natural Community Conservation Plan (Planning)
NEPA	National Environmental Policy Act
NG	Native Grassland
NNG	Non-native Grassland
OMSP	Ongoing Multi-Species Plan
OW	Oak Woodland
R	Riparian
RF	Riparian Forest
RW	Riparian Woodland
SANDAG	San Diego Association of Governments
SM	Salt Marsh
SMC	Southern Maritime Chaparral
SRA	Special Resource Area
USFWS	U.S. Fish and Wildlife Service
var	variety
VLC	Villages of La Costa
VP	Vernal Pool

2. Definitions

Assurances: Mutual agreements and covenants contained in the Implementation Agreement which bind the parties to specified actions and provide each party with benefits. The benefits include, for example, authorization for incidental take of species in accordance with the HMP, and conservation of species resulting from actions to implement the plan.

Authorizations: Permits for incidental take of species in accordance with the HMP.

Changed Circumstances: Those circumstances affecting a species or geographic area that can be reasonably anticipated and planned for.

Conserve: To keep from loss, decay or depletion; maintain, protect. Conservation and preservation are similar terms and are used in much the same way. Preservation connotes the act of securing the land and its values, whereas conservation generally is more broad and includes activities such as management of the land and its resources.

Conservation: As defined in the federal Endangered Species Act, the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary; such measures and procedures include, but are not limited to, all activities associated with scientific resource management such as research, census, law enforcement, habitat acquisition and management, propagation, live trapping and transportation, and in rare cases, regulated taking (ESA, Section 3[3]). In this plan, conservation also applies to all actions related to providing a viable habitat preserve system in the City.

Core: A component of the preserve system established under the HMP, consisting of large blocks of conserved habitat capable of sustaining species over time. (Also see HMP Cores and MHCP Core).

Corridor: A defined tract of land, usually linear, through which a species must travel to reach habitat suitable for reproduction and other life-sustaining needs.

Covered species: A species for which take authorization would be provided because long-term viability was determined to be adequately maintained under a particular preserve design. The federal action addressed in this document is the issuance of incidental take permits from all species on the covered species list whether they currently are listed or are listed in the future.

Critical Location: An area that must be conserved substantially for that species to be adequately conserved by the MHCP. Critical locations often coincide with major populations, but not all major populations are considered critical.

Endangered Species: Any plant or animal in danger of extinction in all or a significant part of its range.

Endangered Species Act: Federal Act of 1973, as amended, 16 U.S.C. Sections 1531-1543; and California Act of 1984, as amended, California Fish and Game Code, Sections 2050-2098.

Existing Hardlines: Areas which have already been conserved for their wildlife value due to actions occurring in the past. Examples include onsite open space required to be set aside as part of approval of a development project and areas that have been purchased and set aside as mitigation for project impacts.

Focus Planning Area Map: A map included as Figure 4 of this plan, which depicts the lands of high biological value that will be considered for conservation or development as part of this plan. The map includes HMP Cores, Linkage Areas, and Special Resource Areas, as defined.

Habitat: The combination of environmental conditions of a specific place occupied by a species or a population of such species.

Harass: A form of incidental take under the federal Endangered Species Act; defined in federal regulations as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR 17.3).

Harm: A form of incidental take under the federal Endangered Species Act; defined in federal regulations as an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3).

HMP Cores: Areas within the Focus Planning Area Map (Figure 4) which consist of blocks of habitat that are sufficiently large to reliably support breeding populations of species, or that are large and intact enough to form ecologically functional areas for preserve design.

Implementing Agreement: A binding legal agreement between the City of Carlsbad, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game providing assurances to all three parties and providing authorization to the City for incidental take of species in accordance with this plan.

Incidental Take: The taking of a federally listed wildlife species, if such taking is incidental to and not the purpose of carrying out otherwise lawful activities. (Also see Take.)

Linkage: A component of the preserve system established under the HMP, consisting of conserved habitat that provides connectivity between Cores and to natural communities within the region. Linkages are depicted on the Focus planning Area Map (Figure 4).

Major Population: A population considered sufficiently large to be self-sustaining with a minimum of active or intensive management intervention (especially for plants) or that at least support enough breeding individuals to contribute reliably to the overall metapopulation stability of the species (especially for animals). Also includes smaller populations that nonetheless are considered important to long-term species survival.

Metapopulation: A network of semi-isolated breeding populations of a species that have some level of regular or intermittent migration and gene flow among them. (See also Population).

MHCP Core: A large habitat area in the unincorporated, County area to the southeast of Carlsbad, which the MHCP is proposing as a subregional biological core area.

Mitigation: Measures undertaken to diminish or compensate for the negative impacts of a project or activity on the environment, including: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or

eliminating the impact over time by preservation and maintenance operations during the life of the action; or (e) compensating for the impact by replacing or providing substitute resources or environments.

Narrow Endemic Species: Native species with restricted geographic distributions, soil affinities and/or habitats, and for purposes of the HMP, species that in addition have important populations within the Plan area, such that substantial loss of these populations or their habitat within the HMP area might jeopardize the continued existence or recovery of that species.

Ongoing Multi-Species Plan: A conservation planning effort, such as the HMP, which was initiated and substantially underway prior to the passage of the NCCP Act of 1992.

Population: A group of individuals of a given species that inhabits a relatively well defined geographic area and has the opportunity to interbreed freely.

Preserve: As a noun, an area set apart for the protection of wildlife and natural resources. As a verb: to keep in safety; protect from danger or harm; to keep intact or unimpaired; maintain. Preservation and conservation are similar terms and are used in much the same way. Preservation connotes the act of securing the land and its values, whereas conservation generally is more broad and includes activities such as management of the land and its resources.

Project(s): Any activity that has biological impacts and is undertaken by the City or involves the issuance of a lease, permit, license, certificate, or other entitlement by the City.

Proposed Hardline Areas: Properties whose conservation and development areas have been planned as part of the HMP, as depicted on Figure 6. If development is proposed on these lands in substantial conformance with Figure 6, the development will be automatically permitted under the HMP. These areas have been agreed-upon in coordination with the landowners, the city, U.S. Fish and Wildlife Service, and the California Department of Fish and Game.

Public Lands: Properties owned by the City of Carlsbad or another governmental agency or special purpose district which are being addressed in this plan. NOTE: Some properties owned by governmental agencies are not included in the Plan at this time. These properties are noted on maps as "not a part."

Section 7: A section of the federal Endangered Species Act that provides for a consultation between a federal agency and the U. S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat or such species.

Special Resource Area (SRA): A component of the Focus Planning Areas established under the HMP, consisting of conserved habitat outside of HMP Cores and Linkages; SRAs are limited to areas with vernal pools, significant populations of listed plant species, and movement corridors for large mammals.

Species: Any distinct population of wildlife that interbreeds when mature.

Standards: Special land use regulations to be adopted by the City of Carlsbad to implement the HMP, as described in Section D. The Standards will be applied only to the lands designated as standards areas.

Standards Areas: Lands designated and depicted in Figure 15 of this plan which must be designed, permitted and developed in accordance with the Standards stated in Section D.

Stepping Stone Linkage: A discontinuous linkage or corridor that consists of a series of habitat patches separated by non-habitat patches. Individuals may move across the linkage by moving from one habitat patch to another. Generally, at least some of the stepping stones should support some breeding individuals of a species, at least in some years.

Take: As defined in the federal ESA, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species, or attempt to do so. Under the California ESA, take of a listed or candidate species means "to hunt, pursue, capture, or kill or attempt the same." (See also Incidental Take.)

Threatened Species: Any species or subspecies that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Unforeseen Circumstances: Changes that could not reasonably have been anticipated and that result in a substantial and adverse change in a species' status.

C. Description of the Plan Area

The summary of biological resources provided below supplements and updates biological information included in the following documents, which are incorporated herein by reference:

- Draft Biological Resources and Habitat Analysis, City of Carlsbad, California (Michael Brandman Associates [MBA] and Dudek & Associates 1992)
- Public Review Draft Habitat Management Plan for Natural Communities in the City of Carlsbad, California (Carlsbad 1994)
- Review Draft Biological Goals, Standards, and Guidelines for Multiple Habitat Preserve Design [for the MHCP] (Ogden 1997)

Biological information in the first two documents was updated extensively in connection with the MHCP and through studies conducted for the HMP after 1994. The most pertinent of these database updates are as follows:

- In 1996, vegetation mapping for the MHCP subregion was updated and refined using 1995 satellite imagery to systematically update the regional vegetation database. Where available, project-specific field mapping performed since 1992 also was incorporated.
- In 1996-97, data on the distribution of certain species of concern were refined and coordinated. Where biologists or other reliable sources suggested additions or deletions to species location points, these changes were made to the GIS database so long as the information could be verified by USFWS, CDFG, or Ogden biologists.
- In 1997, the Carlsbad vegetation and species maps were further updated and refined by merging the most accurate and current portions of GIS data files that had previously been maintained independently by SANDAG and the City. SANDAG produced maps showing where the two databases differed. Where differences occurred, Ogden biologists, in concert with city staff, identified which version was most accurate and current. A master map was then created by merging the best information from each file for each area of the city. This effort also involved incorporating project-specific field mapping where available, along with limited field-truthing by Ogden biologists to verify mapping accuracy.

The major differences in biological resources as described in the 1994 Draft HMP and this 1998 HMP are as follows:

1. Some areas previously mapped as natural habitat have been cleared of vegetation for development projects since 1994. Species locations associated with these cleared areas were also considered to be removed unless specific information indicates that the species still exists there.
2. The updated 1998 vegetation maps recognize some vegetation communities that were not recognized in the 1994 version, most notably southern maritime

chaparral (a rare community supporting a number of narrow endemic plant species) as distinct from southern mixed chaparral (a more common community).

3. More complete species location information is now available for a number of species, most notably some of the narrow endemic (highly restricted) plant species.

1. Regional and Local Context

Carlsbad is situated along the Pacific Coast in northern San Diego County, California. It is bordered on the north and northeast by the City of Oceanside, on the east by the cities of Vista and San Marcos, on the southeast by unincorporated County lands, and on the south by the City of Encinitas (see Figure 1). The coastal portions of Carlsbad are largely developed; however, natural vegetation communities remain in and around the three coastal lagoons and on some of the higher, steeper-sloped, inland portions of the City. Oceanside and Vista are largely built-out, such that in many places the natural communities end abruptly along the City border. The remaining landscape linkages to natural communities outside the City occur along the southeastern border with San Marcos and the unincorporated lands and along the southern border with Encinitas. CSS in the City also is part of a regionally significant stepping stone corridor that extends into Oceanside, connecting gnatcatcher populations in Orange and Riverside counties with those south and east of Carlsbad.

The City of Carlsbad's land use planning process includes a unique Growth Management Program. Under that program, the City is divided into 25 Local Facilities Management Zones (LFMZs) for planning purposes (see Figure 2). These LFMZs are also useful for conservation planning purposes, and they have been utilized throughout this document.

The majority of the land in the City of Carlsbad is privately owned. Major private owners of undeveloped land include Bank of America (Villages of La Costa), San Diego Gas and Electric, and several ranching families that have lived in the Carlsbad area for many years. Public agencies that own significant tracts of undeveloped land include the City of Carlsbad, County of San Diego and State of California (Parks Department, Fish and Game Department, and University of California Natural Reserve System).

There is no federally owned undeveloped land in Carlsbad. This situation is different from other portions of the region which include significant acreage of land owned by the Bureau of Land Management or other federal agencies.

2. Habitat and Species

As described in detail in Appendix A and summarized in Table 1, natural vegetation communities cover approximately 8,758 acres (36% of the City's total area). The remainder of the City is agricultural lands (approximately 1,812 acres), disturbed lands (approximately 1,251 acres) or developed lands (approximately 12,749 acres). Figure 3 illustrates the distribution of vegetation types.

Table 2 identifies the HMP Covered Species, identifies their listing status and habitat type, and indicates the known occurrence of significant populations of each species by LFMZ. Table 2 also includes a list of species for which the City is not requesting coverage as an HMP species at this time. These additional species may be added with a Plan Amendment after the Regional MHCP is completed.

City of Oceanside

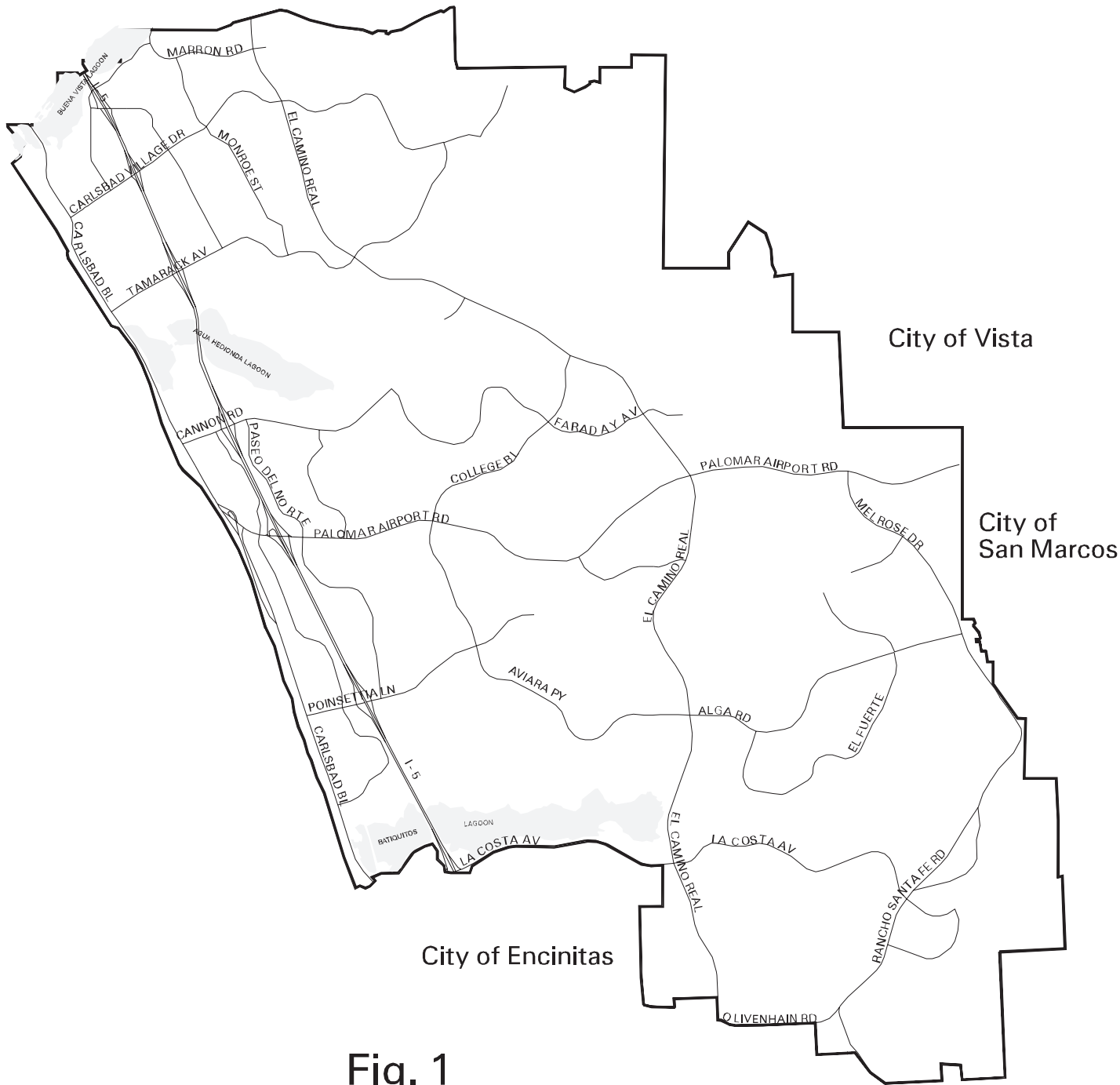
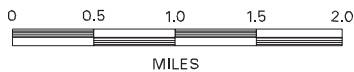


Fig. 1
HMP Plan Area



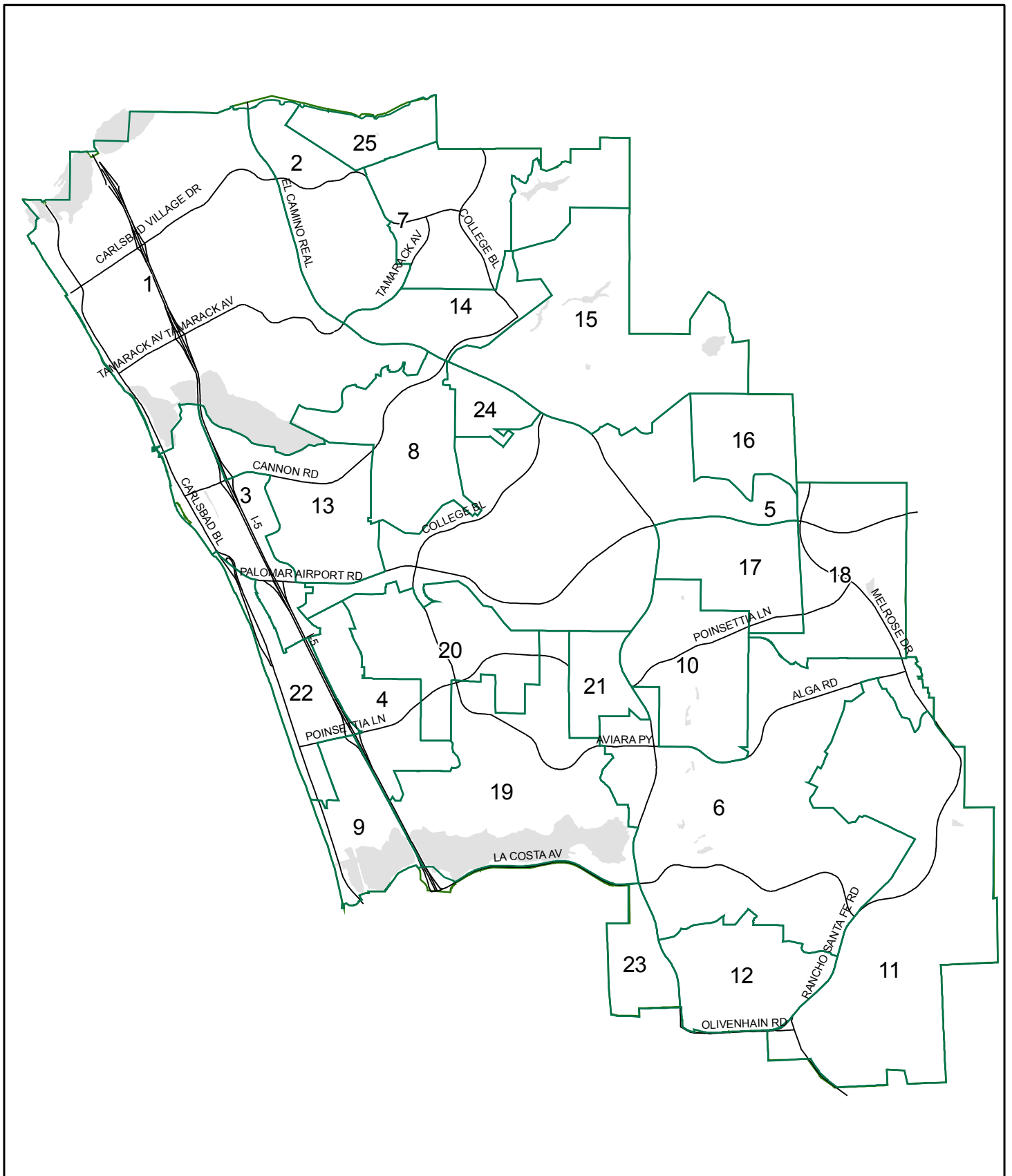


Figure 2
Local Facilities Management Zones



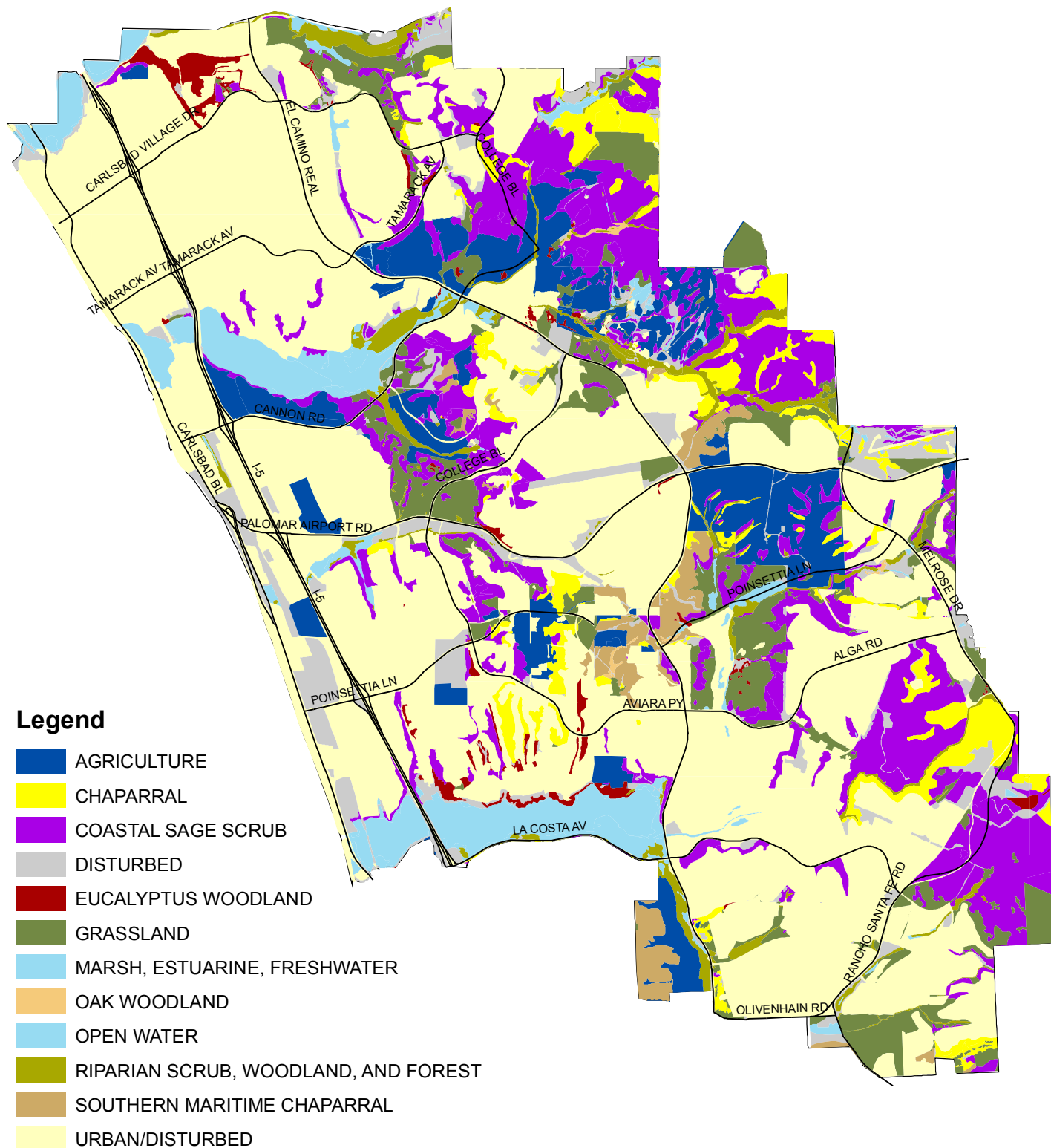


Figure 3
Vegetation Map
City of Carlsbad

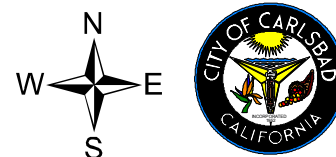


Table 1
Habitat Types within Carlsbad¹

Vegetation Type	Acres
Grassland ²	1,856
Coastal Sage Scrub	3,315
Chaparral (Undifferentiated Types)	968
Southern Maritime Chaparral	392
Oak Woodland	29
Eucalyptus Woodland	258
Riparian Scrub, Woodland and Forest	574
Marsh, Estuarine, Freshwater, and Other Wetlands	1,366
Subtotal Habitat³	8,758
Agricultural	1,812
Disturbed	1,251
Developed	12,749
Subtotal Developed and Disturbed	15,812
TOTAL- All Lands Within City of Carlsbad	24,570

1. Excludes areas designed as not a part (N.A.P.) in HMP.

2. This category includes both native (perennial) and non-native (annual) grasslands. The acreages of each cannot be distinguished at this time due to the absence of detailed survey data for several large grassland areas.

3. Includes vegetated areas in impact areas of projects with USFWS and CDFG approved mitigation plans.

(See Appendix A for a more detailed description of habitat types within Carlsbad)

CARLSBAD HMP

List 1: Species Proposed for Coverage under the Carlsbad Subarea Plan

Scientific Name	Common Name	Status ¹	MHCP Subregional Plan Vol. II Page Ref.
Plants			
<i>Chorizanthe orcuttiana</i>	Orcutt's spineflower	FE/CE/NE	4-56
<i>Dudleya blochmaniae ssp. blochmaniae</i>	Blochman's dudleya	FSC	4-74
<i>Euphorbia misera</i>	Cliff spurge	None	4-101
<i>Hazardia orcuttii</i>	Orcutt's hazardia	FSC/CT/NE	4-111
<i>Quercus dumosa</i>	Nuttall's scrub oak	FSC	4-159
Invertebrates			
<i>Panoquina errans</i>	Salt marsh skipper	FSC/OW	4-202
<i>Euphyes vestris harbisoni</i>	Harbison's Dun Skipper	FSC/NE	4-196
Birds			
<i>Pelecanus occidentalis californicus</i>	California brown pelican	FE/CE/FP/O W	4-251
<i>Plegadis chihi</i>	White-faced ibis	FSC/SSC/OW	4-256
<i>Accipiter cooperii</i>	Cooper's hawk	SSC	4-264
<i>Pandion haliaetus</i>	Osprey	SSC/OW	4-269
<i>Falco peregrinus anatum</i>	American peregrine falcon	CE/FP	4-280
<i>Rallus longirostris levipes</i>	Light-footed clapper rail	FE/CE/FP/O W	4-285
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	FT/SSC/OW	4-291
<i>Sterna elegans</i>	Elegant tern	FSC/SSC/OW	4-299
<i>Sterna antillarum browni</i>	California least tern	FE/CE/FP	4-304
<i>Empidonax traillii extimus</i>	Southwestern willow flycatcher	FE/CE/OW	4-314
<i>Vireo bellii pusillus</i>	Least Bell's vireo	FE/CE/OW	4-321
<i>Polioptila californica californica</i>	Coastal California gnatcatcher	FT/SSC	4-333
<i>Icteria virens</i>	Yellow-breasted chat	SSC/OW	4-360
<i>Aimophila ruficeps canescens</i>	California rufous-crowned sparrow	FSC/SSC	4-366
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	FSC/CE/OW	4-371
<i>Passerculus sanwichensis rostratus</i>	Large-billed savannah sparrow	FSC/SSC/OW	4-377
Reptiles			
<i>Cnemidophorus hyperythrus beldingi</i>	Orange-throated whiptail	SSC	4-245

¹ See the "Key to Legal and Management Status" that follows List 3.

List 2: Species Coverage Contingent on Other MHCP Subarea Plans being Permitted

Scientific Name	Common Name	Status ¹	MHCP Subregional Plan Vol. II Page Ref.
Plants			
<i>Acanthomintha ilicifolia</i>	San Diego thormmint ²	FT/CE/NE	4-9
<i>Ambrosia pumila</i>	San Diego ambrosia	FE/NE	4-16
<i>Ceanothus verrucosus</i>	Wart-stemmed ceanothus ²	FSC	4-50
<i>Dudleya viscida</i>	Sticky dudleya	FSC	4-89
<i>Ferocactus viridescens</i>	San Diego barrel cactus	FSC	4-106
<i>Quercus engelmannii</i>	Engelmann oak	None	4-165

1 See the "Key to Legal and Management Status" that follows List 3.

2 Coverage for this species is also contingent on funding for management of conserved areas.

List 3: Species Coverage Contingent on Funding for Management of Conserved Areas

Scientific Name	Common Name	Status ¹	MHCP Subregional Plan Vol. II Page Ref.
Plants			
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	Del Mar manzanita	FE/NE	4-26
<i>Baccharis vanessae</i>	Encinitas baccharis	FT/CE/NE	4-32
<i>Brodiaea filifolia</i>	Thread-leaved brodiaea	FT/CE/NE	4-37
<i>Comarostaphylis diversifolia</i> ssp. <i>diverifolia</i>	Summer holly	FSC	4-63
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>	Del Mar sand aster	FSC/NE	4-68
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery ³	FE/CE/NE/OW	4-94
<i>Iva Hayesiana</i>	San Diego marsh elder ⁴	FSC	4-116
<i>Myosurus minimum</i> ssp. <i>Apus</i>	Little mousetail ³	FSC/NE/OW	4-133
<i>Navarretia fossalis</i>	Spreading navarretia ³	FT/NE/OW	4-140
<i>Orcuttia californica</i>	California Orcutt grass ³	FE/CE/NE/OW	4-147
<i>Pinus torreyana</i> ssp. <i>torreyana</i>	Torrey pine	FSC	4-154
Invertebrates			
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp ³	FE/NE/OW	4-178
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp ³	FE/NE/OW	4-184

¹ See the "Key to Legal and Management Status" below.

³ Coverage for this species is also contingent on the City of Carlsbad receiving legal control over the protection, management, and monitoring of the vernal pools adjacent to the Poinsettia Train Station in Carlsbad.

⁴ Coverage for this species is also contingent on other MHCP subarea plans being permitted.

Key to Legal and Management Status of Species in Lists 1 - 3

FE	Federally Endangered		
FT	Federally Threatened		
BEPA	Bald Eagle Protection Act		
FSC	Federal Species of Concern (former Category 2 Candidate)		
CE	State Endangered		
CT	State Threatened	SPM	State Special Protected Mammal
FP	State Fully Protected species	SSC	State Species of Special Concern
RGS	State Regulated Game Species	None	No Federal, State, or City status
OW	Obligate Wetland Species in the MHCP		
NE	Narrow Endemic Species in the MHCP		

(Narrow Endemic standards apply to all proposed hardline, standards areas, etc. as described in section 3.7 of MHCP Volume 1)

3. Existing Levels of Conservation

For purposes of quantifying existing levels of conservation within the City, the following categories of lands were identified as existing hardline conservation areas:

- State lands designated as preserves or managed primarily for biological resources;
- Mitigation lands identified in plans and agreements for approved projects; and
- Dedicated open space and easements on lands with biological resources,

Within these areas, there are approximately 4,400 acres of habitat.

4. Assessment of Conditions and Options

Over the course of the HMP planning process, the remaining habitats within the City have been evaluated in qualitative and quantitative terms. These evaluations include:

- GIS habitat value and sensitivity models developed and applied to the HMP, MHCP, and regional NCCP plan areas;
- Application of proposed MHCP biological goals, standards, and guidelines;
- Site-specific analysis and planning by project proponents and HMP consultants; and
- Species-specific studies for individual projects and the MHCP, including gnatcatcher metapopulation analyses.

These evaluations yielded the following conclusions regarding conservation options within the City:

1. Habitats associated with listed species and highly restricted plants (e.g., coastal sage scrub, riparian, and southern maritime chaparral types) constitute much of the remaining habitats in the City.
2. A substantial portion of the remaining habitat lands are covered by existing take authorizations, primarily the Fieldstone (aka Bank of America/Villages of La Costa) Habitat Conservation Plan which was approved in 1995. This plan involves some of the highest quality coastal sage scrub in the City. Because the HCP is already approved, the City and wildlife agencies have no ability to require further conservation within this area.
3. Limitations on the long-term viability of natural communities within the City include: a) the relatively small size of remaining blocks of habitats within the City and the level of fragmentation due to existing development; b) the lack of adequate-sized, permanent connections between blocks of habitat and to habitat within the larger region; and c) the potential for habitat fragmentation and degradation from the combined effects of existing and future land uses. These limitations largely dictate the type of preserve system that can be assembled in Carlsbad. The HMP preserve system will contain some core areas but will function primarily as a means of connection between larger preserve areas within

the City and adjacent cities to the north, east, and south. Although important areas of breeding habitat will be provided within the HMP preserve system, the preserve system's major contribution to regional biodiversity will be the maintenance of wildlife linkages and corridors and saving narrow endemic plant species.

4. Populations of gnatcatchers within the City are important to the overall viability of the regional gnatcatcher metapopulation. The populations represent a critical link in the distribution of the species, throughout north San Diego County, contributing significantly to regional gnatcatcher demographics by "launching" high numbers of dispersing juveniles into the Carlsbad-Oceanside corridor, which connects gnatcatcher populations in Orange and Riverside counties with those to the south and east of Carlsbad.

D. Conservation Strategy

1. Summary of Conservation Strategy

The City of Carlsbad is located in a highly urbanized area and is approximately 65% developed. Because of existing patterns of development and continued agricultural use, there is a high degree of habitat fragmentation. Also, several large areas of the City have previously been granted take permits by the wildlife agencies under Sections 7 and 10(a) of the Endangered Species Act. Given these facts, the HMP proposes to preserve the diversity of natural communities and protect sensitive biological resources by establishing a preserve system that:

- builds on existing levels of dedicated open space and conservation;
- conserves larger, remaining blocks or cores of habitat capable of sustaining threatened, listed or sensitive species over time (HMP cores);
- provides linkages that ensure connectivity to HMP cores within the City and to natural communities in adjoining jurisdictions and the region, while also preserving additional habitat;
- protects Special Resource Areas (SRAs) outside of the core and linkage areas which are defined herein as vernal pools, significant populations of listed plant species, and movement corridors for large mammals; and
- provides for participation in conserving a habitat core in the county area southeast of Carlsbad (MHCP core).

There are approximately 8,800 acres of remaining habitat in the City. The strategy is to establish a preserve system of approximately 6,400 acres, consisting of existing hardline preserve areas (existing dedicated open space), proposed hardline preserve areas (proposed open space) and standards areas (planned open space). The strategy also includes participation in the conveyance of lands in the MHCP Core Area. The preserve system is intended to provide adequate conservation and coverage specifically for the species listed on the HMP Species List (Table 2).

2. Preliminary Biological Planning For the Preserve System

Based on existing distribution of vegetation communities and sensitive species, Focus Planning Areas (FPAs) were identified. The FPAs were further broken down into HMP cores, linkages and Special Resource Areas which are shown and identified on Figure 4. These areas include eight core FPAs that are connected to one another and to habitat areas outside the City by a variety of linkages and wildlife movement corridors. These areas served as a basis for biological planning for the establishment of the proposed preserve system and do not represent exact boundaries. A description of the biological resources in the identified areas is provided below. Table 3 indicates the existing habitat types by acreage in the core and linkage areas.

A. Core 1 FPA

The Core 1 FPA, approximately 206 acres in area, consists of Buena Vista Lagoon and adjoining wetland and upland habitats in northwest Carlsbad. This Core FPA is dominated by open water and riparian habitats. The lagoon is primarily an estuarine system west of Interstate 5 and a freshwater system east of the freeway. It is surrounded by development, with small patches of coastal sage scrub and other upland habitats on the adjacent banks.

Important habitats associated with Buena Vista Lagoon include areas of freshwater marsh that skirt the edges of the lagoon and large areas of disturbed wetland that dominate the lagoon's eastern half. The lagoon provides habitat for critical populations of the California least tern, western snowy plover, light-footed clapper rail, American peregrine falcon, California brown pelican, and white-faced ibis.

Core 1 is connected to Core 2 via Buena Vista Creek, which is partially outside of Carlsbad in the City of Oceanside. Although the creek is channelized in the approximately 0.5-mile stretch connecting these two Cores, a continuous strip of riparian scrub remains, except where El Camino Real crosses the creek. This extremely narrow strip of riparian habitat may function as a wildlife movement corridor for some birds and mammals, including coyotes, but it is not considered a landscape level linkage.

B. Core 2 and Linkage FPAs

The FPA for Core 2 is located in the northeastern portion of the City and is approximately 352 acres in area. It contains major grassland and riparian habitats with scattered patches of chaparral and coastal sage scrub. The patches of coastal sage scrub probably support 6-10 pairs of gnatcatchers, although complete survey information is lacking. Buena Vista Creek borders the northern edge of Core 2 and supports riparian scrub and freshwater marsh habitats. Least Bell's vireo are known to occupy the riparian scrub. Although recent survey information is lacking for this area, the extent and quality of the riparian vegetation suggest that this may represent a major population area for the vireo.

Core 2 has linkages to Core 3 (Linkage Area A), Core 4 (Linkage Area B), and the City of Oceanside. The portion of Linkage Area A connecting Cores 2 and 3 is a short stepping-stone linkage of approximately 24 acres dominated by coastal sage scrub. It is considered critical for gnatcatchers because it is the primary connection between Core 3, containing approximately 20-30 pairs of gnatcatchers, and areas north of the City. This linkage is probably also used by other birds and some mammals, including coyote and bobcat.

The portion of Linkage Area B connecting Cores 2 and 4 is dominated by grassland and coastal sage scrub. It is approximately 1 mile in length and about 300-400 feet wide, on average. Three roads, including El Camino Real, cross this linkage. With some revegetation and enhancement of coastal sage scrub, this linkage should be moderately effective for birds and mammals.

Core 2 also provides the only linkage from Carlsbad into Oceanside. Dispersing gnatcatchers moving between Carlsbad and Oceanside must utilize this Core. Coastal sage scrub patches apparently supply breeding habitat for the species, and the riparian habitats may help facilitate dispersal and winter foraging by the species.

C. Core 3 and Linkage FPAs

The Core 3 FPA (approximately 1,164 acres) contains large areas of coastal sage scrub that support critical populations of California gnatcatcher and thread-leaved brodiaea. Major stands of chaparral and grassland are also present. The northern portion of Core 3 contains open water, freshwater marsh, and riparian scrub habitats that are associated with Lake Calavera. Oak woodland, riparian forest, and riparian scrub occur in the southern section of this Core. Core 3 has linkages to Core 2 (Linkage Area A; see above), Core 4 (Linkage Area B), and Core 5 (Linkage Area C).

The portion of Linkage Area B between Cores 3 and 4 supports grassland and coastal sage scrub communities that are surrounded by agricultural lands. The linkage is approximately 3,000 feet long and is probably moderately effective for birds and mammals. There are significant opportunities for enhancement and restoration within this linkage.

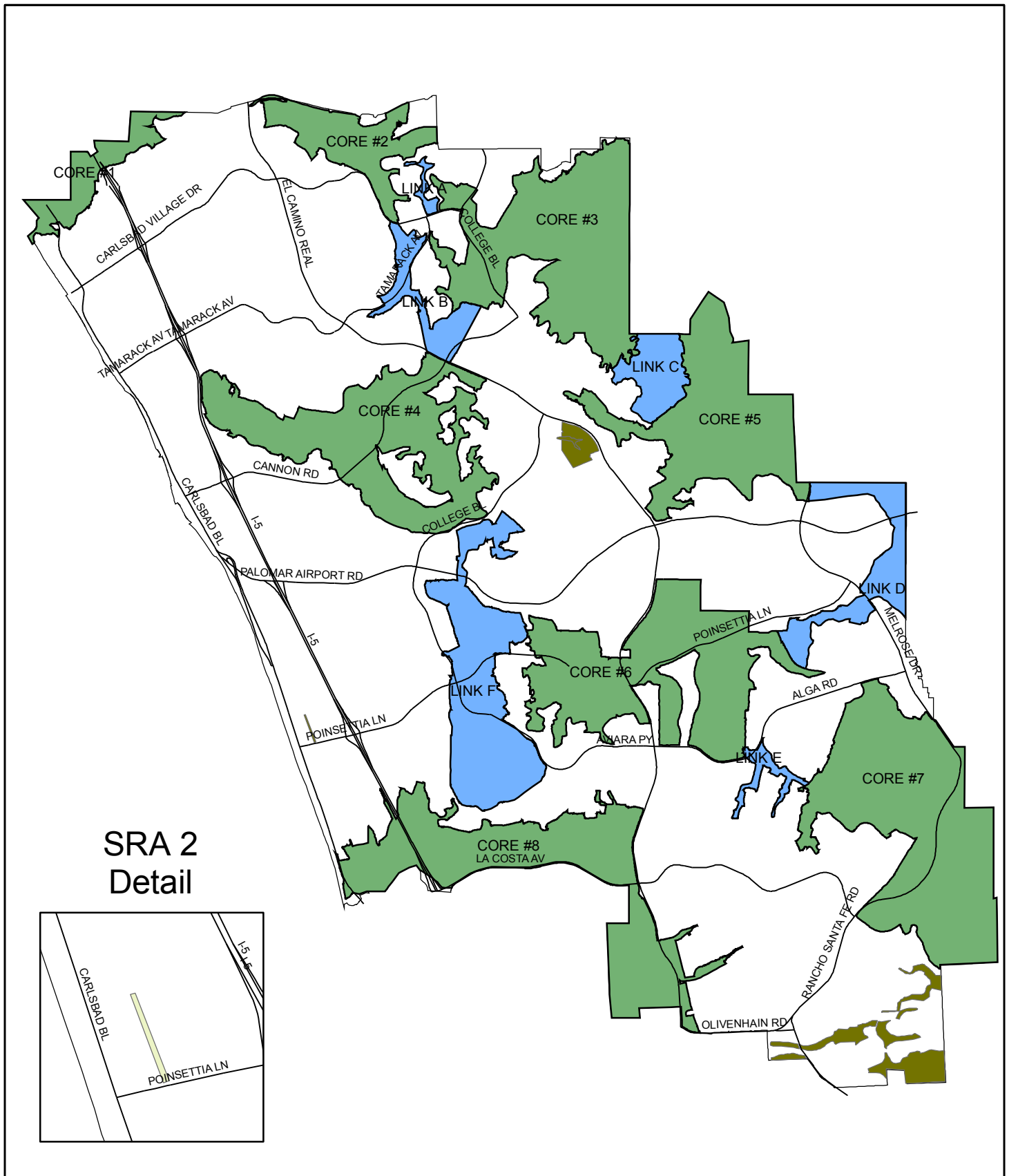


Figure 4
Focus Planning Areas
 Generalized Boundaries Only

- HMP Core
- Linkages
- Special Resource Area



Linkage Area C, between Cores 3 and 5, is a classic stepping-stone linkage; it is approximately 0.5 mile long and contains small fragments of coastal sage scrub surrounded by agricultural lands. A wide variety of birds and mammals are expected to move across this large, open area. At least one gnatcatcher was observed in the eastern portion of the linkage during 1997 (D. Levine, pers. comm.). There are significant opportunities for enhancement and restoration within this linkage.

D. Core 4 and Linkage FPAs

The Core 4 FPA, (approximately 1,063 acres), located in west-central Carlsbad, includes Agua Hedionda Lagoon and upland habitats immediately east of the lagoon. Critical vegetation communities within this Core include saltmarsh, freshwater marsh, and riparian scrub. Major areas of coastal sage scrub are also present, as are small patches of grassland, southern maritime chaparral, southern mixed chaparral, and coastal sage scrub/chaparral. Critical populations of saltmarsh skipper butterfly, light-footed clapper rail, western snowy plover, California least tern, and Belding's Savannah sparrow occur in the estuarine habitats associated with Agua Hedionda Lagoon. This coastal wetland is also critical for American peregrine falcon and California brown pelican. A major population of wart-stemmed ceanothus is associated with southern maritime chaparral east of the lagoon. Core 4 has linkages to Core 2 (Linkage Area B, see above), Core 3 (Linkage Area B, see above), Core 6 (Linkage Area F), and Core 8 (Linkage Area F).

The portion of Linkage Area F between Cores 4 and 6 is an approximately 1.5-mile stepping-stone linkage containing moderately fragmented coastal sage scrub and grassland habitats. Although this is probably an effective linkage for gnatcatchers and other bird species, Palomar Airport Road bisects this linkage, limiting its utility for reptiles and mammals.

The portion of Linkage Area F between Cores 4 and 8 is a stepping-stone linkage through west-central Carlsbad containing fragmented patches of coastal sage scrub, grassland, and chaparral, but also a significant amount of existing development. The linkage is approximately 2.5 miles long and is bisected by Palomar Airport Road. It is probably most effective as a dispersal corridor for birds. Coastal sage scrub patches within the linkage area support a number of nesting gnatcatcher pairs.

E. Core 5 and Linkage FPAs

The Core 5 FPA is approximately 884 acres in area and is located along the eastern border of Carlsbad in the central section of the City. This area supports critical stands of riparian forest and southern maritime chaparral. It also supports a large upland area of chaparral, chaparral/coastal sage scrub, coastal sage scrub, southern maritime chaparral, and grassland. Critical populations of Del Mar manzanita and Nuttall's scrub oak as well as a major population of summer holly occur in the southern maritime chaparral. Core 5 has linkages to Core 3 (Linkage Area C, see above), Core 6 (Linkage Area D), and Core 7 (Linkage Area D).

The portion of Linkage Area D between Cores 5 and 6 is approximately 3.0 miles long and includes coastal sage scrub, chaparral, grassland, and riparian habitats. Disturbed areas in this linkage, especially in the vicinity of the Carlsbad Raceway, should be evaluated for potential restoration. Portions of this linkage include habitats in the neighboring city of San Marcos. In its current configuration, this linkage is probably a moderately effective corridor for birds and mammals.

The portion of Linkage Area D between Cores 5 and 7 is approximately 3.0 miles long and contains coastal sage scrub, chaparral, and grassland habitats. The southern portion of this

linkage includes areas in the neighboring city of San Marcos. The northern section of this linkage includes the disturbed areas near Carlsbad Raceway that should be evaluated for potential restoration. This section of Linkage Area D should be a moderately effective corridor for birds and mammals. It is an important linkage for dispersing gnatcatchers moving between the two gnatcatcher core populations within Carlsbad.

F. Core 6 and Linkage FPAs

The Core 6 FPA, (approximately 1,134 acres), contains a critical stand of southern maritime chaparral and a major stand of grassland. It also has several vernal pools. The coastal sage scrub in this area supports approximately 12 gnatcatcher pairs. Additional habitats include chaparral, open water, disturbed wetland, oak woodland, eucalyptus woodland, and riparian forest. A critical population of Del Mar manzanita and a major population of summer holly are associated with the southern maritime chaparral in this Core. Core 6 has linkages to Core 4 (Linkage Area F, see above), Core 5 (Linkage Area D, see above), Core 7 (Linkage Area E), and Core 8 (Linkage Area F).

Linkage Area E connects Cores 6 and 7 and is a grassland corridor approximately 0.5 mile long and 300-400 feet wide with narrow north-south canyons vegetated with coastal sage scrub. This relatively short, narrow corridor is probably moderately effective for dispersing gnatcatcher and other birds and mammals.

The portion of Linkage Area F connecting Cores 6 and 8 is a stepping-stone linkage primarily for birds. It is approximately 1 mile long and consists of coastal sage scrub and chaparral habitat patches.

G. Core 7 and Linkage FPAs

Core 7 is located along the eastern border of Carlsbad in the southeast section of the City and is approximately 1,429 acres in area. A critical population of approximately 40 gnatcatchers pairs is supported by the large blocks of coastal sage scrub that dominate this Core. Other habitats in Core 7 include grassland, riparian scrub, and major stands of chaparral. Critical populations of sticky dudleya and San Diego goldenstar occur in this Core. Core 7 has linkages to Core 5 (Linkage Area D, see above), Core 6 (Linkage Area E, see above), and areas southeast of Carlsbad.

The linkage between Core 7 and natural lands southeast of the City contains large areas of chaparral and gnatcatcher-occupied coastal sage scrub. It is likely an effective regional landscape linkage for a wide range of species.

In addition to landscape linkages, two wildlife movement corridors connect Core 7 to Core 8. Coastal sage scrub, grassland, and channelized riparian areas along the southern border of Carlsbad and the La Costa Country Club Golf Course probably allow some birds and mammals, particularly coyotes, to move between these two Cores.

H. Core 8 and Linkage FPAs

The Core 8 FPA, located in the southwest corner of Carlsbad, includes Batiquitos Lagoon and Green Valley. It is approximately 1,129 acres in area. Critical vegetation communities in the area are maritime succulent scrub, saltmarsh, and southern maritime chaparral. The southern maritime chaparral located in Green Valley supports critical populations of Del Mar manzanita and Encinitas baccharis as well as major populations of wart-stemmed ceanothus and Del Mar Mesa sand aster. Batiquitos Lagoon is an estuarine system with a fringe of wetland and upland habitats largely surrounded by development. Batiquitos Lagoon supports

critical populations of Nuttall's lotus, saltmarsh skipper butterfly, white faced-ibis, light-footed clapper rail, western snowy plover, California least tern, and Belding's Savannah sparrow. The lagoon is also a critical foraging area for American peregrine falcon and California brown pelican. Core 8 has linkages to Core 4 (Linkage Area F, see above) and Core 6 (Linkage Area F, see above). Two additional wildlife movement corridors, not considered to be landscape-level linkages, connect Core 8 to Core 7 (see above).

I. Special Resource Areas

Certain naturally vegetated areas in the City are too small, edge-effected, or isolated to be considered biological Cores or linkage areas, but are nonetheless important to preserve design or the conservation of particular species. Three such areas are described here as SRAs.

1) SRA 1

SRA 1 lies between El Camino Real, Faraday Avenue, and College Boulevard within Zone 5. It comprises slopes covered by grasslands and small patches of coastal sage scrub. This area is known to support a major population of a Narrow Endemic plant species (*Brodiaea filifolia*) and may support additional Narrow Endemic species. Although SRA 1 is isolated from biological core and linkage areas, conservation of Narrow Endemic plant populations within the SRA is considered important for species conservation.

2) SRA 2

SRA 2 comprises the Poinsettia Lane vernal pools and their watershed. Although isolated from biological core and linkage areas by urban development, this location is critical to the conservation of several Narrow Endemic plant and fairy shrimp species.

3) SRA 3

SRA 3 comprises those portions of Encinitas Creek and its tributaries that are within Zone 11, including the natural vegetation adjacent to the drainages. The primary biological function for this SRA is maintenance of wildlife movement between Batiquitos Lagoon (Core 8) and more inland biological Cores (e.g., Core 7 and undeveloped areas in the unincorporated County). Maintaining access to Batiquitos Lagoon by large mammals, including coyotes and bobcats, is considered essential to ecosystem balance within lagoon habitats; and Encinitas Creek is considered the best remaining wildlife movement corridor to the lagoon.

Table 3

HABITAT IN HMP CORE AND LINKAGE FPA

	Coastal Sage Scrub	Chaparral	Southern Maritime Chaparral	Oak Woodland	Riparian	Marsh	Grassland	Eucalyptus Woodland	Agri- culture	Disturbed	Developed	Totals
Core #1	10	0	0	0	4	137	0	14	0	30	11	206
Core #2	41	18	0	0	81	25	184	3	0	0	0	352
Core #3	712	189	0	12	32	46	129	1	17	23	3	1,164
Core #4	318	40	27	0	105	357	126	2	19	48	22	1,064
Core #5	354	169	72	0	128	0	126	0	2	14	19	884
Core #6	201	103	219	12	25	38	346	15	29	32	114	1,134
Core #7	860	243	0	0	34	2	156	12	0	99	23	1,429
Core #8	57	25	111	0	78	561	18	50	110	68	50	1,128
Link A	22	0	0	0	0	0	0	0	0	2	0	24
Link B	56	0	0	0	1	0	42	9	48	0	20	176
Link C	42	0	0	2	1	11	2	0	117	20	2	197
Link D	79	13	0	3	26	6	49	0	13	71	31	291
Link E	34	0	0	0	0	0	16	0	0	3	6	59
Link F	205	77	2	0	3	0	77	26	4	7	325	726
Subtotal	2,991	877	431	29	518	1,183	1,271	132	359	417	626	8,834
Outside Cores & Linkage s	359	127	17	1	87	182	615	125	1,529	881	12,169	16,092
CITY- WIDE TOTAL	3,350	1,004	448	30	605	1,365	1,886	257	1,888	1,298	12,795	24,926

Note: Acreage figures may vary somewhat between tables due to rounding.

3. Preserve Components and Assembly

Using the Focus Planning Areas as a foundation, the HMP has identified a preserve system that consists of the components described below:

A. Existing Hardline Preserve Areas

These areas include both publicly owned land and privately owned land that has been committed to habitat conservation as a result of existing open space regulations, past development approvals or other actions. This includes the City's three coastal lagoons and wetlands, the Dawson Los Monos Reserve, as well as preserve areas in Aviara, Villages of La Costa, Carrillo Ranch, Calavera Heights, and other development areas. Total acreage of existing hardline areas equals approximately 4,459 acres, or approximately 69% of the 6,449 acre preserve system.

There are a number of projects in the City which have obtained permits or approvals from the federal and state wildlife agencies to impact listed species or their habitats and which have agreed to conserve other habitat areas. The proposed conservation areas of these projects are also included in the existing hardline portions of the preserve system, as described below:

- Calavera Heights (LFMZ 7), Villages A to D, E-2, F, G, I, J, L-1, M, N, O, P-1, Q, and T, which have been developed or which have approved tentative or final maps, and the Calavera Heights Mitigation Site approved by the City in 1993. A new master plan update must be approved by the City for the development of Villages E-1, H, K, L-2, R, U and W to Y.
- Ranch Carrillo (southern portion of LFMZ 18), which has a 1996 permit from ACOE with Section 7 consultation with the USFWS.
- Rancho Verde (a portion of LFMZ 11), which has a 1995 permit from ACOE with Section 7 consultation with the USFWS.
- Villages of La Costa (LFMZs 10, 12 and a portion of 11), which has a habitat conservation plan (HCP) approved by the USFWS and CDFG in 1995.

There is one existing mitigation bank included in the existing hardline component of the preserve system. A mitigation or conservation bank is land that is permanently conserved and managed for its natural resource values, with the intent of selling mitigation credits to private or public entities requiring mitigation. The one conservation bank in operation in the City is the Carlsbad Highlands Conservation Bank, located in the northern portion of LFMZ 15 and approved by the USFWS and CDFG in 1995. This bank contains 263 acres of primarily upland habitats, including coastal sage scrub.

The existing hardline component of the preserve system is shown on Figure 5 and the levels of conservation achieved by this component by habitat type and by LFMZ are provided in Table 4.

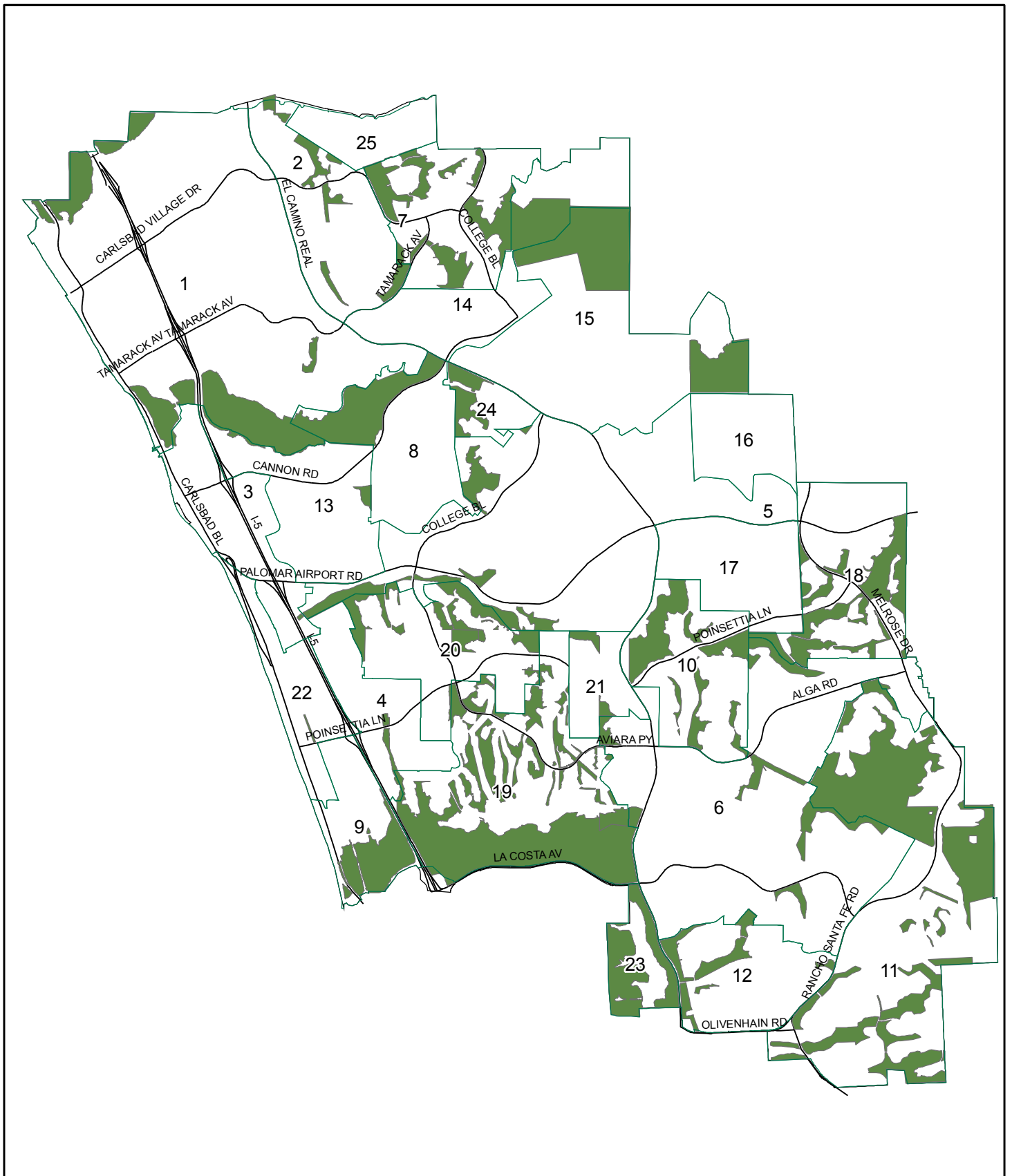


Figure 5
Existing Hardline Conservation Areas



Table 4

Existing Hardline Conservation Areas (Acres)

LFMZ	Natural Habitats							Disturbed Habitats				Totals
	Coastal Sage Scrub	Chaparral	Southern Maritime Chaparral	Oak Woodland	Riparian	Marsh	Grassland	Eucalyptus Woodland	Agriculture	Disturbed	Developed	
1	12	0	0	0	0	378	0	0	1	1	3	395
2	19	0	0	0	1	9	19	1	0	3	18	70
3	0	0	0	0	0	2	0	0	0	0	1	3
4	12	0	0	0	0	12	0	0	0	0	3	27
5	43	29	4	0	10	21	2	5	0	12	22	148
6	75	24	9	0	9	3	12	0	0	4	10	146
7	90	15	0	0	5	0	31	3	0	13	61	218
8	42	2	10	0	62	122	7	0	1	8	2	256
9	13	0	0	0	0	135	0	0	0	4	1	153
10	41	1	81	0	18	12	41	2	0	7	4	207
11	444	144	15	0	34	7	99	11	0	39	35	828
12	7	21	0	0	18	0	30	1	1	4	10	92
13	11	0	0	0	0	1	2	0	1	1	0	16
14	66	36	0	0	1	0	2	0	0	2	0	107
15	173	76	0	0	24	0	89	0	23	1	4	390
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	87	25	0	3	21	2	46	0	12	19	35	250
19	63	80	5	0	16	411	2	73	5	31	61	747
20	83	209	0	1	1	9	11	0	3	1	23	152
21	0	0	19	0	0	0	0	0	0	1	0	20
22	0	0	0	0	0	0	0	0	0	2	0	2
23	0	0	111	0	43	7	1	0	8	3	2	175
24	9	20	1	0	6	10	7	0	0	0	8	61
25	0	0	0	0	0	0	0	0	0	0	0	0
Totals	1,281	493	255	4	269	1,141	401	96	55	156	303	4,454

Note: Acreage figures may vary somewhat between tables due to rounding.

B. Proposed Hardline Preserve Areas

A number of proposed public and private projects have submitted proposed hardline design for inclusion in the HMP and the preserve system. Upon approval of the HMP, these proposals will obtain the same conservation status as the existing hardline areas and the City's General Plan will be amended to designate them as open space. Take of habitat will be authorized for the remaining portions of the projects. These projects include the City's municipal golf course, Lake Calavera, Veteran's Memorial Park, Hub Park, the Zone 19 park, Manzanita Properties, SDG&E south shore properties, Bressi Ranch, Carlsbad Oaks North Business Park, Holly Springs, Kelly Ranch, South Coast and the Raceway Property. The general location of the proposed hardline areas are shown on Figure 6, while detailed boundaries are shown for the individual projects on Figures 7 through 19. The proposed hardline boundaries on Veterans Memorial Park which provide a corridor between the City's Municipal Golf Course and properties to the north, constitutes mitigation for the development of the remaining portion of Veterans Memorial Park. A pedestrian trail, park road and five individual and two group passive picnic areas will be permitted in the corridor. The City is proposing to include the 266 acre public property at Lake Calavera as a public project mitigation bank for municipal projects such as the City golf course and the major roads shown on the City's Circulation Plan. The other City projects which could be covered by the City mitigation bank are identified in Appendix B. One of the key objectives of the HMP is permitting for City public facility projects mandated by the Growth Management Plan. The purpose of a public mitigation bank will be mitigation of unavoidable impacts to biological resources resulting from these public facilities projects. The mitigation credits available in the Lake Calavera mitigation bank are shown in the following table. There are 266.1 total acres at the bank. There are two pairs of gnatcatchers at the bank which are being preserved as partial mitigation for the City's municipal golf course. 20 acres are deducted to reflect the two gnatcatcher pairs. Deductions have been made for development in the portion of Hub Park not being conserved as a hardline preserve area (10 acres). Deductions have also been made for approved future improvements on the property which consists of a police shooting range (10 acres) and Water District projects (22 acres) and for a 100 ft. wide fire break along the northerly portion of the property (17.55 acres).

TABLE 5
Lake Calavera Public Mitigation Bank

TOTAL ACREAGE	266.1
DEDUCTIONS	ACRES
Approved Mitigation for Existing Projects	30
Future Improvements	32
100 ft. wide fire break	17.55
Sub-Total	79.55
TOTAL REMAINING CREDITS (ACRES)	186.55

The remaining credits at Lake Calavera will mitigate for habitat impacts of City projects on an acre-for-acre basis regardless of the type of habitat being impacted except for impacts to gnatcatcher occupied coastal sage scrub, southern maritime chaparral, maritime succulent scrub and wetlands. It is appropriate for City projects to mitigate out-of-kind at the Lake Calavera mitigation bank because the objective is to build the preserve system by combining small mitigation requirements into a larger, contiguous area.

In addition to mitigation credits at Lake Calavera, 10 acres of coastal sage scrub and two gnatcatcher pair mitigation credits for future City projects will be given for the conservation provided at Hub Park as a hardline preserve area.

The levels of conservation achieved by the proposed hardline component of the preserve system by habitat type and by LFMZ are provided in Table 6. The total acreage of conserved habitat resulting from proposed hardline conservation areas is 1,437 acres or approximately 22% of the preserve system.

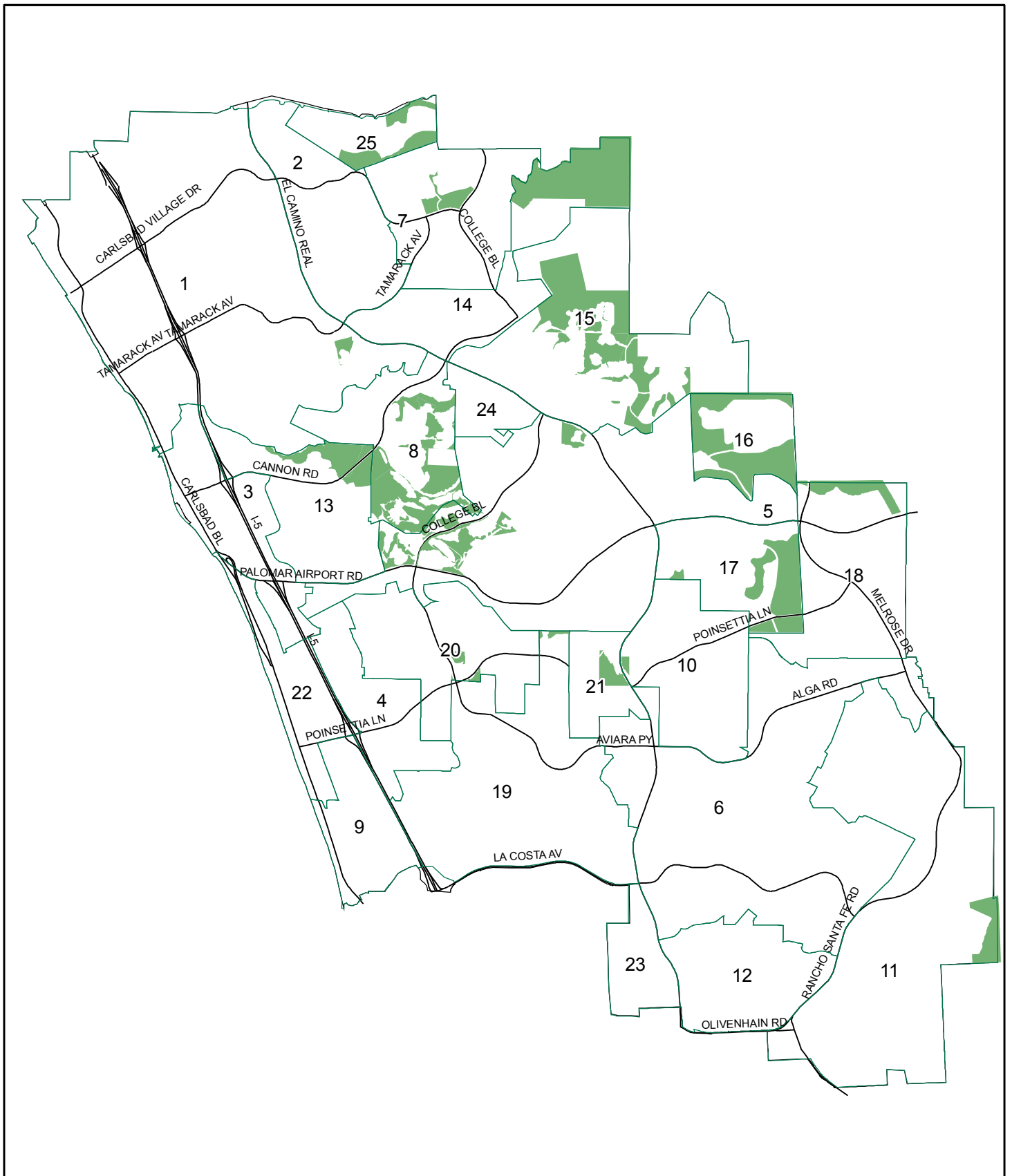


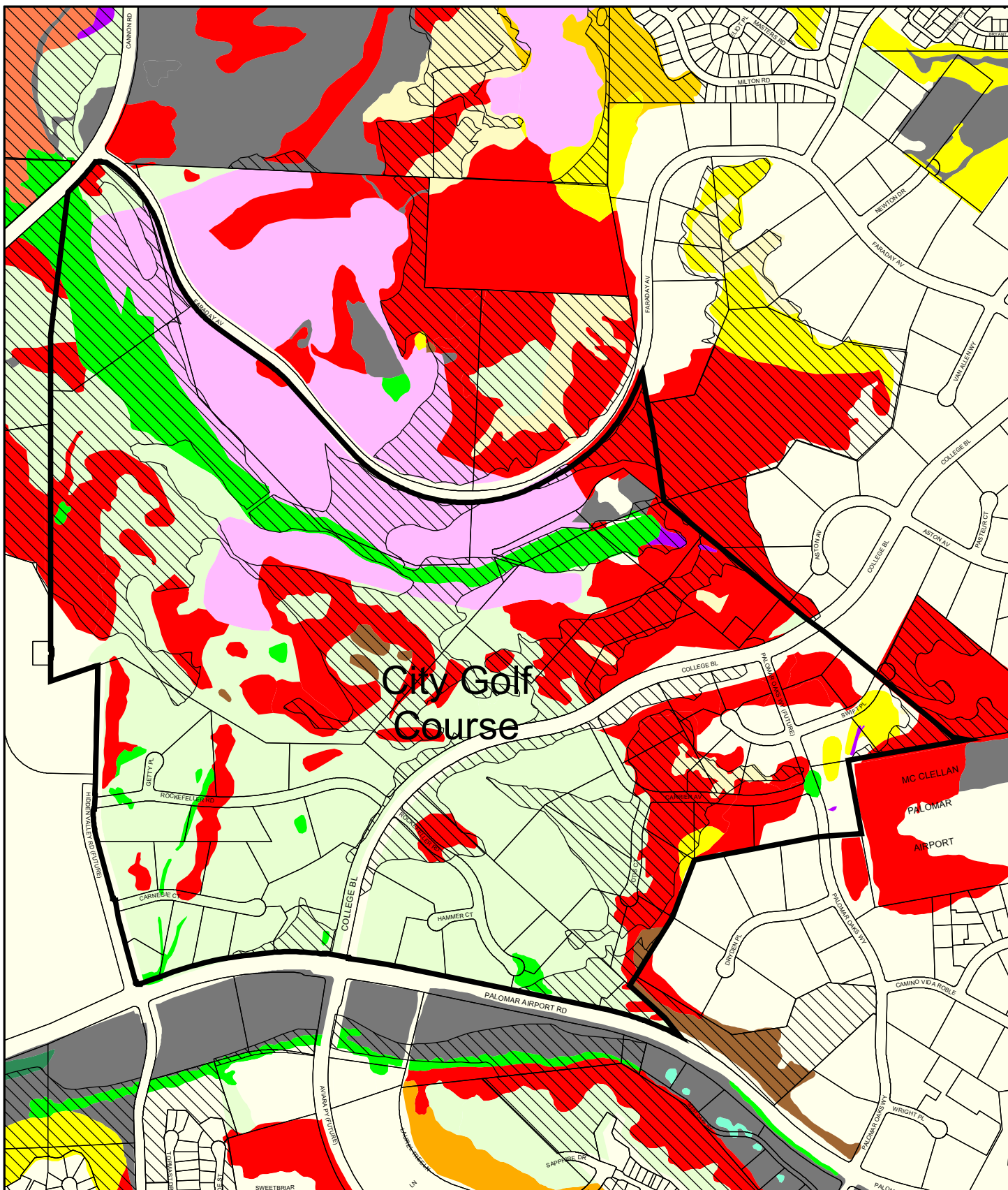
Figure 6
Proposed Hardline Conservation Areas





Figure 7
Vegetation Legend for Proposed
Hardline Areas





**Figure 8 - Revised
City Golf Course**



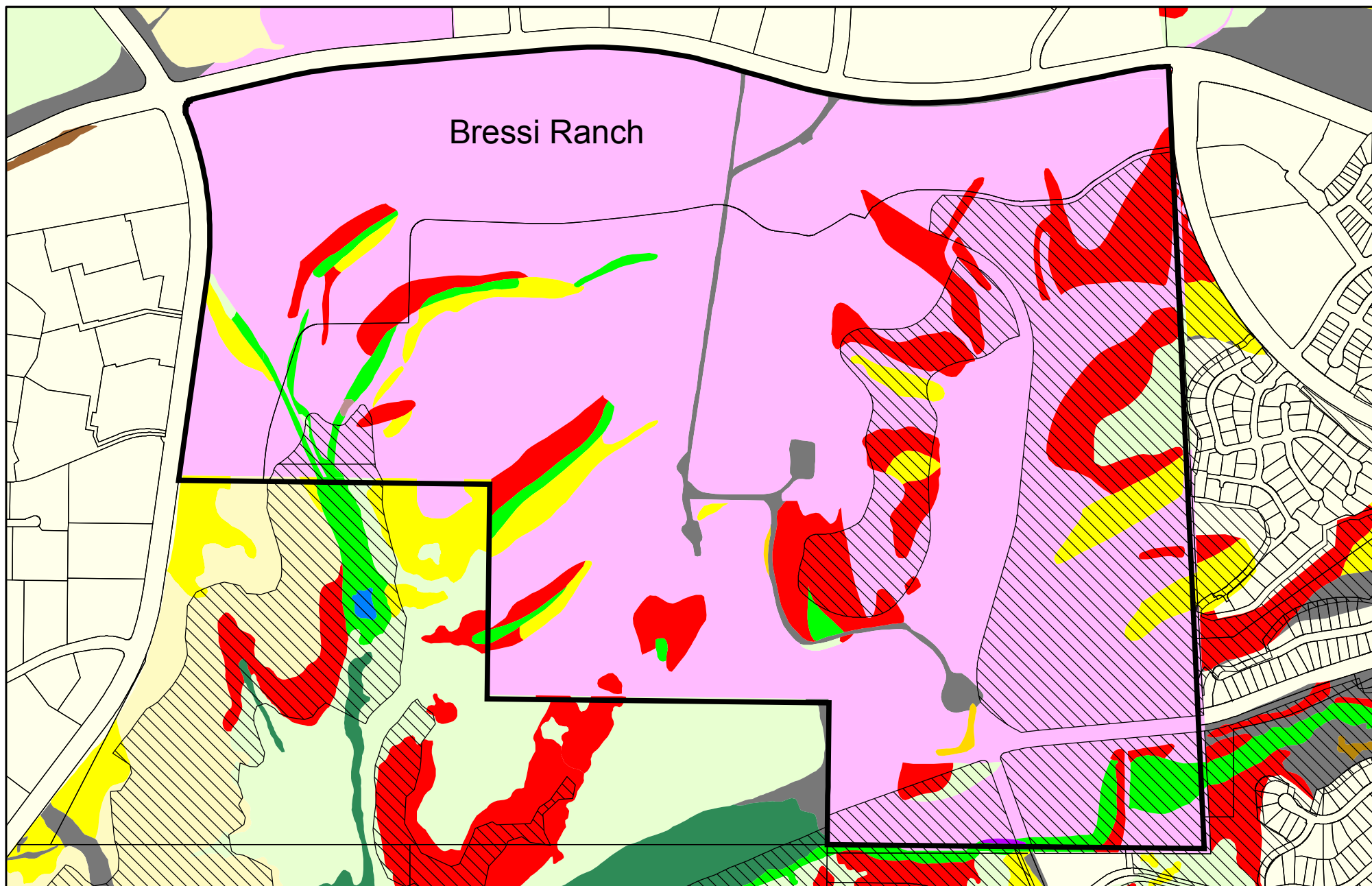


Figure 9
Bressi Ranch



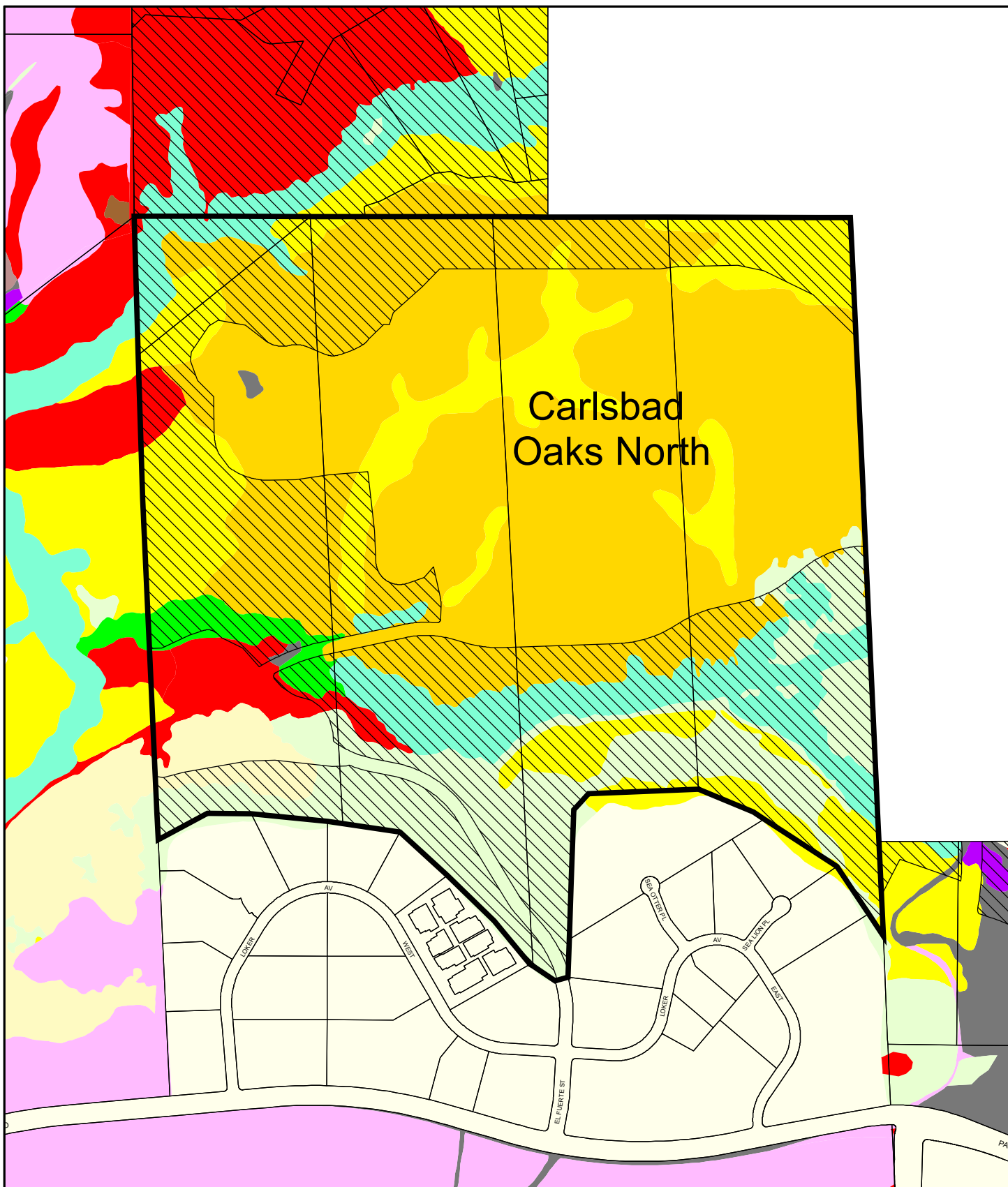


Figure 10
Carlsbad Oaks North



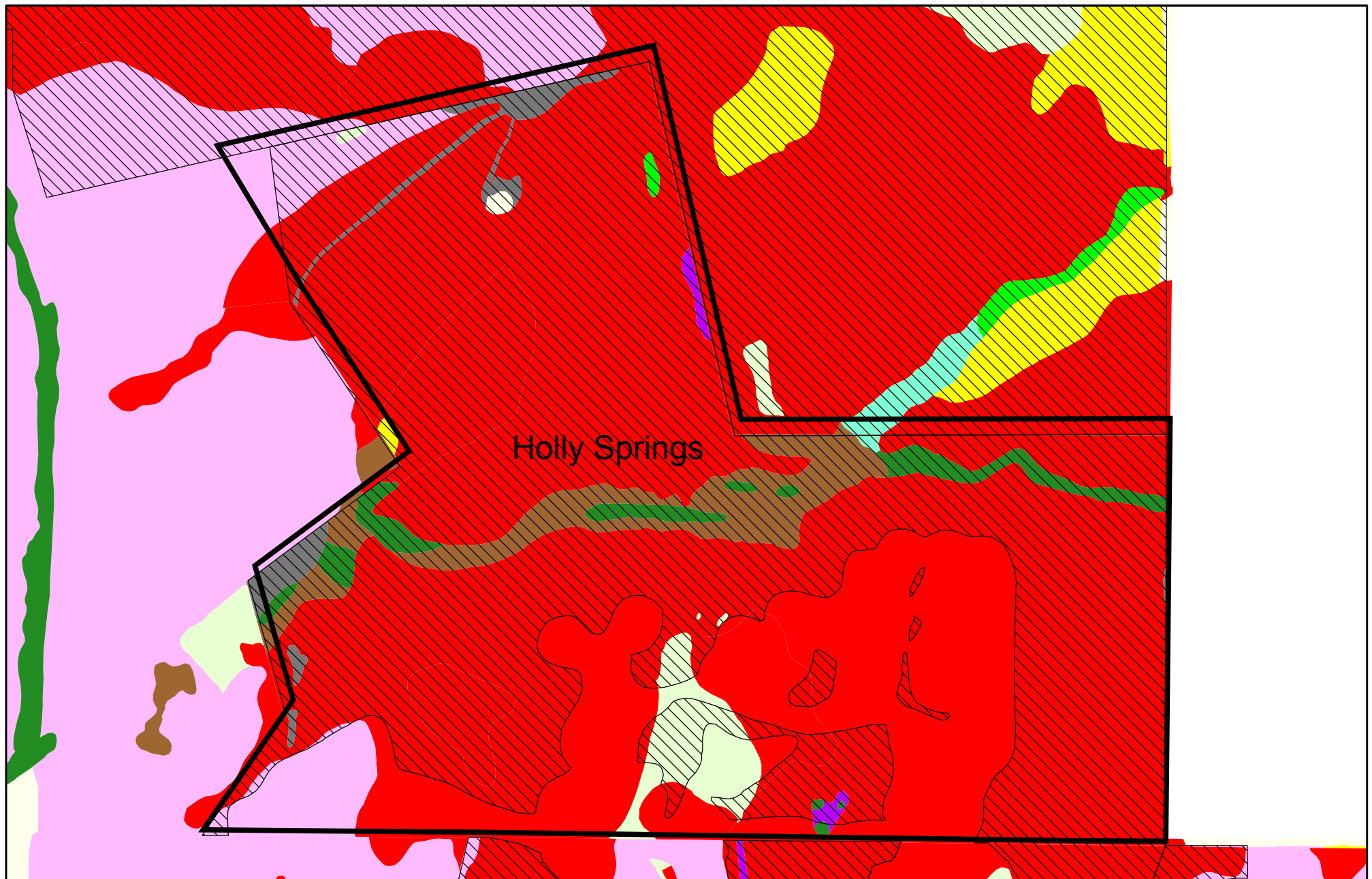
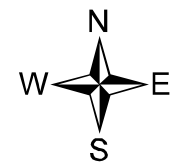
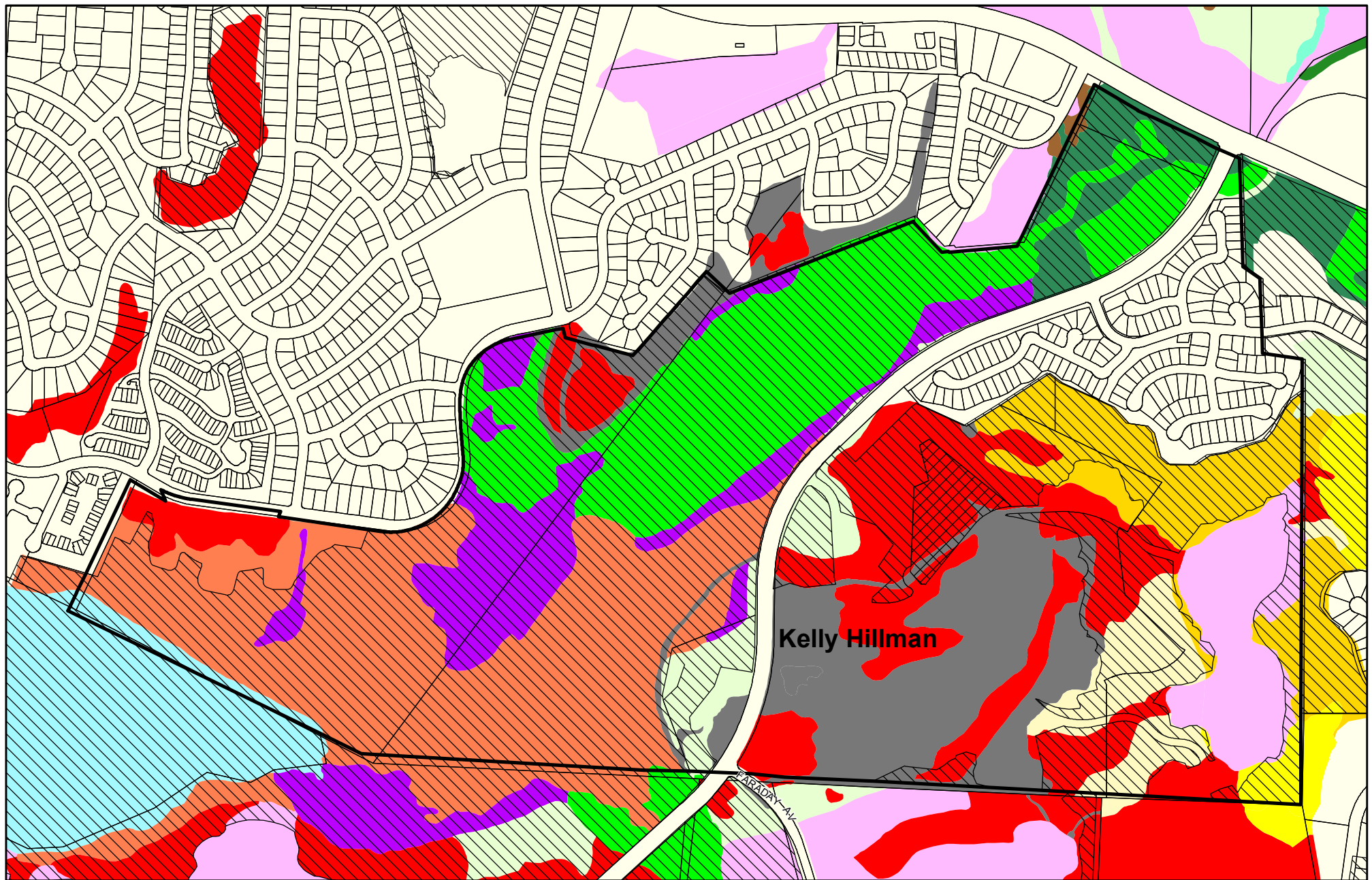
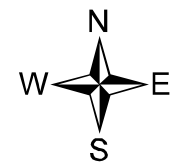


Figure 11
Holly Springs





**Figure 12 - Revised
Kelly Hillman Property**



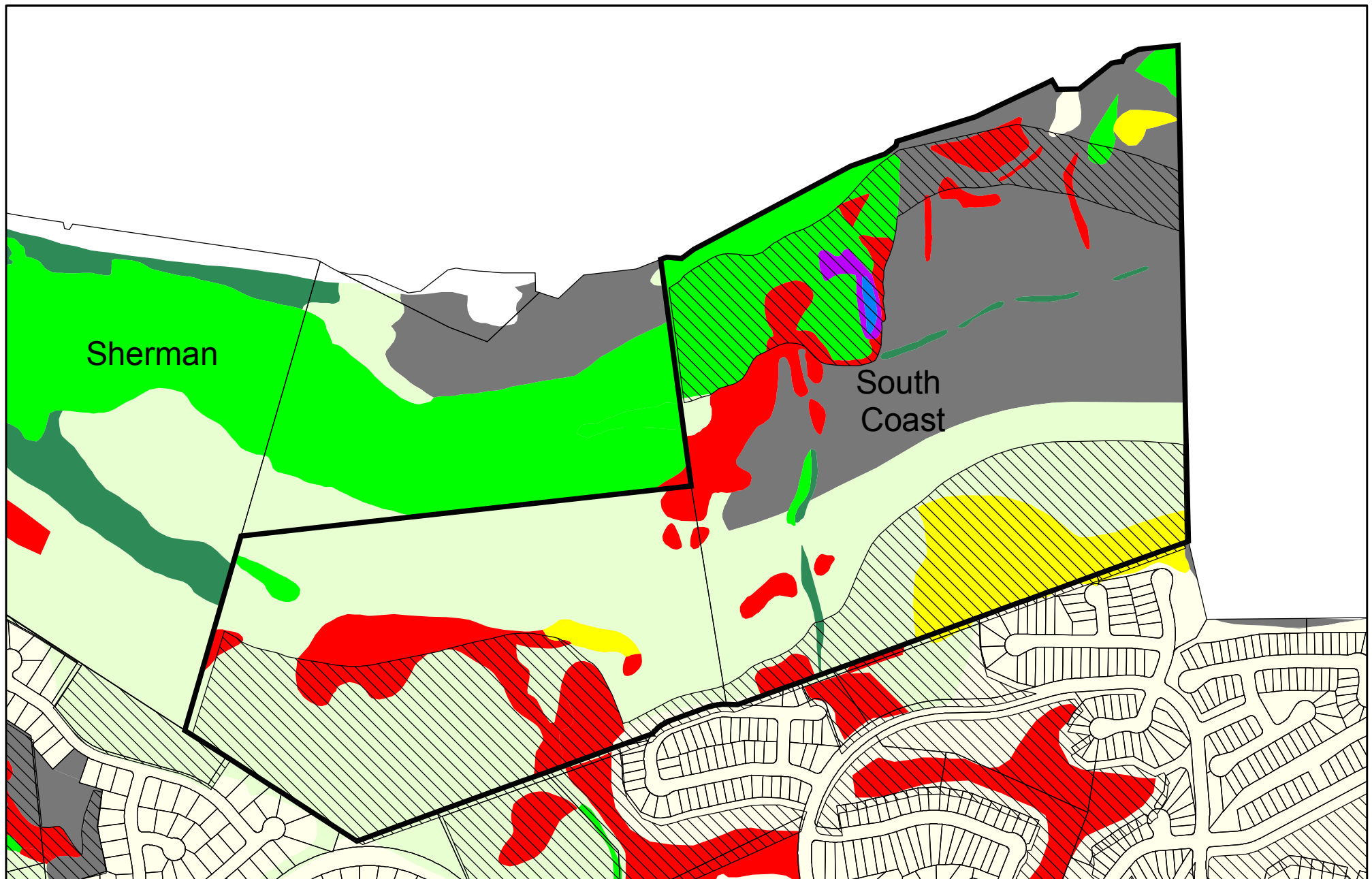
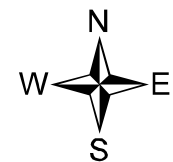


Figure 13
South Coast



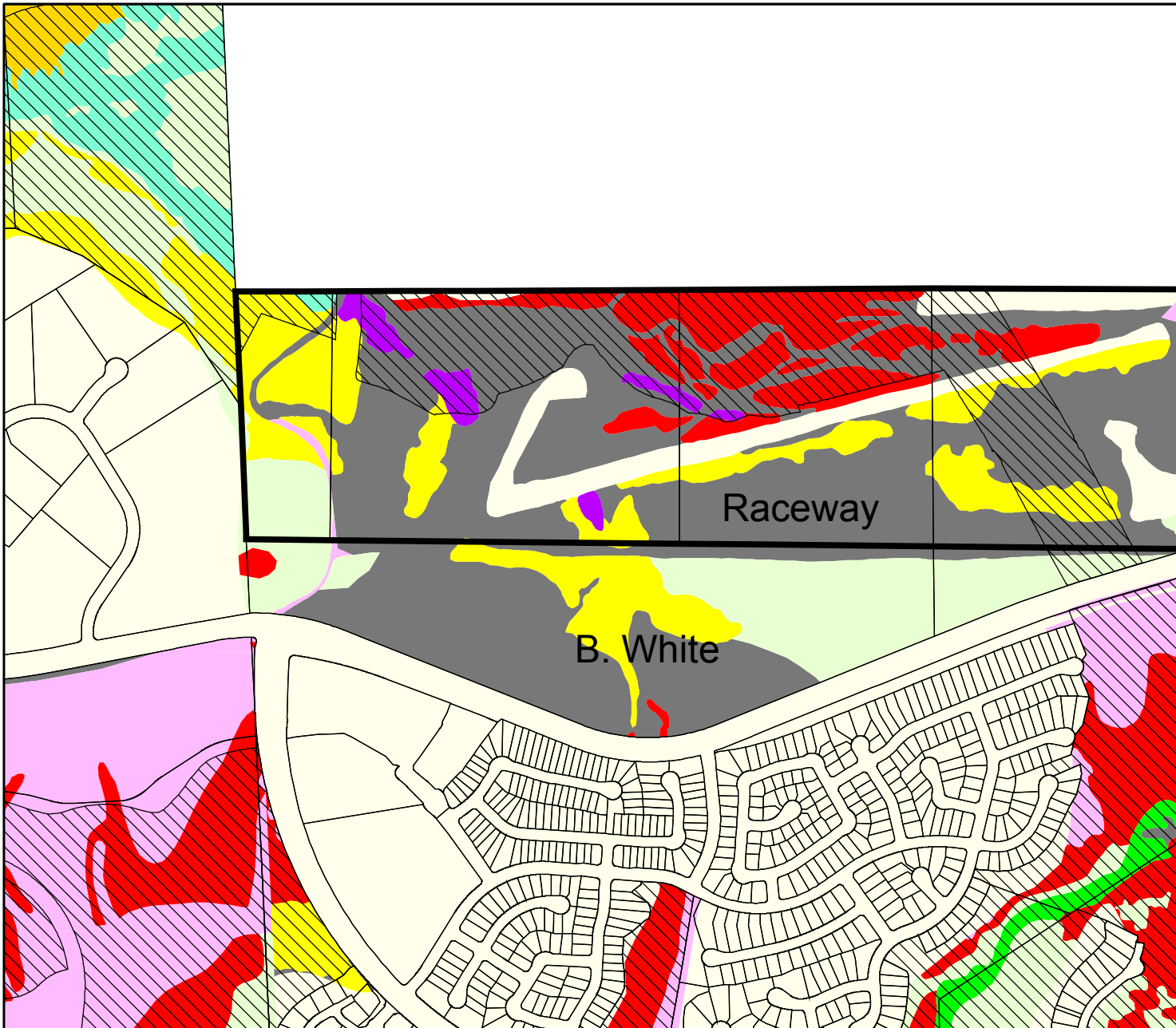
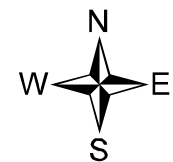


Figure 14
Raceway



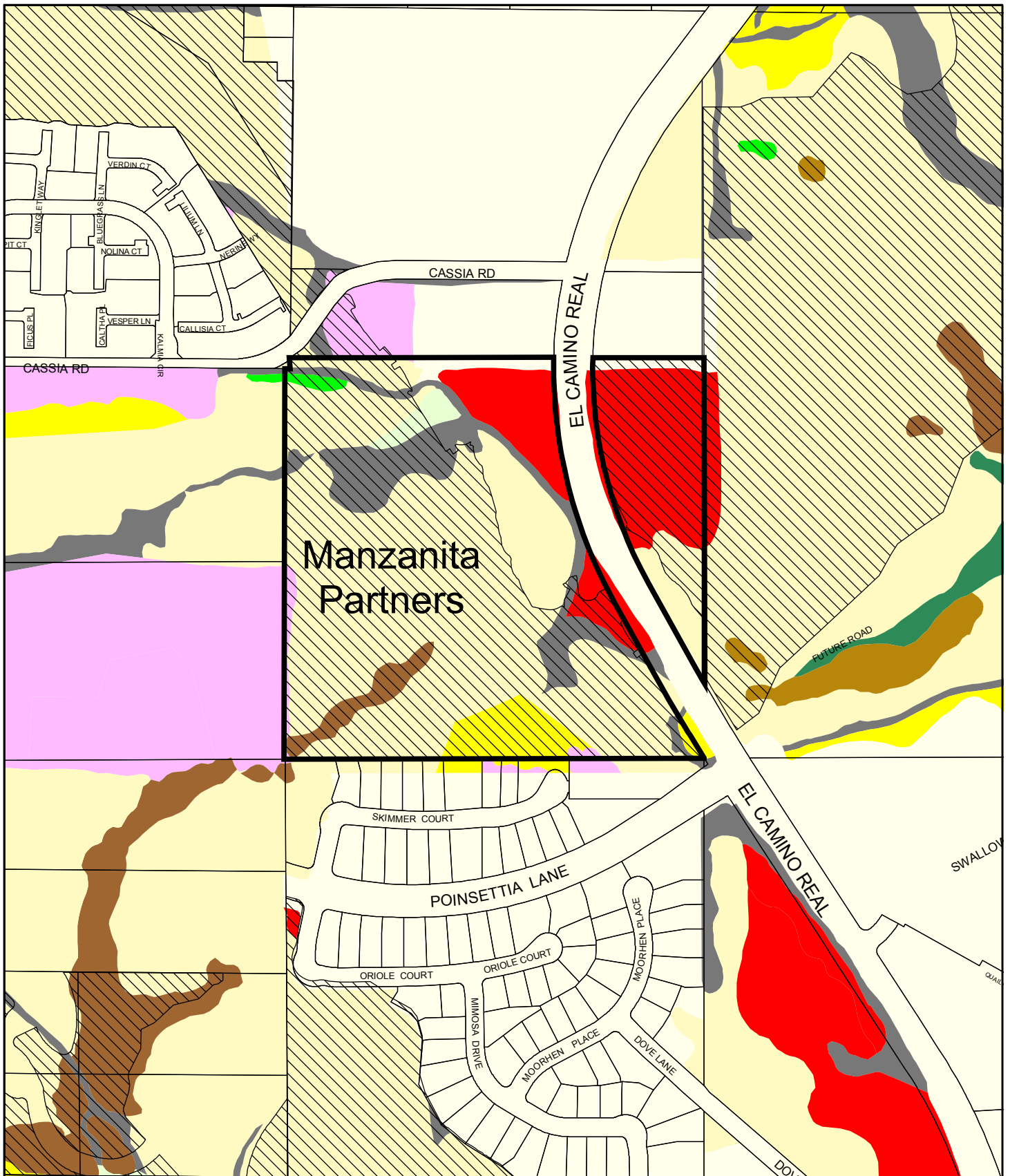


Figure 15
Manzanita Partners



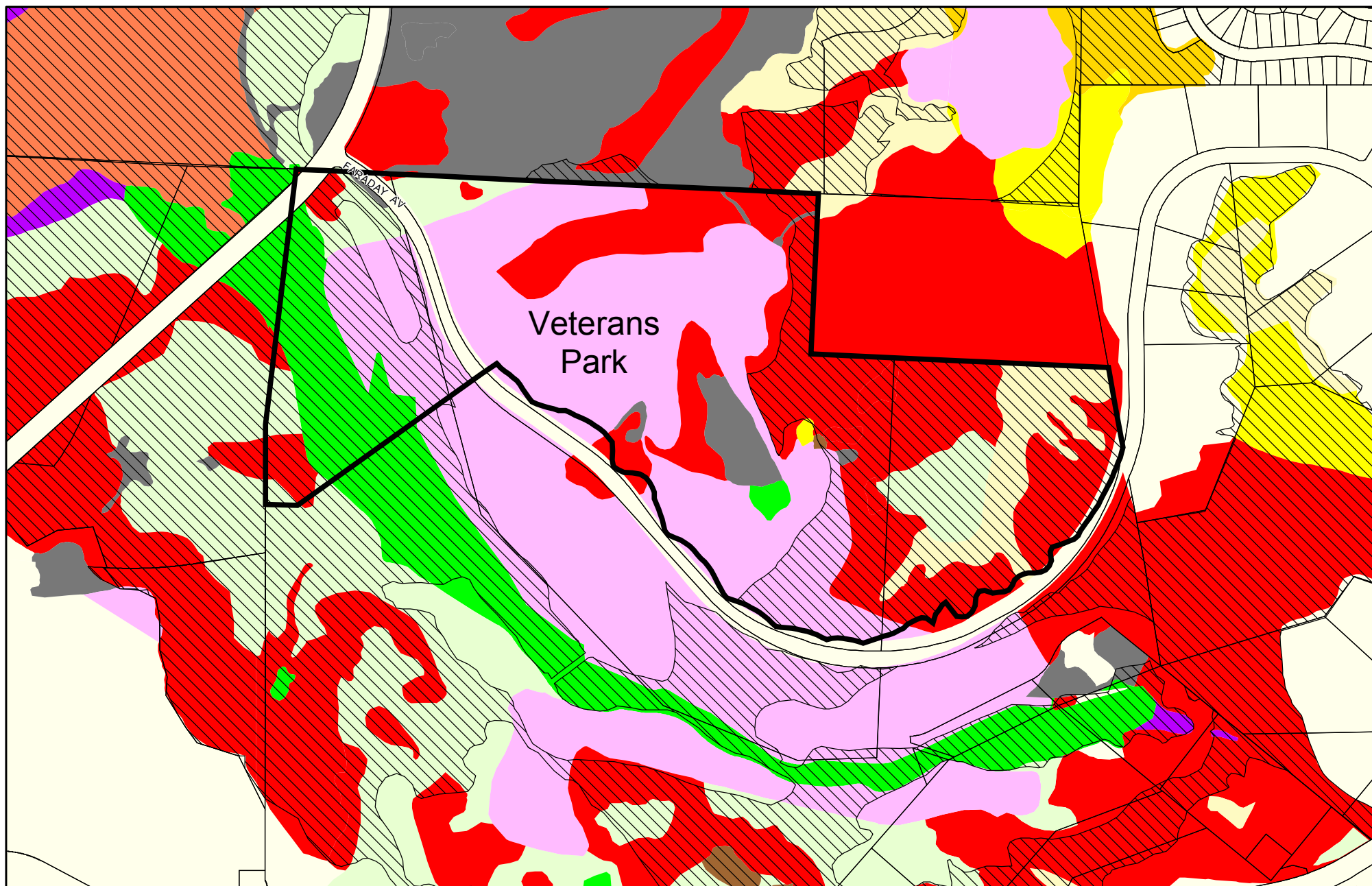
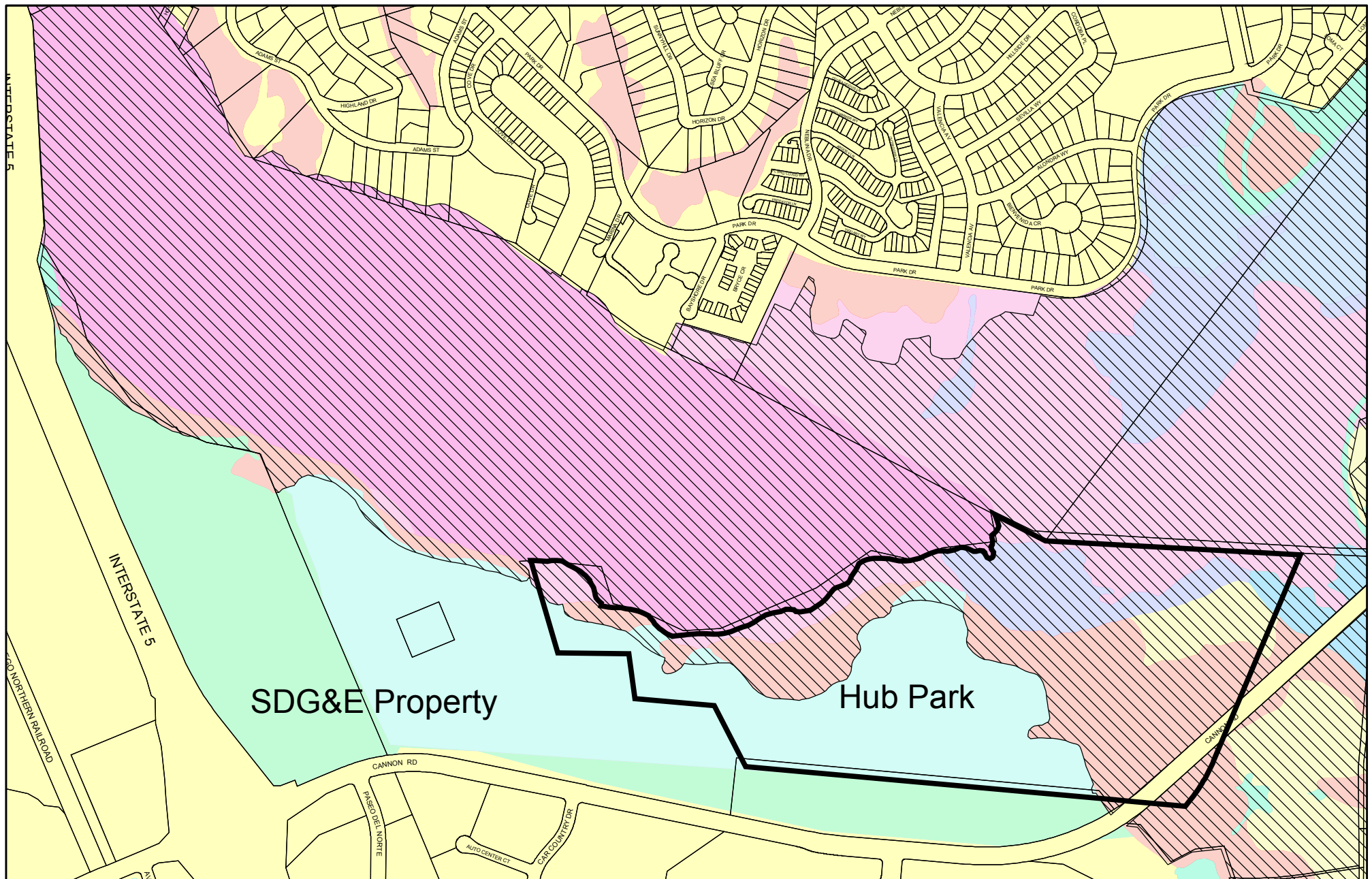
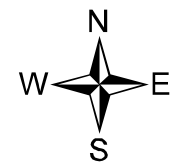


Figure 16
Veterans Memorial Park





**Figure 17 - Revised
Hub Park and SDG&E Property**



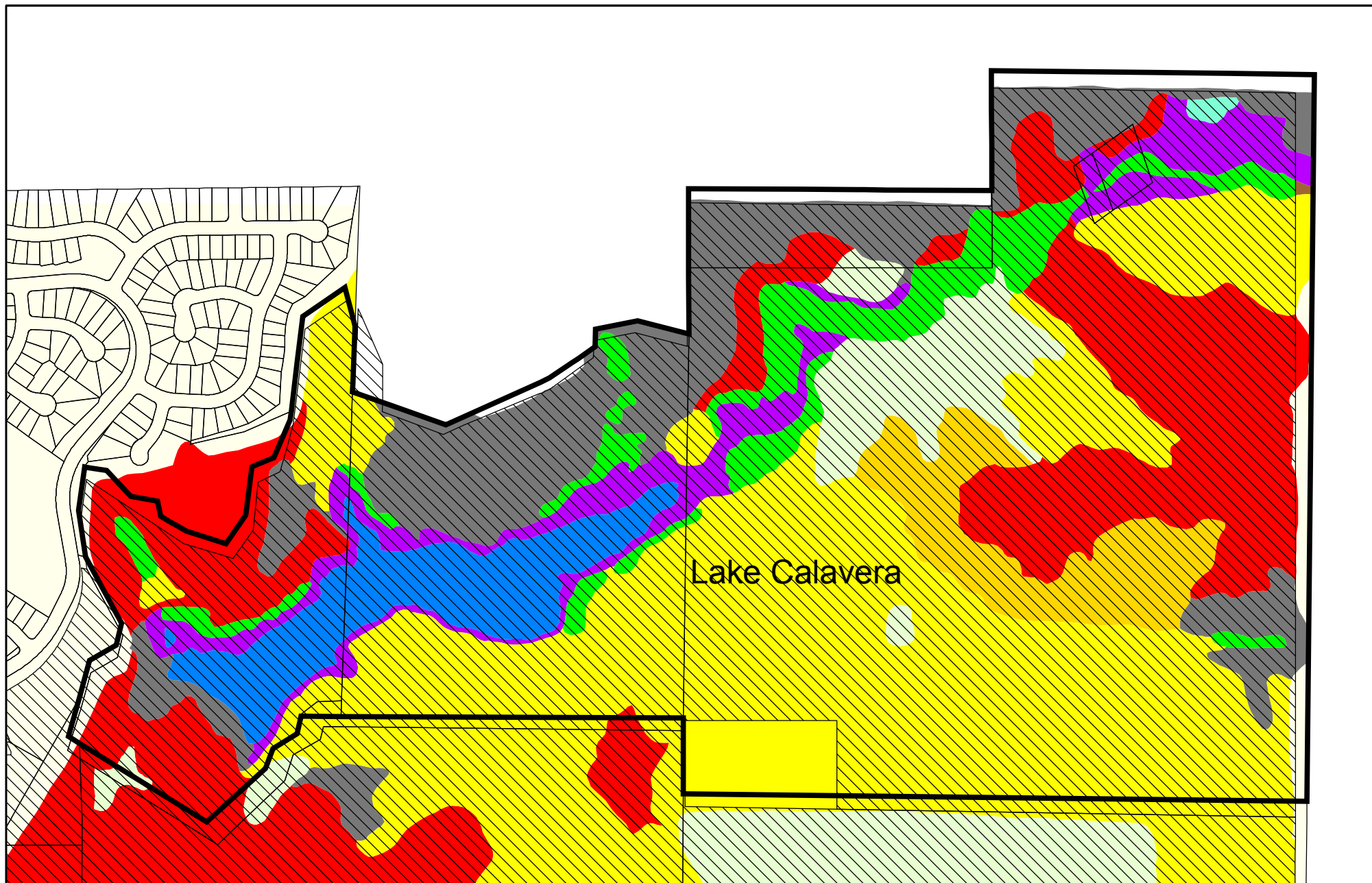


Figure 18
Lake Calavera



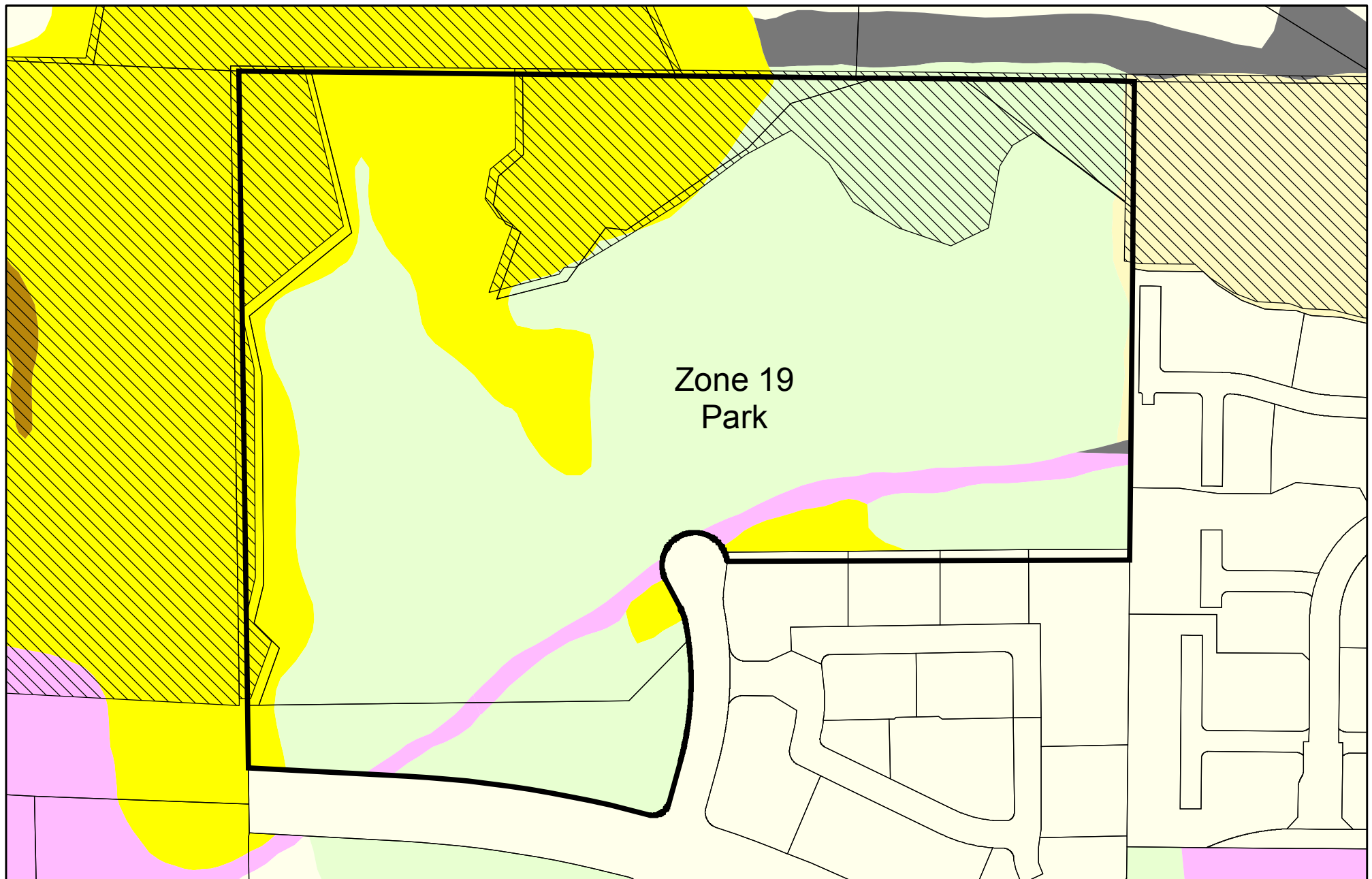
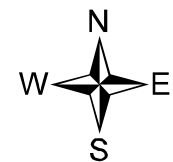


Figure 19
Zone 19 Park



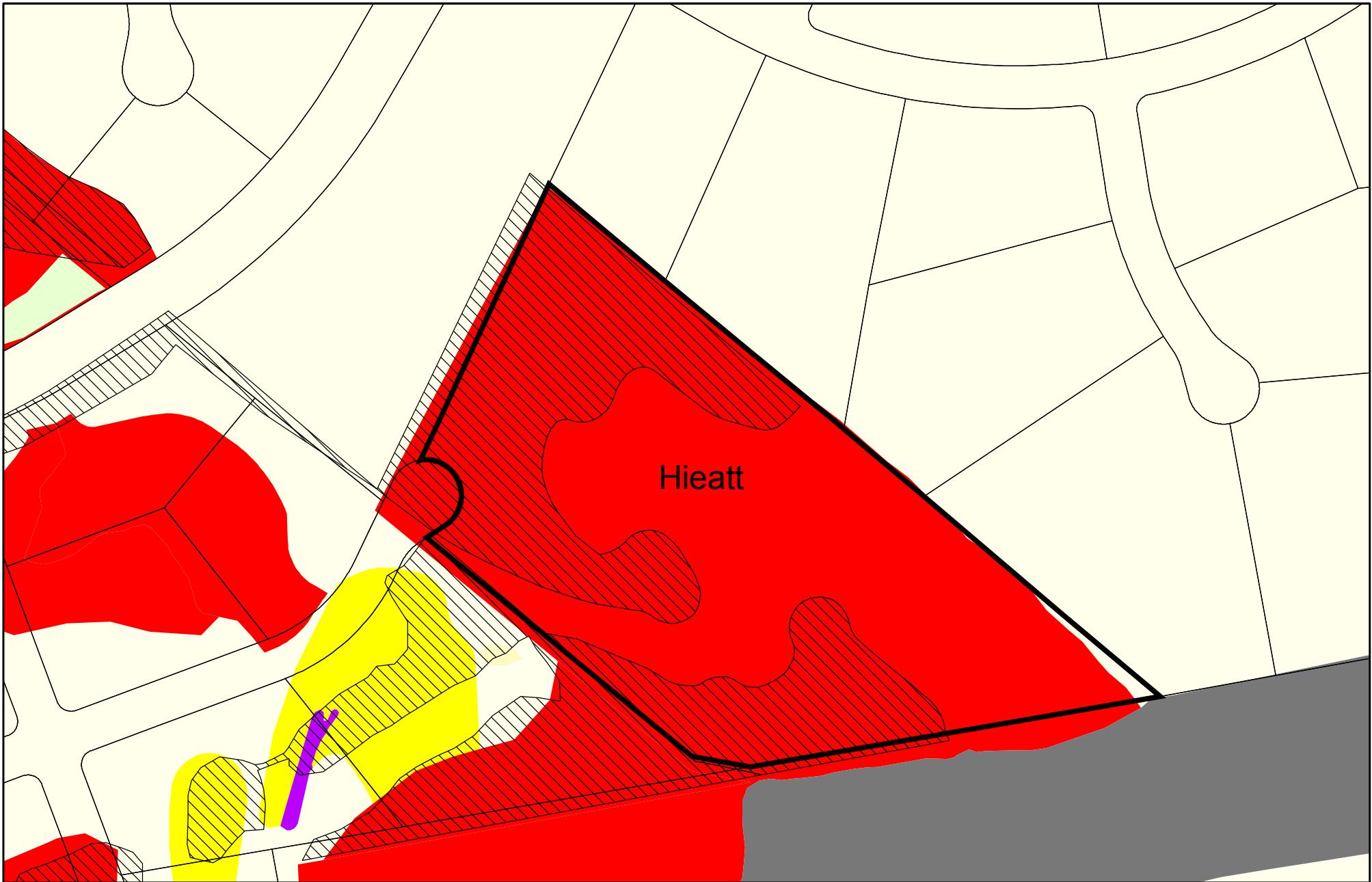


Figure 20
Hieatt



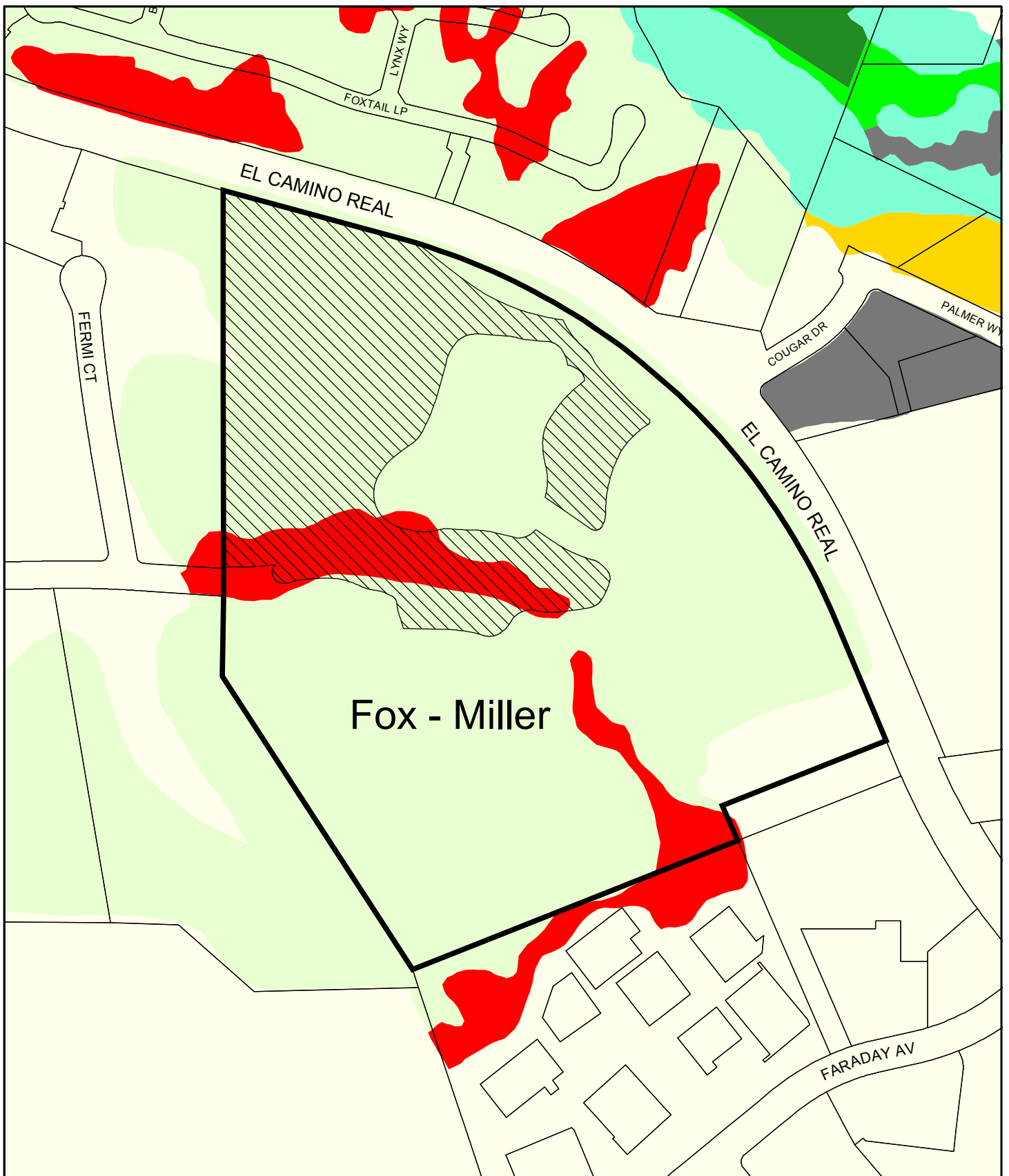
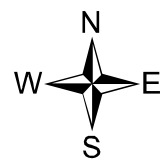


Figure 21
Fox - Miller





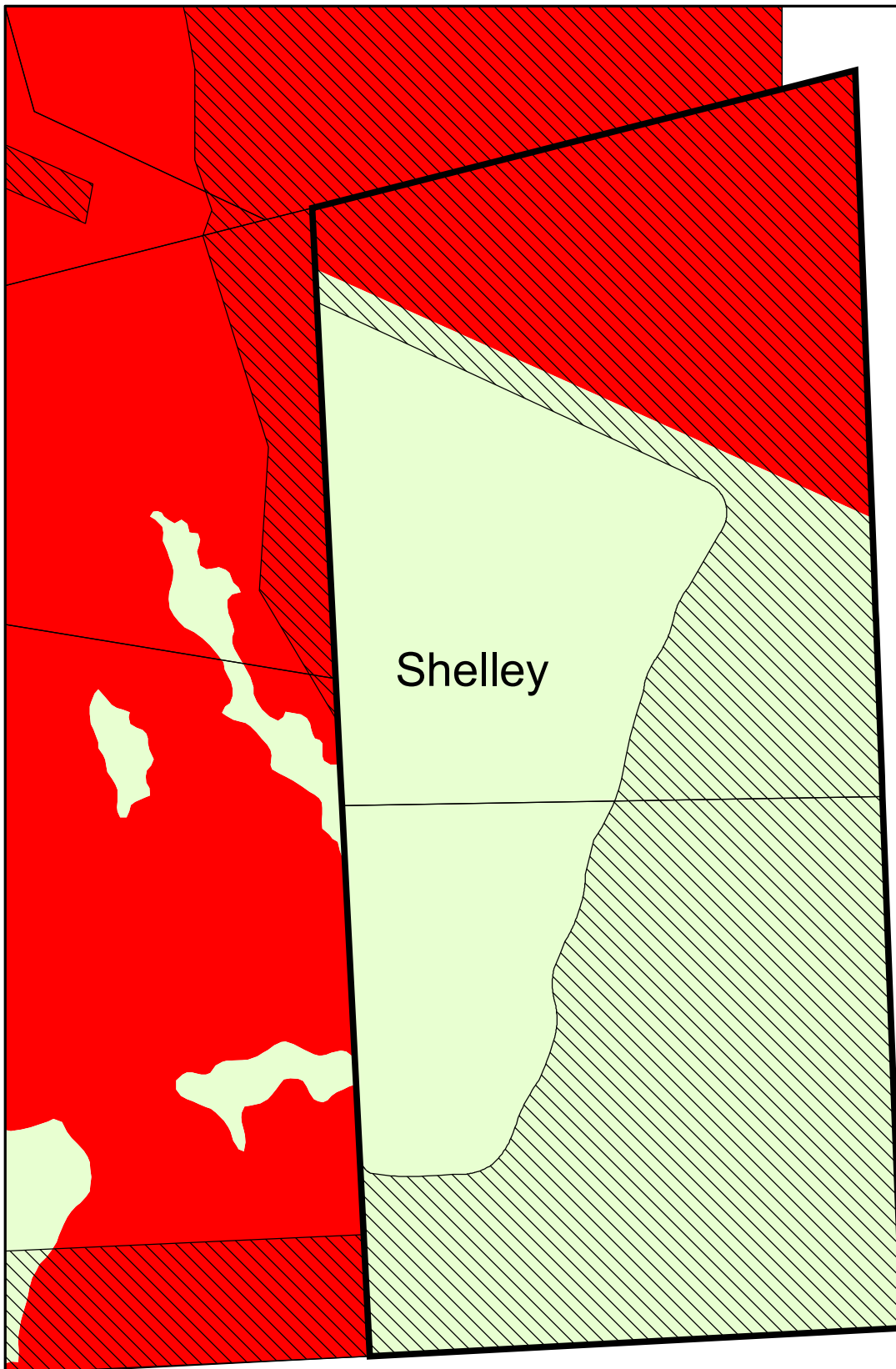


Figure 23
Shelley Property



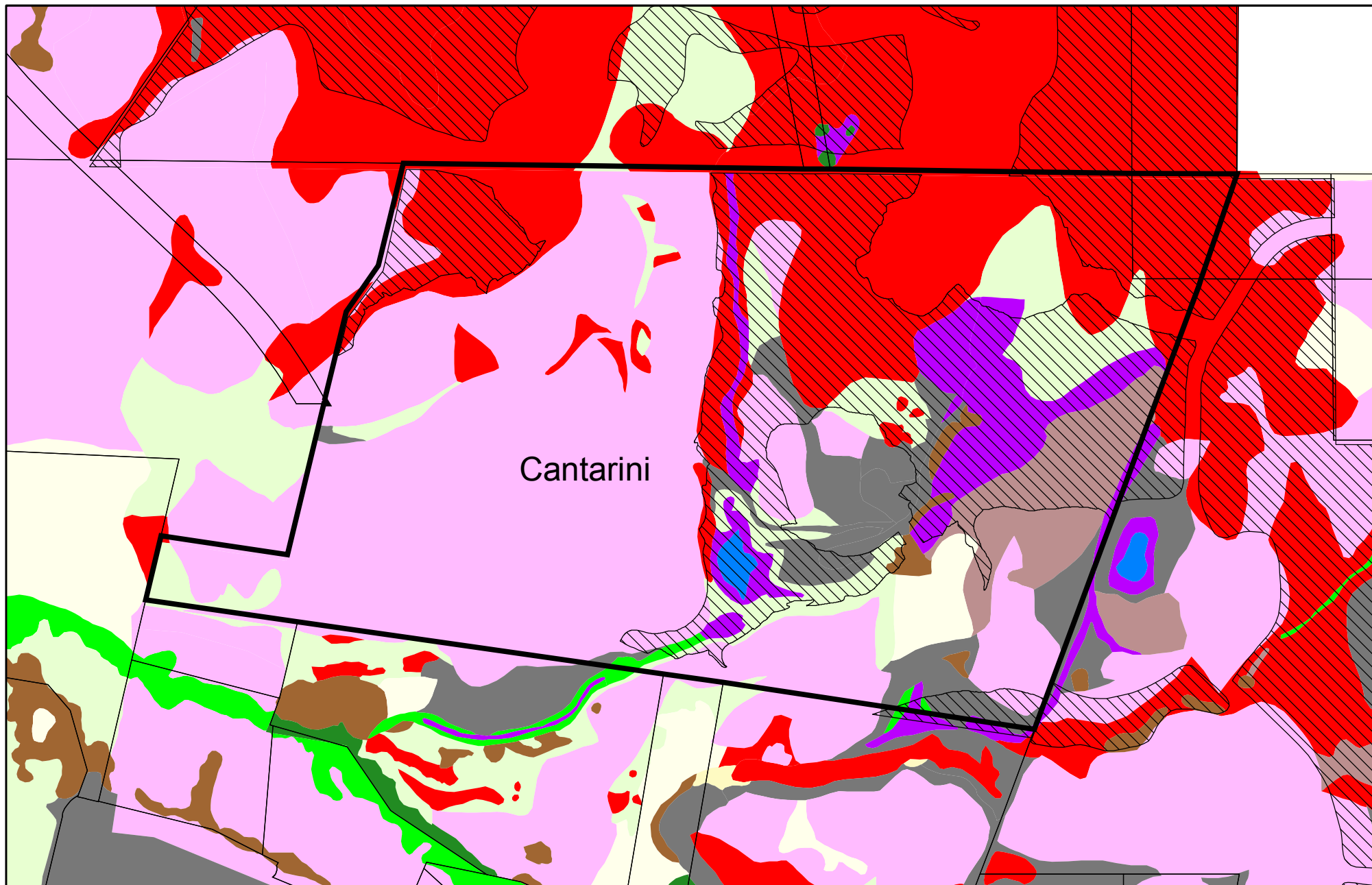
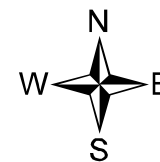


Figure 24
Cantarini



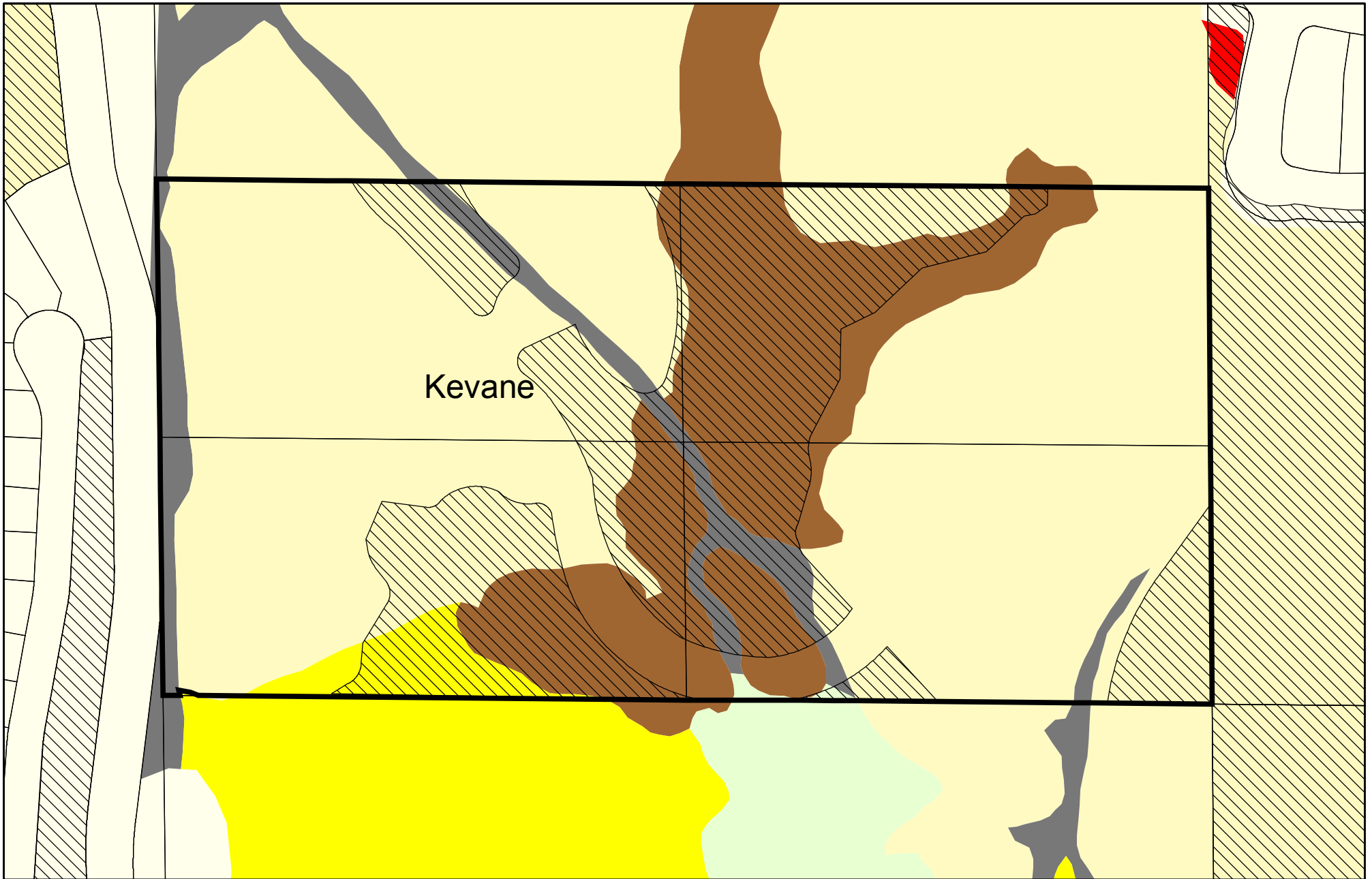


Figure 25
Kevane



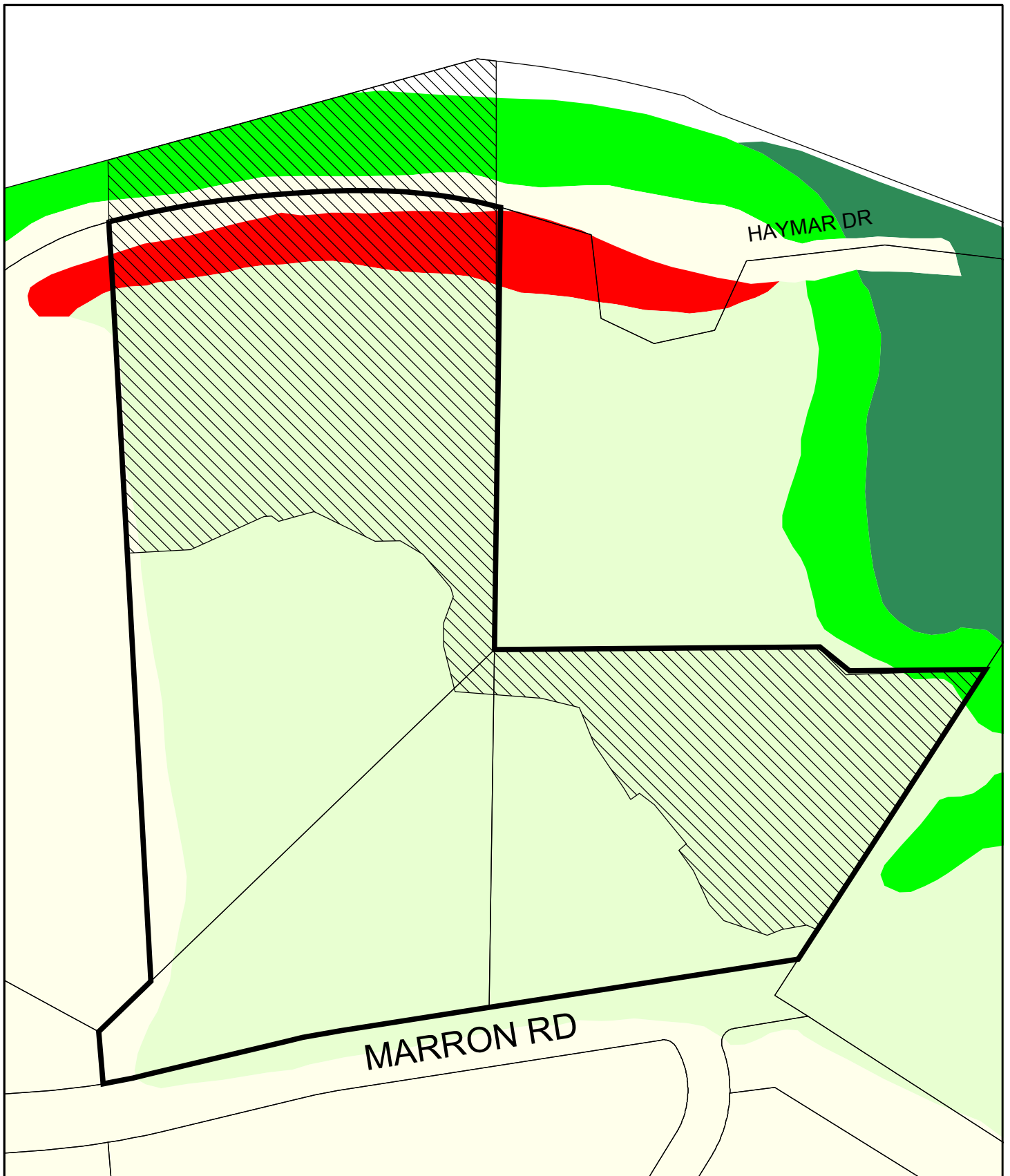


Figure 34
Summit at Carlsbad Property



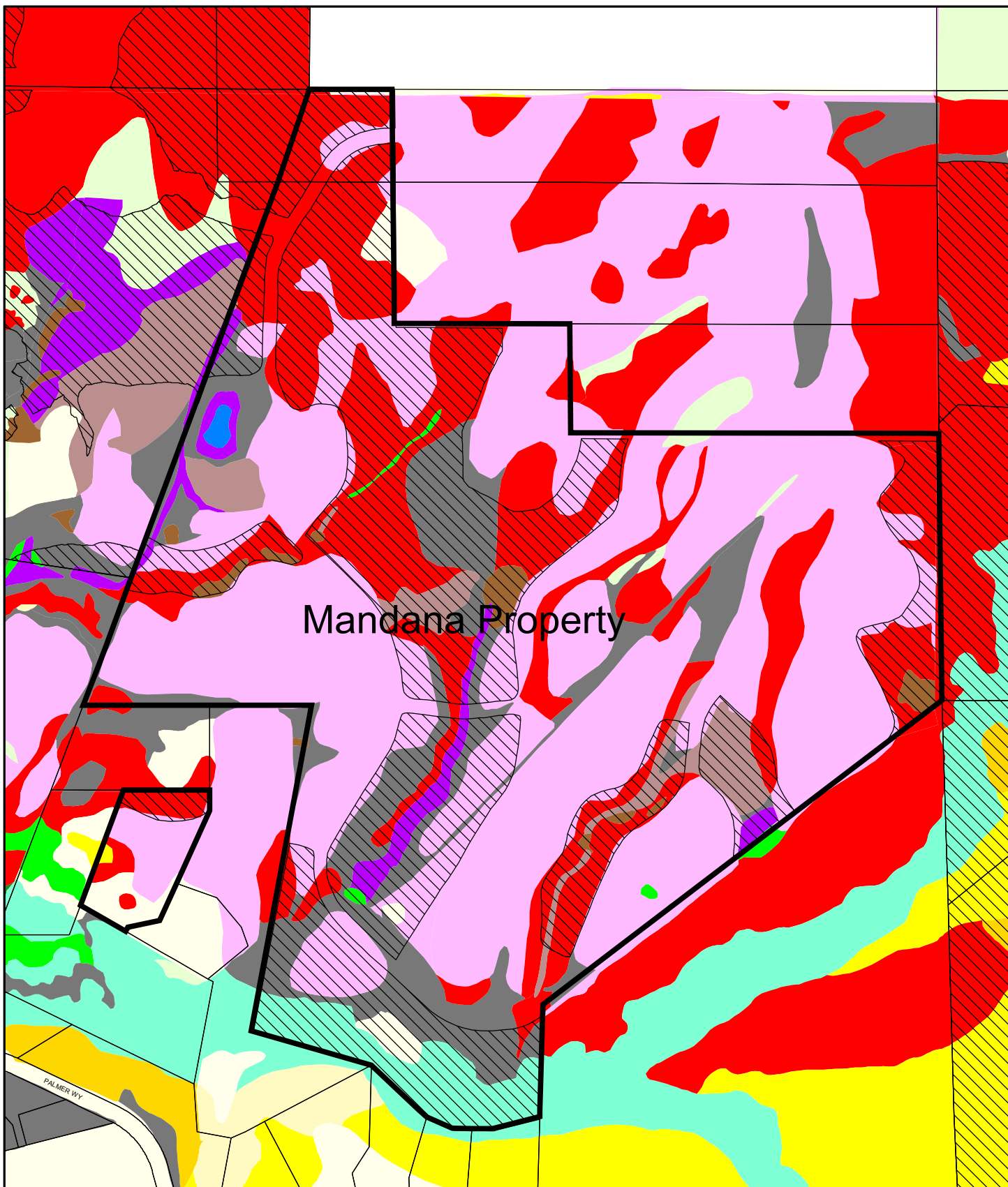
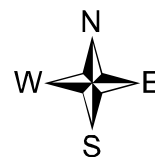


Figure 35
Mandana Property

Previously included in Addendum No. 2



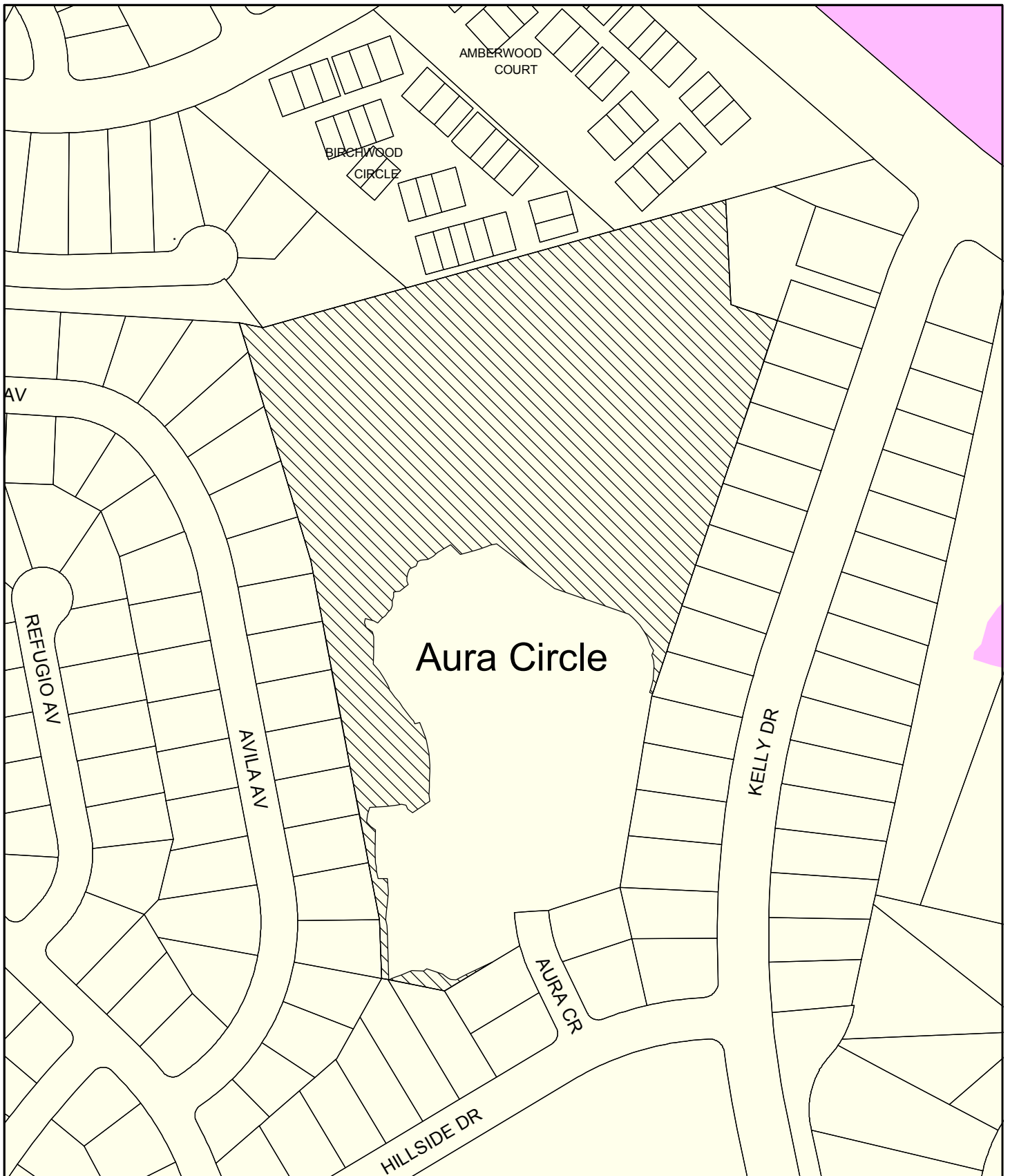


Figure 36 Aura Circle

Previously included in Addendum No. 2



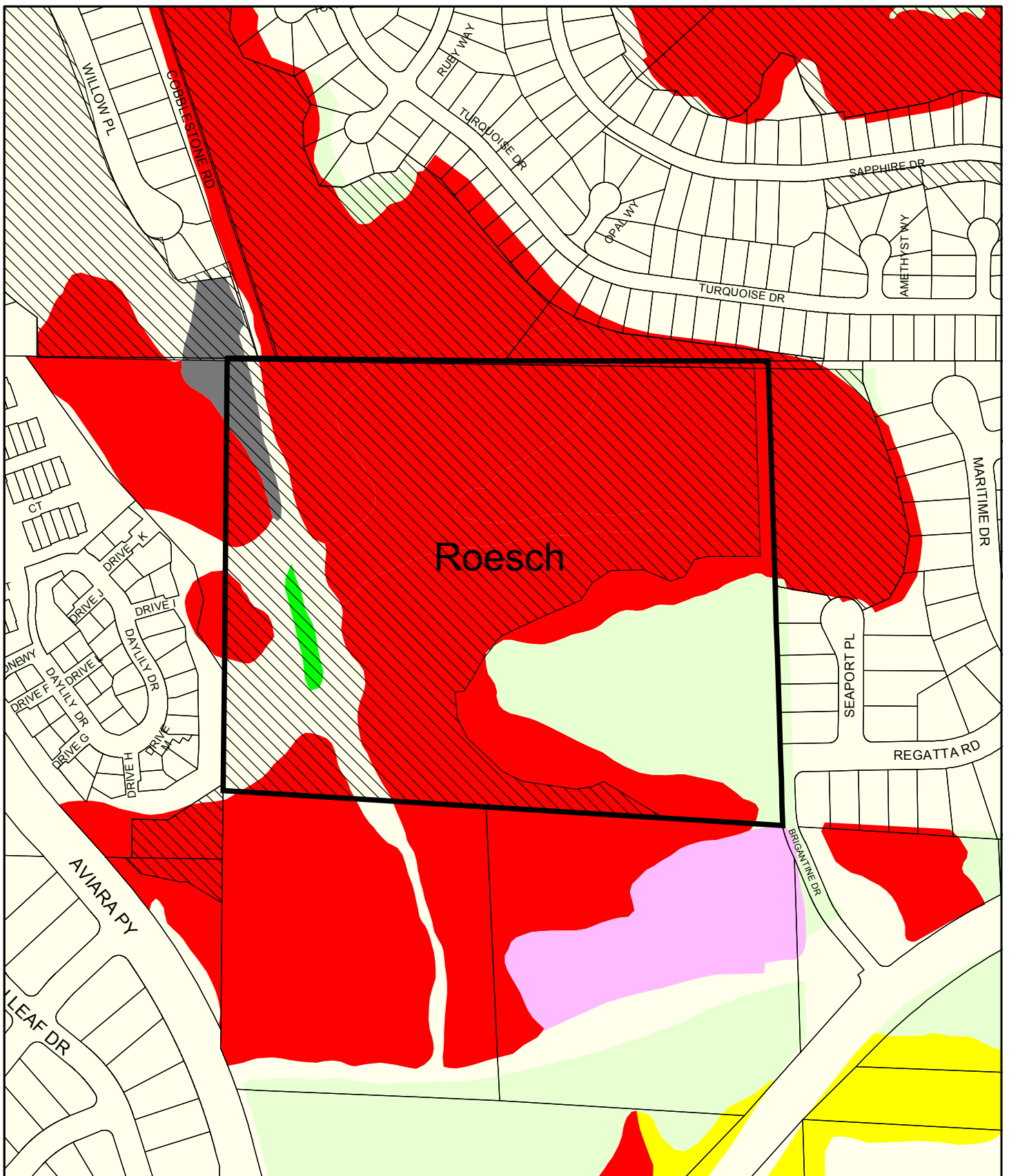


Figure 37

Roesch

Previously included in Addendum No. 2



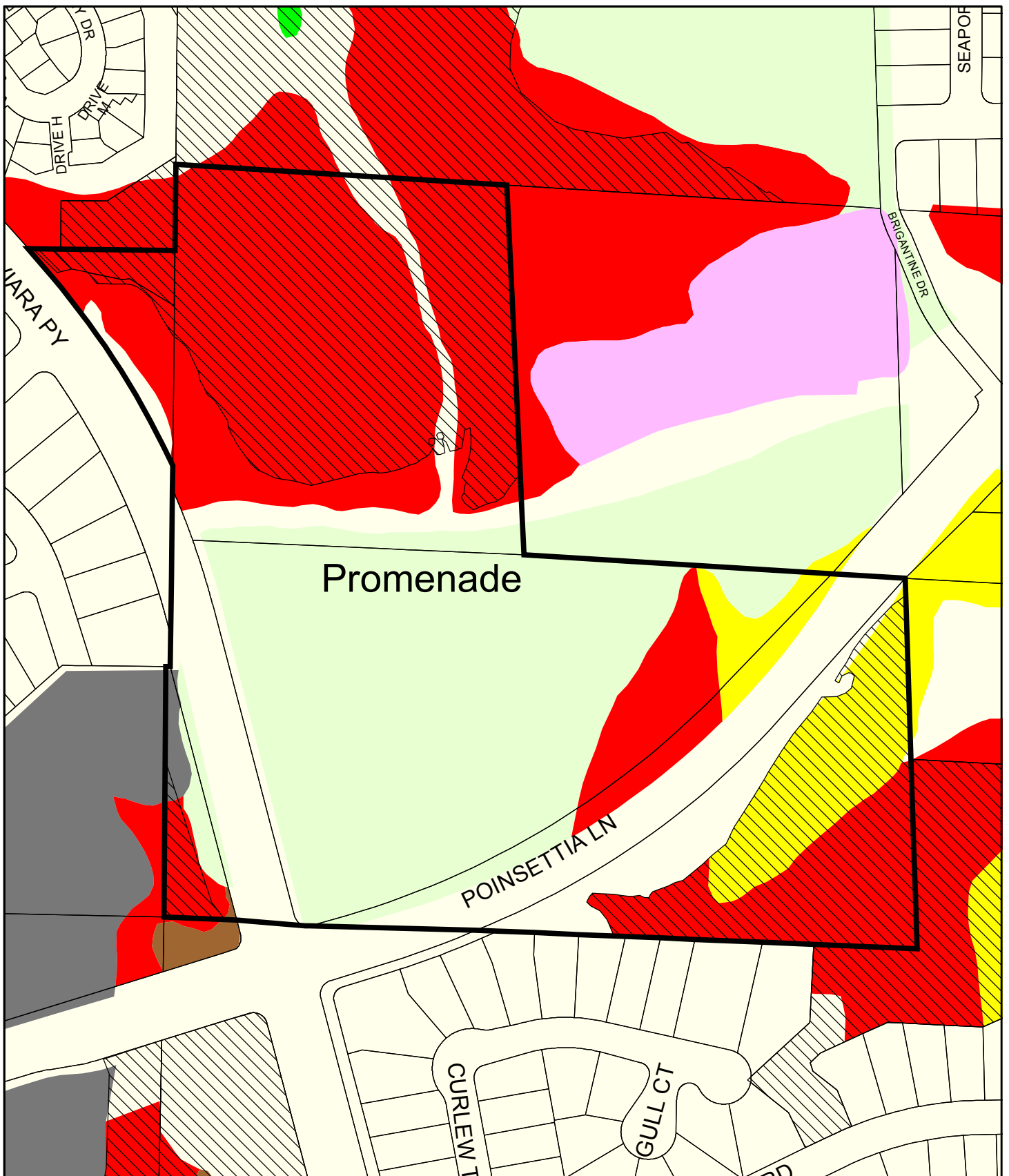
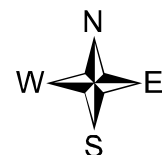


Figure 38

Promenade

Previously included in Addendum No. 2



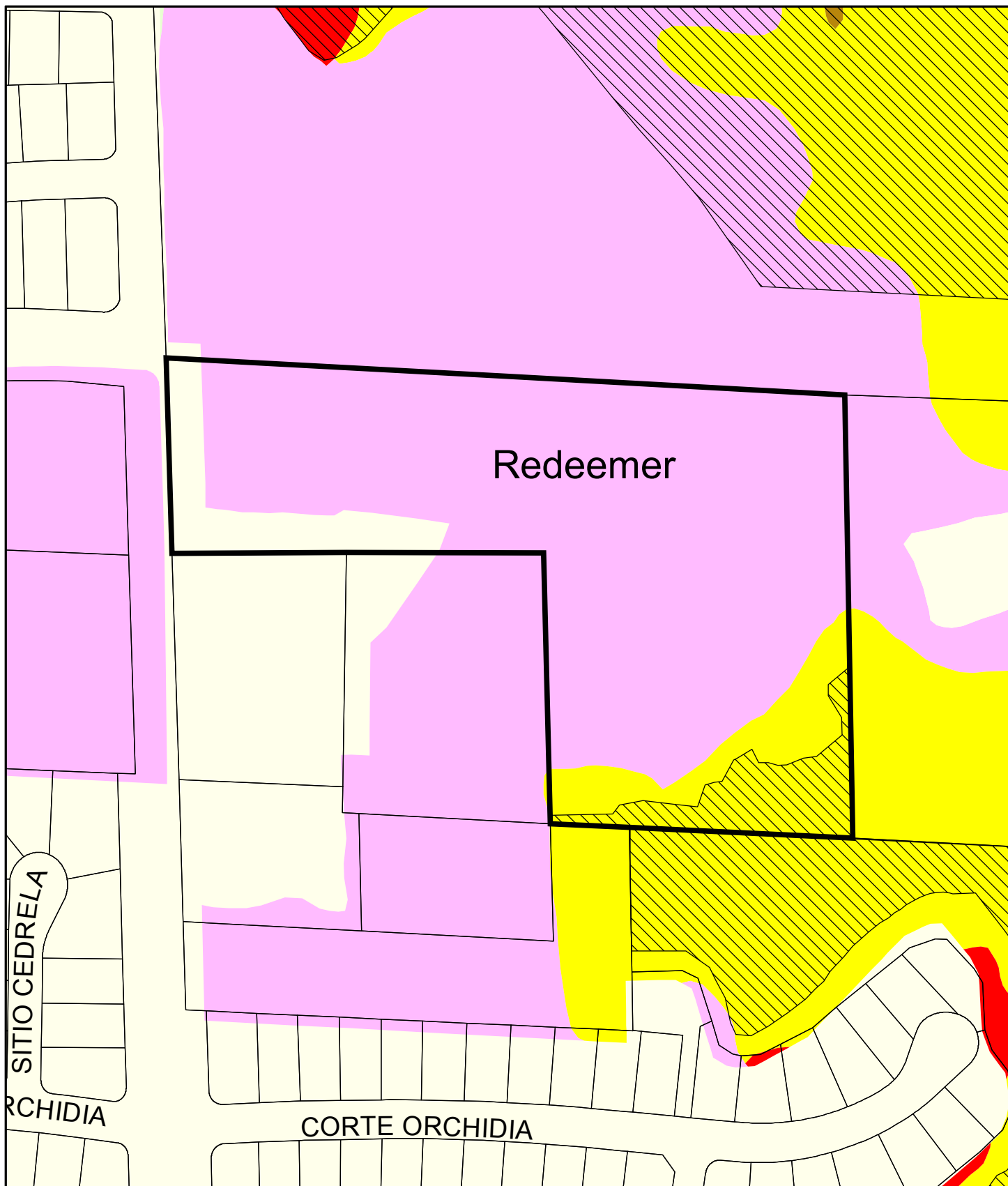
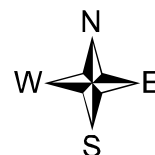


Figure 39
Redeemer by The Sea

Previously included in Addendum No. 2



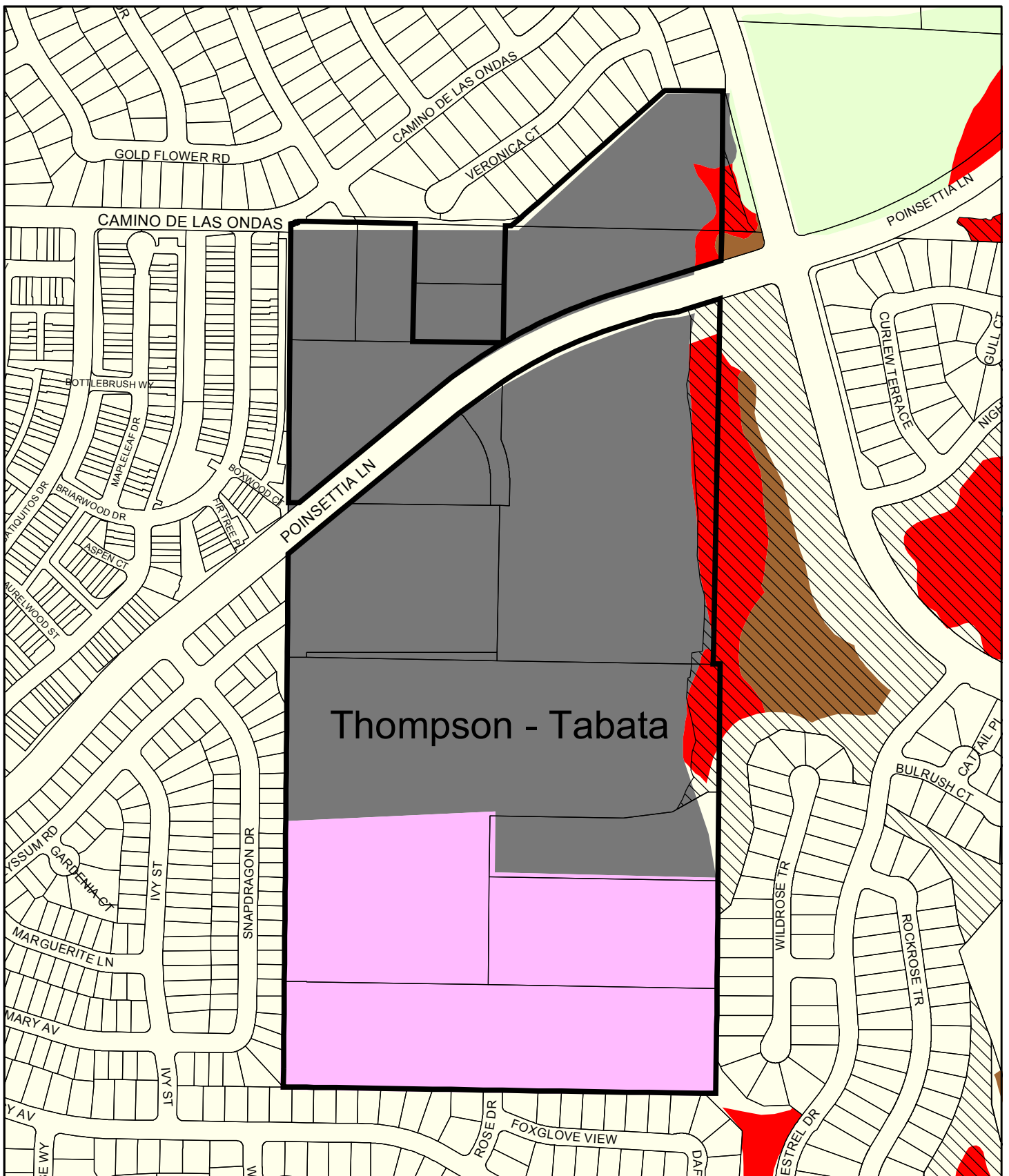


Figure 40
Thompson - Tabata
Previously included in Addendum No. 2

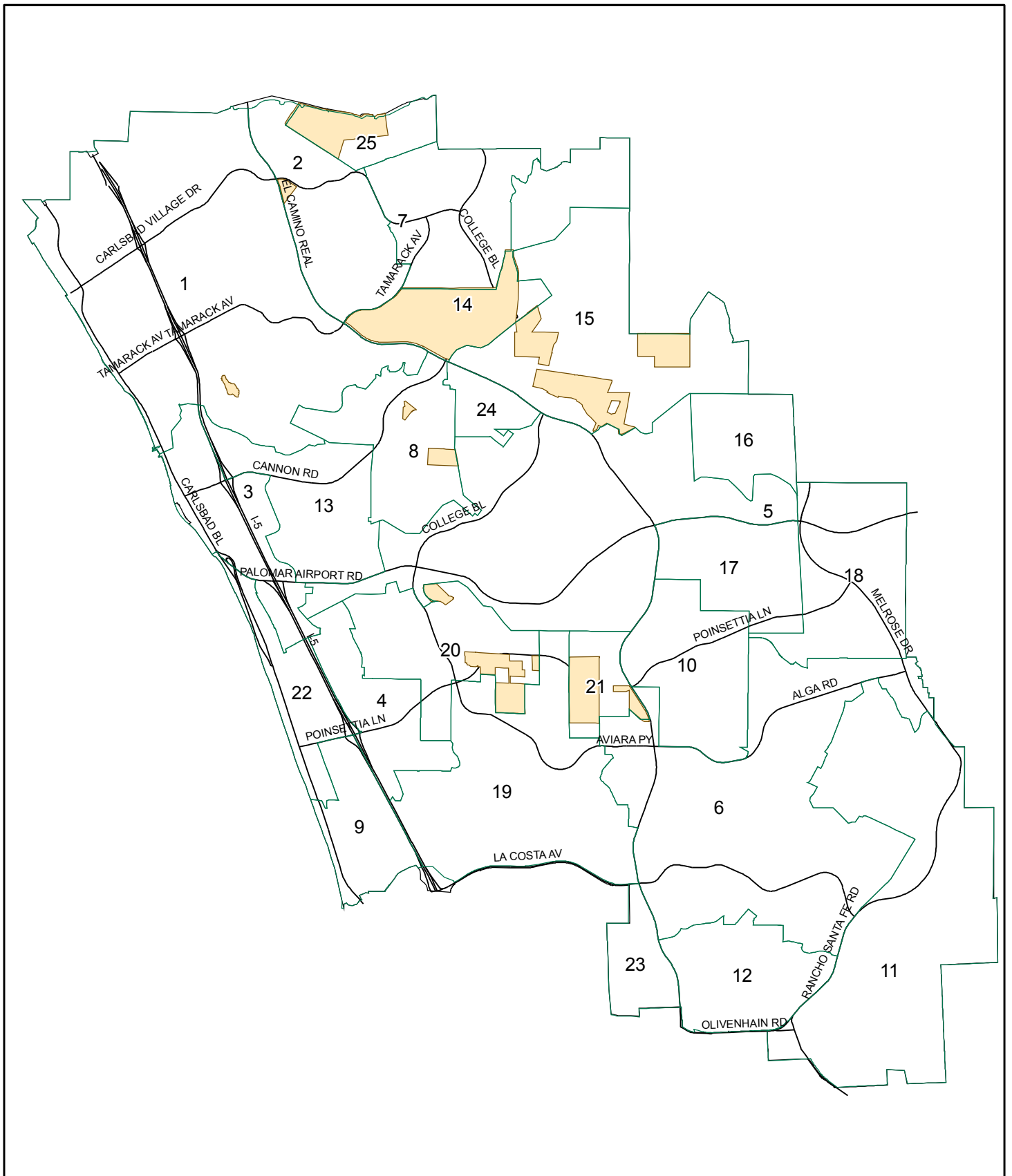


Table 6

Proposed Hardline Conservation Areas (Acres)

LFMZ	Natural Habitats							Disturbed Habitats				Totals
	Coastal Sage Scrub	Chaparral	Southern Maritime Chaparral	Oak Woodland	Riparian	Marsh	Grassland	Eucalyptus Woodland	Agriculture	Disturbed	Developed	
1	13	0	0	0	0	5	0	0	0	0	0	18
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	33	0	2	0	3	0	42	1	0	3	3	87
6	0	0	0	0	0	0	0	0	0	0	0	0
7	26	3	0	0	0	0	2	1	0	3	2	37
8	53	0	7	0	25	1	30	1	23	1	0	141
9	0	0	0	0	0	0	0	0	0	0	0	0
10	4	0	1	0	0	0	0	0	0	0	0	5
11	18	0	0	0	0	0	39	0	0	0	0	57
12	0	0	0	0	0	0	0	0	0	0	0	0
13	48	0	0	0	5	17	19	0	2	1	0	92
14	63	91	0	0	17	31	13	0	0	37	5	257
15	176	0	0	11	6	15	10	0	8	7	0	233
16	75	47	4	0	43	0	54	0	0	0	0	223
17	35	9	0	0	6	0	7	0	96	0	0	153
18	17	4	0	0	0	3	1	0	0	27	2	54
19	0	3	0	0	0	0	2	0	0	0	0	5
20	9	20	0	0	0	0	0	0	0	0	0	11
21	4	2	19	4	0	0	0	0	1	3	0	30
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	11	9	0	0	10	1	33	0	0	6	1	71
Totals	585	170	33	12	115	73	252	3	130	88	13	1,474

Note: Acreage figures may vary somewhat between tables due to rounding.



**Figure 26 - Revised
Proposed Standards Areas**
Previously included in Addendum No. 2



C. Standards Areas

For some key properties within the City which have not submitted proposed hardline designs for inclusion in the preserve system at this time, the HMP includes conservation goals and standards which will apply to future development proposals in these areas. The goals and standards have been arranged according to the Local Facilities Management Zones (LFMZs) to which they apply. Figure 20 shows the LFMZs, the areas of the City and individual properties covered by the standards areas.

The standards apply only to those areas within the LFMZs not already covered by existing and proposed hardline areas, existing take authorizations or areas shown as development areas on the HMP map. They are focused geographically using the 25 Local Facilities Management Zones (LFMZs) defined by the City's Growth Management Plan (GMP). The GMP requires that each zone have a local facilities management plan approved by the City Council before development applications can be accepted or processed for that zone. The HMP requires that each plan demonstrate how the goals and objectives of the HMP will be achieved for that zone. This planning should ensure that viable biological open space will be comprehensively planned for the zone, rather than having open space areas planned piece-meal for each parcel within the zone. If individual properties are proposed for development within a zone, the property owner must show how the standards will be met. Standards are identified for properties in zones 1, 2, 8, 14, 15, 20, 21 and 25.

The planning standards are based on biological issues defined specifically for each zone based on existing biological conditions and preserve design considerations. These issues are translated into HMP conservation goals, which in general focus on conserving and maintaining major and critical populations of HMP species, major and critical habitat patches within core areas, and landscape linkages and movement corridors between core areas as well as with adjoining jurisdictions.

The discussion of biological issues and goals is followed by recommended standards for planning new developments within each zone. These planning standards are intended to achieve the zone-specific biological goals based on zone-specific conditions and constraints. They would be used during the land use planning and review process by the City as described in Sections D and E, to identify conservation priorities and compliance options for new projects. Although the standards will ultimately result in determining preserve boundaries, the standards as well as the mitigating measures and ratios contained in Tables 9 and 11 of the document apply to all projects in the zone whether they are within or outside the preserve boundaries. (See page D-91 or further discussion of Citywide minimization and mitigation requirements.)

There are several properties within the standards areas which are extremely important to planning a viable preserve system because of their geographical location (e.g., linkage) or the habitat type occurring on the property. In order to allow reasonable economic use of these properties, the standards allow at least 25% of the property to be developed, in the least environmentally damaging location, while 75% will be conserved.

Protection of coastal sage scrub is of particular importance in these remaining unplanned areas of the city. Therefore, 67% of coastal sage scrub shall be conserved overall within the Standards Areas, as well as 75% of gnatcatchers. Some zones may conserve more or less than these percentages due to parcel size, location, resources, or long-term conservation potential. The procedures detailed in Section E of this plan will be implemented in the processing of any application for development entitlements for the Standards Areas. Implementation of Section E will ensure that the acreage goals and species preservation goals outlined for the Standards Area will be achieved.

The following contains the specific standards by LFMZ.

Zone 1**1. Biological Resource Issues**

Zone 1, which is almost entirely developed, contains scattered fragments of natural vegetation, including major and critical stands of riparian, as well as some scattered patches of coastal sage scrub, non-native grassland, maritime succulent scrub, saltmarsh, and freshwater marsh. Some coastal sage scrub areas support California gnatcatchers. Much of the remaining vegetation is on slopes adjoining Buena Vista and Agua Hedionda lagoons, thus contributing to the biological value of the lagoon watersheds. Buena Vista and Agua Hedionda lagoons support major or critical populations of southwestern pond turtle, white-faced ibis, western snowy plover, and California least tern. The lagoons also provide foraging habitat for the American peregrine falcon and California brown pelican.

2. HMP Conservation Goals

Conserve the majority of sensitive habitats in or contiguous with biological core areas, including no net loss of wetland habitat, and preserve, coastal sage scrub and maritime succulent scrub adjacent to the lagoons. Retain and manage natural habitats adjacent to lagoons to buffer wetland resources from adverse effects and provide upland nesting habitat for pond turtles and other HMP species.

3. Planning Standards

There are two specific areas within Zone 1 to which specific standards are being applied; several vacant lots on the north shore of Agua Hedionda Lagoon and a larger, vacant in-fill lot located to the southwest of El Camino Real and Kelly Drive.

Avoid removal of maritime succulent scrub and any patches of coastal sage scrub in or contiguous with biological core areas. Preserve at least 50% of coastal sage scrub with preference for avoidance of any areas that contain gnatcatchers. If impacts to native habitats cannot be avoided, mitigate by creation or enhancement of like habitats adjacent to lagoons, or by offsite compensation or restoration within biological core and linkage areas. Maximize the preservation of habitat adjacent to the lagoon.

Zone 2**1. Biological Resource Issues**

Zone 2 is almost entirely developed with some very small patches of coastal sage scrub native and non-native grassland. The northern end of the zone comprises part of the regional north-south linkage for gnatcatchers.

2. HMP Conservation Goals

Establish, enhance and maintain a habitat linkage from Core Area #2 to the city limits with Oceanside to ensure Carlsbad's portion of regional connectivity for gnatcatchers. Restoration of habitat is required in the northern portion of this zone, adjacent to Highway 78. Allow no net loss of riparian and other wetland habitats.

3. Planning Standards

There are only two properties within this zone where specific standards apply. The first is at the northeastern edge of this zone and is identified on the HMP map as the Kelly/Bartman property. It is approximately 20 acres in size. Approximately 50% of this property, which is primarily grassland, shall be conserved, while allowing development to occur on the least environmentally sensitive portion of the property. The conserved area must form a continuous corridor from the southeast corner of the property to the northern edge with a minimum habitat linkage width of 500 ft. at the southeast and

northwest portions of the property. The conserved area shall be revegetated as a mosaic of grassland and coastal sage scrub in order to facilitate gnatcatcher movement through the regional linkage with Oceanside. Allow no net loss of any riparian and other wetland habitats.

Avoid removal of coastal sage scrub or grassland habitats within this area, and restore or enhance sage scrub habitat, as necessary, to achieve coastal sage scrub contiguity. Restoration of this area is highly desirable. Allow no net loss of any riparian and other wetland habitats.

The second property is an infill lot located off the southeast corner of El Camino Real and Carlsbad Village Drive and is known as the Spyglass property. Although this property is not contiguous to any other habitat and would not provide a link or corridor for habitat connectivity purposes, a majority of the property contains native grasslands. Any grasslands impacted on this property shall be required to do offsite mitigation at a 2:1 ratio.

Zone 8

1. Biological Resource Issues

Most of Zone 8 is comprised of existing or proposed hardline preserve areas. The habitats in Zone 8 comprise much of Core Area 4, and link to other cores to the northeast (via Linkage Area B), southeast (via Linkage Area F), and west (Agua Hedionda Lagoon). This zone supports a variety of sensitive habitats, including critical salt marsh, freshwater marsh, and riparian scrub habitats as well as a major stand of coastal sage scrub. A small patch of southern maritime chaparral is located in and adjacent to agriculture, non-native grassland, southern mixed chaparral, and disturbed land. Marsh habitats associated with Agua Hedionda Lagoon support critical populations of California least tern, western snowy plover, Belding's Savannah sparrow, light-footed clapper rail, and potentially salt marsh skipper. Riparian habitats support breeding least Bell's vireos and potentially southwestern willow flycatchers. California gnatcatchers inhabit most of the sage scrub in this zone, and Del Mar manzanita occurs in the southern maritime chaparral.

2. HMP Conservation Goals

Ensure no net loss of wetland habitats and minimize loss of sensitive upland habitats within Core Area 4, especially occupied coastal sage scrub. Conserve major and critical populations of HMP species and populations of Narrow Endemic species. Maintain contiguity between upland and wetland habitats within the zone, as well as continuity of sensitive upland habitats across the zone from southeast to northwest.

3. Planning Standards

There are two properties within this zone that are designated as standards areas; the Kirgis property and the Callaghan property. Both properties are required to avoid impacts to any identified Narrow Endemic plant populations. Impacts to coastal sage scrub and southern maritime chaparral habitats shall also be avoided, with impacts limited to smaller fragments, edges, lower quality areas, and areas devoid of sensitive species. The Kirgis property shall be allowed a maximum of 25% of the parcel for development purposes. The Callaghan property shall be allowed a maximum of 50% of the parcel for development purposes. Both properties shall place their development on the least environmentally sensitive portion of the property.

Zone 14**1. Biological Resource Issues**

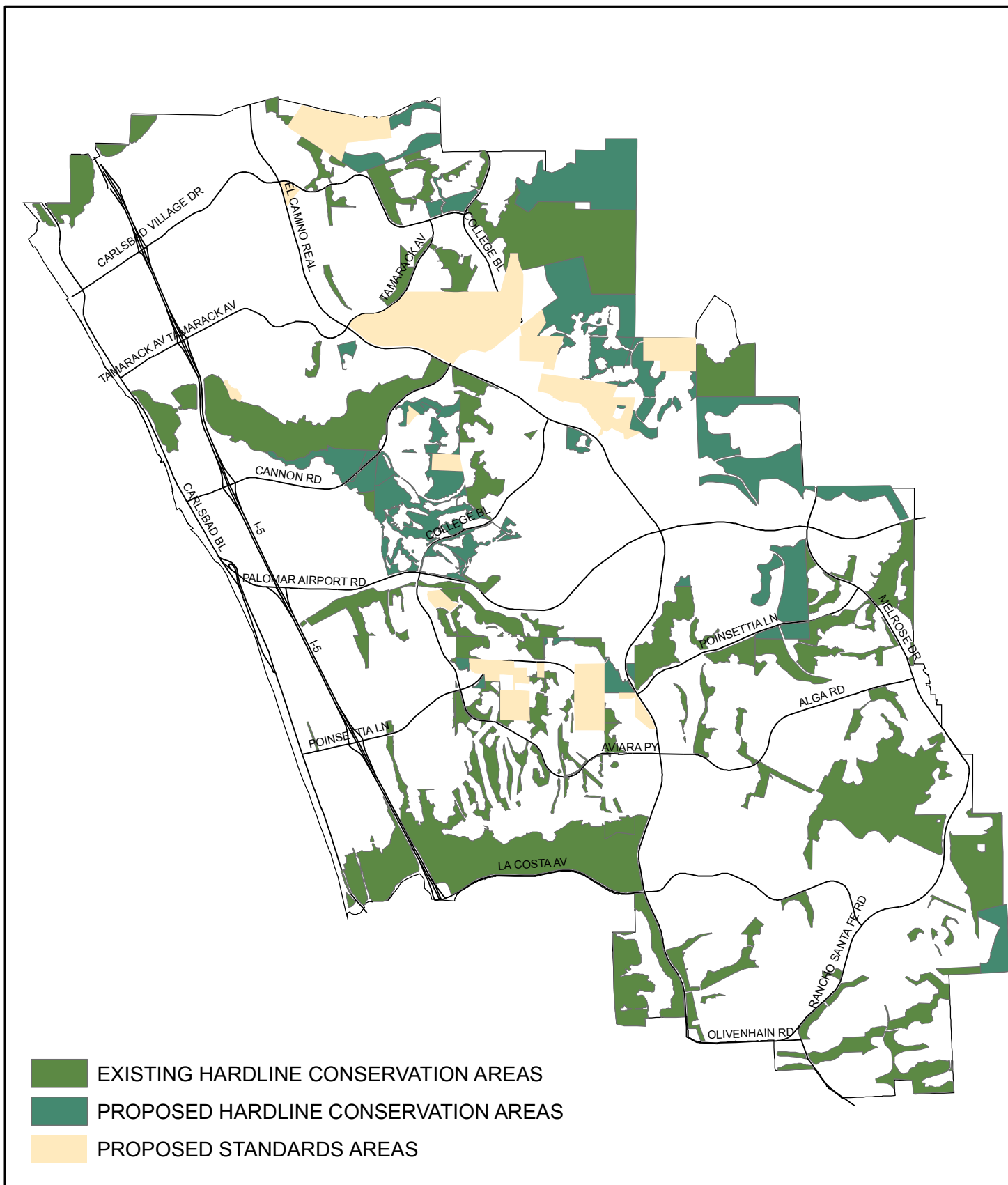
Zone 14 is divided into two biologically distinct portions. The northeastern portion of Zone 14 contains critical coastal sage scrub and riparian habitats, as well as major stands of chaparral, which are contiguous with other large open-space areas. This area also supports California gnatcatchers and forms a part of Core Area 3 (which includes Lake Calavera and Calavera Heights). The southern portion of this zone is dominated by agricultural fields, with scattered areas of non-native grassland and coastal sage scrub on slopes. A narrow sycamore riparian woodland also runs north-south through the agricultural fields. Remnant habitats in the southern section of this zone likely serve as wildlife movement corridors and habitat linkages, particularly connecting Core Area 3 to Core Area 4 via Linkage Area B. Large mammals using these connections are needed to maintain ecosystem balance at Agua Hedionda Lagoon.

2. HMP Conservation Goals

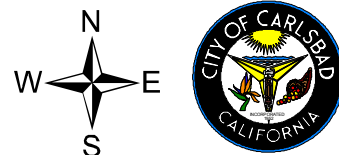
Establish, enhance, and maintain viable habitat linkages across Linkage Area B to ensure connectivity for gnatcatchers and other HMP species between Core Areas 3 and 4. Allow no net loss of wetlands and conserve through preservation, restoration or enhancement, 67% of coastal sage scrub.

3. Planning Standards

Areas of upland habitat outside of the designated linkage B may be taken in exchange for restoration and enhancement inside the linkage, as long as the result is conservation of at least 67% of coastal sage scrub and the associated gnatcatcher population within the southern portions of the zone. Creation of the linkage must utilize patches of existing habitat within the identified alignment. Maintain and enhance the wildlife movement potential between core areas using sensitive design of any road or utility crossings of Linkage B (e.g., bridging, undercrossing). Conserve all riparian habitats onsite, and prohibit fill or development within the existing flood plain except where required for Circulation Element roads, Drainage Master Plan facilities, or other essential infrastructure. Conserve any Narrow Endemic plant populations identified during planning. When conversion of agricultural lands to other uses is proposed, set back all development impacts at least 100 feet from existing wetland habitats and require habitat restoration or enhancement in the riparian and buffer areas.



**Figure 27 - Revised
Conservation Components Map**
Previously included in Addendum No. 2



Zone 15

1. Biological Resource Issues

Important core and linkage habitats comprise much of Zone 15. The northern portion of the zone includes much of Core Area 3, which is already largely existing and proposed hardline open space. Critical blocks of coastal sage scrub in this area are densely occupied by a critical population of California gnatcatchers and other sensitive species. Most of the California gnatcatchers in the northernmost core population are in this block of habitat. It connects to core population areas on Camp Pendleton via core and linkage areas in Zones 7, 25, and 2 and the City of Oceanside, and to core population areas in southeast Carlsbad via stepping-stone Linkage Areas C and D, Core Area 5, and southwest San Marcos. This area also supports a critical population of thread-leaved brodiaea. Riparian scrub and oak riparian woodlands cross the large block of coastal sage scrub in the northern part of the zone and also border the zone's southern boundary. The southern portion of the zone, which includes multiple property ownerships, is a mosaic of coastal sage scrub, non-native grassland, and chaparral. Some of the natural habitat patches border the southern drainage (Agua Hedionda Creek) and add to its value as a wildlife movement corridor. Agricultural areas north of Agua Hedionda Creek support a mosaic of disturbed coastal sage scrub patches on rocky hills and ridges, along with a variety of wetland communities. These remnant natural habitat patches, surrounded by active agricultural fields, comprise part of a stepping-stone linkage (Linkage Area C) for gnatcatchers and other species. The Dawson-Los Monos Reserve in the eastern portion of the zone supports relatively undisturbed sage scrub, chaparral, and riparian communities.

2. HMP Conservation Goals

Establish, enhance, and maintain a viable habitat linkage across Linkage Area C to ensure connectivity for gnatcatchers and other HMP species between Core Areas 3 and 5. Conserve the majority of sensitive habitats in or contiguous with biological core and linkage areas, including no net loss of wetland habitats and coastal sage scrub within Core Area 3 and Linkage Area C.

3. Planning Standards

Maintain and enhance a habitat linkages across Linkage Area C and adjoining portions of Core Areas 3 and 5 that averages between 500 and 1,000-feet wide, with a minimum width of no less than 500 feet. Emphasis should be on improving gnatcatcher habitat within the linkage. Areas of upland habitat outside of the designated linkage Area C may be taken in exchange for restoration and enhancement inside the linkage, as long as the result is no net loss of coastal sage scrub and the associated gnatcatcher population within the southern portion of the zone. Creation of linkage should utilize patches of existing habitat to the maximum extent practicable. Creation of the linkage must utilize patches of existing habitat within the identified linkage alignment. Maintain and enhance the wildlife movement potential between core areas using sensitive design of any road or utility crossings of Linkage C. Conserve all riparian habitats onsite, and prohibit fill or development within the existing flood plain except where required for Circulation Element roads, Drainage Master Plan facilities, or other essential infrastructure. Conserve any Narrow Endemic plant populations identified during planning. When conversion of agricultural lands to other uses is proposed, set back all development impacts at least 100 feet from existing wetland habitats and require habitat restoration or enhancement in the riparian and buffer areas.

Zone 20

1. Biological Resource Issues

Much of this zone is already developed and much of the remainder is agricultural land. Coastal sage scrub, maritime succulent scrub, southern mixed chaparral, and southern maritime chaparral in this

zone support a variety of HMP species, including California gnatcatcher, Del Mar manzanita, orange-throated whiptail, and San Diego thorn-mint. There is insufficient survey information for some portions of this zone. Habitats in Zone 20 are part of a stepping-stone linkage (Linkage F) that connects cores areas 4, 6, and 8.

2. HMP Conservation Goals

Establish, enhance, and maintain a viable habitat linkage across Linkage Area F to ensure connectivity for gnatcatchers and other HMP species between Core Areas 4 and 6. Conserve the majority of sensitive habitats in or contiguous with biological core and linkage areas, including no net loss of wetland habitats, southern maritime chaparral, maritime succulent scrub, and coastal sage scrub within Core Area 6 and Linkage Area F.

3. Planning Standards

Conserve habitats in a continuous configuration through Linkage Area F, from Core Area 6 to where Linkage Area F crosses Palomar Airport Road. This configuration is intended to allow for continued animal movement between core areas 4 and 6, particularly for gnatcatchers and other birds. The objective is to create continuous habitat connectivity and wildlife movement across the zone with a minimum constriction of 500 feet. However, in no case shall this standard deny a property owner some reasonable use of their property. Areas of coastal sage scrub and maritime succulent scrub outside of the designated Linkage F may be taken in exchange for restoration and enhancement inside the linkage, as long as the result is no net loss of these habitats or the associated gnatcatcher population within the standards portions of the zone. Southern maritime chaparral outside of core and linkage areas may also be taken unless it supports significant populations of Narrow Endemic plants. Creation of linkage F must utilize patches of existing habitat within the identified alignment. Where consistent with creation of Linkage F, avoid removal of natural habitats that are contiguous with open space on adjacent parcels. Maintain and enhance the wildlife movement potential between core areas using sensitive design of any road or utility crossings of Linkage F. Conserve all riparian habitats onsite, and prohibit fill or development within the existing flood plain except where required for Circulation Element roads, Drainage Master Plan facilities, or other essential infrastructure. When conversion of agricultural lands to other uses is proposed, set back all development impacts at least 100 feet from existing wetland habitats and require habitat restoration or enhancement in the riparian and buffer areas. Mitigation for any allowed impacts shall be as stated in Table 11 on Page D-113.

Zone 21

1. Biological Resource Issues

The majority of Zone 21 is covered by these standards and consists of multiple property owners. The zone contains a critical stand of southern maritime chaparral that supports a critical population of Del Mar manzanita, a major population of summer holly, and other Narrow Endemic plant species. Vernal pools, coastal sage scrub, and oak riparian forest also occur and likely support HMP species, including California gnatcatcher. Zone 21 contains most of the habitats comprising the western half of Core Area 6, which is the primary link between the eastern and western halves of the City. Scattered agricultural fields are also located within this zone. There is insufficient survey information for some portions of Zone 21.

2. HMP Conservation Goals

Conserve the majority of remaining natural habitats and ensure a net loss of no more than 10% of coastal sage scrub and southern maritime chaparral. Ensure no net loss of wetland habitats, vernal pools, and oak woodlands within the zone. Conserve habitats in a continuous configuration across

the zone to allow for continued east-west connectivity and animal movement between El Camino Real (Zone 10) and Linkage Area F (Zones 19 and 20). Conserve Narrow Endemic plant populations.

3. Planning Standards

Additional field surveys at the appropriate time of year are needed in this zone to determine the extent and location of sensitive species. Major areas for development should be restricted to agricultural areas and disturbed habitat. Avoid removing maritime succulent scrub, southern maritime chaparral, and any Narrow Endemic plant populations identified during planning. Minimize removal of coastal sage scrub and southern maritime chaparral; avoid impacts within the watersheds of vernal pools and to oak riparian forest. Ensure continuous habitat connectivity and wildlife movement east-west across the zone with an average habitat width of 500 feet to 1,000 feet and a minimum constriction of 500 feet (where narrower constrictions don't already exist). However, in no case shall this standard deny a property owner some reasonable use of their property. If impacts to natural habitats cannot be avoided, they must be limited to disturbed, low quality portions of the site. Areas of highly disturbed, low quality southern maritime chaparral and coastal sage scrub may be mitigated by a combination of onsite enhancement and offsite mitigation in locations of higher quality habitat. Mitigation for any allowed impacts shall be as stated in Table 11 on Page D-113.

Zone 25

1. Biological Resource Issues

Zone 25 comprises a large proportion of Core Area 2, which supports critical riparian and other wetland habitats, as well as grasslands with scattered coastal sage scrub patches. The riparian habitats along Buena Vista Creek support least Bell's vireos, and coastal sage scrub patches support approximately 6-10 pairs of California gnatcatchers. One or more ponds in the area may potentially support pond turtles. This zone represents a critical portion of the regional California gnatcatcher corridor from northern Carlsbad across Oceanside to Camp Pendleton. Linkage Areas A and B connect Zone 25 to Core Areas 3 and 4, respectively. The eastern portion of the zone includes proposed hardline open space. The western portion of the zone is subject to these standards.

2. HMP Conservation Goals

Conserve the majority of remaining natural habitats, and allow no net loss of coastal sage scrub and riparian and other wetland habitats. Retain upland habitats adjacent to riparian habitats to provide potential nesting habitat for pond turtles, to buffer impacts of development on riparian species, and to maximize gnatcatcher use of riparian areas for dispersal through the regional corridor system. Maintain and enhance sufficient nesting habitat to reliably support some nesting pairs of gnatcatchers within the zone in most years.

3. Planning Standards

Conservation of approximately 75% of the Sherman property is required to provide adequate connectivity within the regional gnatcatcher corridor. The percentage of conservation can be modified with the concurrence of the wildlife agency as long as conservation planning goals can be achieved. Mitigation for any allowed impacts shall be as stated in Table 11 on Page D-113. Align future Marron Road to minimize impacts to sensitive biological resources and disruption of wildlife movement. Conserve wetland habitats and set development back at least 100 feet. Avoid and minimize removal of coastal sage scrub and maintain a continuous linkage of sage scrub, chaparral, and grassland averaging 800 feet to 1,000 feet wide along the southern and western portion of the zone with a minimum constriction of 500 feet where narrower constrictions do not already exist. Mitigate any removal of natural habitat by onsite restoration or enhancement of coastal sage scrub to improve gnatcatcher breeding habitat within the zone. Conserve any Narrow Endemic plant populations. Conserve and enhance riparian vegetation along Buena Vista Creek with 200-foot buffers supporting natural vegetation between wetland habitats and development. Prohibit fill or development within the existing 100 year flood plain except where required for Circulation Element roads, Drainage Master

Plan facilities, or other essential public infrastructure. Use sensitive design of any road or utility crossing of Buena Vista Creek.

The above standards would be applied to the specified areas at the time of application for development entitlements. The process for compliance with the standards is contained in Section E of the HMP.

The City's projection of levels of conservation within the preserve system achieved by future compliance with the conservation standards by habitat type and by LFMZ are provided in Table 7. The total estimated acreage of conserved habitat resulting from the proposed standards areas is 553 acres or approximately 9% of the preserve system. It should be noted that the acreage figures are an estimate based on the information currently available. Precise figures for any specific area will not be known until completion of the review and approval process described above.

The procedures detailed in Section E will ensure that the conservation goals for the Standards Areas overall will be achieved.

Table 7

Proposed Standards Areas (Acres)

LFMZ	Natural Habitats							Disturbed Habitats				Totals
	Coastal Sage Scrub	Chaparral	Southern Maritime Chaparral	Oak Woodland	Riparian	Marsh	Grassland	Eucalyptus Woodland	Agriculture	Disturbed	Developed	
1	1					4						5
2					1		14					15
8	19											19
14	74				8	2	19					103
15	120		2	3	42	12						179
19							3					3
20	49	13		1								63
21	7		52	4								63
25	3				59	20	18					100
TOTALS	273	13	54	8	110	38	54	0.0	0.0	0.0	0.0	550

NOTE: Acreage figures may vary somewhat between tables due to rounding.

4. The Preserve System and Resulting Levels of Conservation

The combination of the preserve and assembly components described previously will result ultimately in a preserve system of 6,449 acres. Figure 27 generally shows these conservation components combined on one map. The HMP map, Figure 28, located in the back of the HMP, graphically shows the entire preserve system and includes the existing hardline areas, proposed hardline areas, standards areas and the areas subject to existing take agreement (Fieldstone/Carlsbad HCP). Table 8 provides the total resulting levels of conservation achieved by the HMP, based on these components of the preserve system. The preserve system has been designed, to the maximum extent feasible, to ensure that species addressed by the HMP continue to survive in healthy and thriving populations within Carlsbad.

Table 8 also shows the conservation levels excluding the area covered by the Fieldstone HCP take permit. Although this area has not developed yet, the Fieldstone HCP was approved and legal agreements with the property owners and wildlife agencies were entered into prior to the completion of the HMP. The City does not have the authority to require additional conservation on the properties covered by the HCP. The level of conservation is higher in the remainder of the City and resultant take of HMP species is lower if the Fieldstone HCP is separated out.

As identified on Table 8, implementation of the HMP will result in the preservation of 65% of the remaining habitat in the City including 64% of the remaining coastal sage scrub habitat. By adding other land to the preserve system (e.g., disturbed habitat) and creating a system 6,449 acres, the overall conservation level is 74%. When adjusted for the existing Fieldstone HCP take permit, 71% of the remaining habitat is preserved, and 68% of the coastal sage scrub habitat, and the actual conservation level is increased to 78%.

5. MHCP Participation by City

As a result of the biological analysis associated with the preparation of the North County Subregional Multiple Habitat Conservation Plan (MHCP), it has been determined that a large (approximately 500 acre), biological core area primarily for supporting a core population of gnatcatchers is needed in the south, central portions of the MHCP and including the unincorporated area to the southeast of Carlsbad in the general area as shown on Figure 29. The initial biological analysis for the HMP also identified the need to enhance conservation levels, particularly for coverage of the gnatcatcher. In addition, as part of the approval of the Fieldstone HCP, the City was required to take a lead position in identifying the location and potential funding sources for 240 acres in this same general area. In order to satisfy its participation in the MHCP core area, increase conservation levels for the gnatcatcher in the HMP and fulfill its responsibilities under the Fieldstone HCP, the City will effectuate the conservation and conveyance of 307.6 acres of land within the MHCP core area consisting of the following components:

A. Bank of America (VLC) onsite (increased coastal sage scrub preservation within the Villages of La Costa)	12 acres
B. Fieldstone HCP offsite (the difference between additional onsite preservation identified above and the 240 acre need identified in the Fieldstone HCP)	228 acres
C. Rancho Carrillo offsite conservation (mitigation funds previously paid by Rancho Carrillo Master Plan to be used for offsite acquisition in the MHCP Core Area)	16 acres
D. Municipal Golf Course offsite conservation (partial mitigation for development of the City golf course. This acreage contains habitat occupied by five pairs of Gnatcatchers)-	51.6 acres
TOTAL	307.6 acres.

The funding for acquisitions required to effectuate the conveyance of the above described 307.6 acres is identified later in this section of the Plan. The proposed conservation and conveyance of this land shall: a) be considered as an increase to the overall, resulting conservation levels in Carlsbad; b) constitute the full participation of the City in any MHCP land acquisitions in the core area; c) complete Carlsbad's obligations under the Fieldstone HCP regarding the 240 acres of offsite mitigation; and d) allow the HMP to be severable from the MHCP.

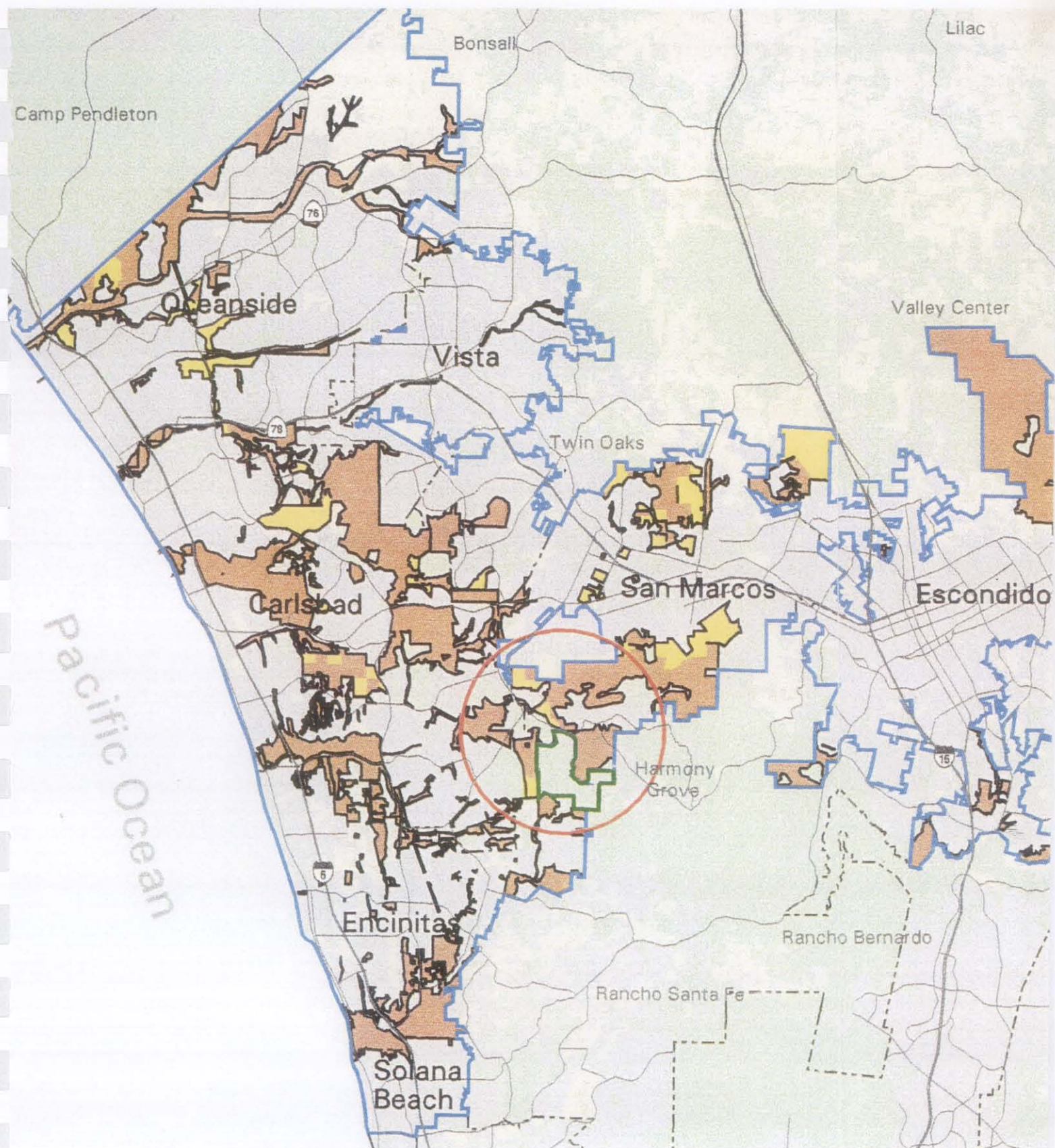


Fig. 29 MHCP Core Area

CARLSBAD HMP

**Table 8
HMP Conservation Levels**

	Existing Habitat Acres Citywide (1)	Acres Conserved in Existing Hardline Areas	Acres Conserved in Proposed Hardline Areas	Projected Acres Conserved in Standards Areas	Total Estimated Acres Conserved	Total Conserved as % of Existing	Existing Habitat Acres Citywide Adjusted for VLC (2)	Total Estimated Acres. Conserved Adjusted for VLC (3)	Adjusted % Conserved (4)	Potentially Impacted/ Developed (Based on the HMP) Acres %	
Estimated Total Acres	8,758	3,940	1,243	550	5,733	65%	6,997	4,983	71%	3,025	35%
Coastal Sage Scrub	3,315	1,281	585	273	2,139	65%	2,288	1,581	69%	1,176	35%
Chaparral	968	492	168	16	676	70%	791	639	81%	292	30%
Southern Maritime Chaparral	392	255	33	54	342	87%	296	266	90%	50	13%
Oak Woodland	29	4	12	8	24	83%	23	22	96%	5	17%
Riparian (5)	574	269	115	110	494	100%	513	449	100%	80	0%
Marsh (5)	1,366	1,141	73	38	1,252	100%	1,370	1,273	100%	114	0%
Grassland	1,856	401	252	54	707	38%	1,464	654	45%	1,149	62%
Eucalyptus Woodland	258	96	3	0	99	38%	252	99	39%	159	62%

Additional Conservation on Disturbed Lands		514	231		745			491	
Total Conservation within Carlsbad		4,454	1,474		6,478	74%		5,427	78%
Conserved Parcels within MHCP Core Area	308				308				
Total Conservation within Carlsbad plus MHCP Core Area Parcels	9,066				6,786	75%			

Table 8 (continued)

HMP Conservation Levels

Notes:

- (1) Existing Acres Citywide excludes 567 acres designated as "Not A Part"
- (2) Existing Citywide Acres Adjusted for VLC deducts all vacant land within Villages of La Costa
- (3) Total Estimated Acres Conserved Adjusted for VLC deducts all open space due to Fieldstone HCP
- (4) Adjusted % Conservation reflects conservation levels excluding Villages of La Costa
- (5) Potential impacts to wetland habitat types are shown because some wetland areas fall outside of defined preserve areas. These numbers do not reflect actual expected impacts to wetlands because avoidance of impacts will be the first priority both inside and outside of preserve areas. Actual conservation of wetlands will be 100% due to application of the policy of "no net loss of wetlands". Any projects allowed to impact wetlands will be required to comply with the "no net loss" policy in addition to complying with all applicable federal and state wetland permitting requirements.

6. Measures to Minimize Impact on HMP Species and Mitigation Requirements

The primary mitigation for impacts to HMP Species under the Plan is the conservation and management of habitat for the species in the preserve system. In addition, in compliance with the ESA requirements that the impacts of incidental take be minimized and mitigated to the maximum extent practicable, measures to avoid and reduce impacts will apply citywide on a project level basis. These measures are applicable to projects both within and outside the preserve system boundaries.

Conservation goals and measures to avoid, minimize, and mitigate impacts to HMP species on a project basis are summarized in Table 9. These measures will be applied citywide to all public and private projects regardless of whether the project is located within or outside of the preserve system. Detailed information about the measures for HMP Species is included in Appendix C, together with an analysis of the effects of take and plan implementation on the HMP species.

Narrow Endemic Species

In addition to the requirements that apply to Types A-F, projects that would affect lands occupied by narrow endemic species must meet the following conservation standards. If the land is within the proposed preserve system, 100% conservation of the narrow endemic population(s) is required. If the land is outside the proposed preserve system, at least 80% conservation of the narrow endemic population(s) is required. As defined herein, narrow endemic species are populations of native species that 1) have restricted geographic distribution, soil affinities, and/or habitats, 2) occur in the City, and 3) the substantial loss of which might jeopardize the long-term survival of the species. The conservation goals and measures for such species within the City are indicated in Table 9; a composite list of the Narrow Endemics covered by this Plan is provided in Table 10.

All future projects, including public projects, shall also mitigate impacts to habitat based on the mitigation requirements provided in Table 11. Again, these mitigation ratios apply whether a project is located inside or outside the preserve system. Projects which conserve at least 67% of habitat onsite shall not be subject to offsite mitigation. Habitat conserved onsite shall be credited toward mitigation. After determining the amount of acreage needed for mitigation based on the mitigation ratios, the acres of onsite conserved habitat shall be subtracted from the required acres of mitigation. Mitigation shall occur within the City principally in the focus planning areas unless the City Council authorizes mitigation outside the City. For habitat Groups D, E and F as identified on Table 11, a mitigation fee shall be paid to the City in lieu of offsite mitigation in an amount to be determined by the City Council. The amount of the fee shall be adequate to cover the cost of any acquisition of land in the MHCP core area which is the responsibility of the City of Carlsbad and for which funding has not previously been provided for. The fee may also be used to provide for overall management and maintenance of the preserve system. This fee is discussed in more detail in Section E of the HMP document. City public facility and improvement projects shall provide mitigation based on the ratios shown in Table 11. Mitigation banks may be approved by the City and the wildlife agencies, subject to the issuance by the City of a conditional use permit as required by the Carlsbad Municipal Code. City projects will mitigate at the same ratios as private projects. However, City projects will use the Lake Calavera Mitigation Bank for impacts to unoccupied coastal sage scrub, mixed chaparral, and annual (non-native) grasslands.

Analysis of proposed impacts to wetlands shall consist of a three-step process. The first step involves determining whether the impacts are avoidable or unavoidable. Secondly, for unavoidable impacts, the allowable amount of encroachment must be determined. The final step involves determining the mitigation for unavoidable impacts.

All projects that would affect Type A Habitats (riparian and wetland habitats, including vernal pools) must demonstrate that the impacts: 1) cannot be avoided by a feasible alternative, 2) have been minimized to maximum extent possible, and 3) will be mitigated in ways that assure no net loss of habitat value or function. This demonstration will occur as part of the CEQA review for the project, will require documentation and analysis of impacts and alternatives, and must include an evaluation of the

value and function of the affected habitat. The evaluation of habitat function and value will consider the rarity of the habitat type, presence of listed and sensitive species, proportion of native to exotic vegetation, existing levels of habitat disturbance, connection to or isolation from natural habitats and preserves, groundwater and water quality issues, potential for restoration, feasibility of long-term management, and other relevant ecological factors. Road or utility projects that must cross a wetland must demonstrate that the crossing will occur at the narrowest and/or least sensitive location and that all feasible minimization measures have been employed. In making this determination, alignment planning must consider whether avoidance of wetland impacts would result in more significant upland impacts. Private projects that would impact a wetland must demonstrate that the impact is essential to the feasibility of the project and that no feasible alternative would eliminate or minimize the impact. For all projects affecting Type A Habitat, habitat replacement ratios and the specific location of mitigation lands will be determined in consultation with the Service, Corps, and Department as appropriate in accordance with the requirements of the federal Clean Water Act, federal wetland policies, and the California Fish and Game Code. All mitigation lands for impacts to vernal pools, riparian and wetland habitats will be in the City or MHCP plan area.

In addition to the above, the following species-specific measures will be required of any project that may impact the habitat of those species:

A) LEAST BELL'S VIREO (LBV)

- 1) Survey by qualified biologist using approved survey protocol all areas containing suitable habitat. Surveys shall occur prior to any proposed impact as part of the project review process (e.g., CEQA process) both within and outside of the FPA. Surveys shall be conducted when impacts could occur as a result of indirect impacts by placement of the project in or adjacent to occupied habitat or through creation of suitable conditions for brown-headed cowbirds (e.g., agricultural fields, livestock presence, woodland parks, roadsides).
- 2) Any take both inside and outside of the FPA shall be consistent with the conditions outlined herein.
- 3) Projects having direct or indirect impacts to the LBV within the HMP shall adhere to the following measures to avoid or reduce impacts:
 - a) The removal of native vegetation and habitat shall be avoided and minimized to the maximum extent practicable. Determination of adequate avoidance and minimization of impacts shall be consistent with Section D-6 of the HMP. Deviations from these guidelines shall require written concurrence of USFWS and CDFG. For temporary impacts, the work site shall be returned to pre-existing contours and revegetation with appropriate native species. All revegetation for temporary and permanent impacts shall occur at the ratios specified in applicable permits (e.g., 404 or 1603). Revegetation specifications shall ensure creation and restoration of riparian woodland vegetation to vireo quality. All revegetation plans shall be prepared and implemented consistent with Section F-2 (Habitat Restoration and Revegetation) and shall require written concurrence of USFWS and CDFG. If written objections are not provided by the wildlife agencies within 30 days of receipt of written request for concurrence by the local jurisdiction, then the deviation may proceed as approved by the local agency. The wildlife agencies shall provide written comments specifying wildlife agency concerns.
 - b) Projects shall be carried out consistent with the - Standard Best Management Practices, provided at the end of this section.
 - c) Projects shall to the maximum extent practicable avoid impacts during the breeding season of the LBV (generally March 15 - September 15). Projects that cannot be conducted without placing equipment or personnel in or adjacent to sensitive habitats

shall be timed to ensure that habitat is removed prior to the initiation of the breeding season (generally before March 15).

- d) Construction noise levels at the riparian canopy edge shall be kept below 60 dBA Leq (Measured as Equivalent Sound Level) from 5 a.m. to 11 a.m. during the peak nesting period of March 15 to July 15. For the balance of the day/season, the noise levels shall not exceed 60 decibels, averaged over a one-hour period on an A-weighted decibel (dBA)(i.e., 1 hour Leq/dBA). Noise levels shall be monitored and monitoring reports shall be provided to the jurisdictional city, USFWS, and CDFG. Noise levels in excess of this threshold shall require written concurrence from USFWS and CDFG and may require additional minimization/mitigation measures.
 - e) Brown-headed cowbirds and other exotic species which prey upon LBV shall be removed from the site. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions shall require monitoring and control of cowbirds.
 - f) Biological buffers of at least 100 feet shall be maintained adjacent to occupied LBV habitat, measured from the outer edge of riparian vegetation. Within this 100-foot buffer, no new development shall be allowed, and the area shall be managed for natural biological values as part of the preserve system. Buffers less than 100 feet shall require written concurrence of the USFWS and CDFG within 30 days of receipt of written request for concurrence by the local jurisdiction.
- 4. LBV populations within the FPA shall be managed consistent with Conservation Goals of the Species Evaluation for this species (Appendix C). Projects shall include measures to provide appropriate successional habitat, cowbird control, and protection against detrimental edge effects. Projects that impact LBV populations outside the FPA shall be required to ensure sufficient management to maintain these populations.
 - 5. Suitable unoccupied habitat preserved within the FPA shall be managed to maintain or mimic effects of natural fluvial processes (e.g., periodic substrate scouring and deposition).
 - 6. Natural riparian connections with upstream riparian habitat shall be maintained to ensure linkage to suitable occupied and unoccupied habitat within the County MSCP North Segment and City of San Diego MSCP Subarea Plan.

B) SOUTHWESTERN WILLOW FLYCATCHER

- 1. Survey by qualified biologist using approved survey protocol all areas containing suitable habitat (riparian woodlands and forests). Surveys shall occur prior to any proposed impact as part of the project review process (e.g., CEQA process) both within and outside of the FPA. Surveys shall be conducted when impacts could occur as a result of indirect impacts by placement of the project in or adjacent to occupied habitat or through creation of suitable conditions for brown-headed cowbirds (e.g., agricultural fields, livestock presence, woodland parks, roadsides),
- 2. Nesting Southwestern Willow Flycatchers shall be treated consistent with the Critical Population Policy. Wintering localities and confirmed vagrants shall be treated consistent with the Narrow Endemics Policy - Section D-6.
- 3. Occupied habitat within the FPA shall be managed consistent with Conservation Goals of the Species Evaluation for this species (Appendix C). Area-specific management directives shall include measures to provide appropriate successional habitat, cowbird control, and specific measures to protect against detrimental edge effects. Projects that

impact Flycatcher populations outside the FPA shall be required to ensure sufficient management to maintain these populations.

4. Projects having direct or indirect impacts to the Southwestern Willow Flycatcher shall adhere to the following measures to avoid or reduce impacts:
 - a) The removal of native vegetation and habitat shall be avoided and minimized to the maximum extent practicable. Determination of adequate avoidance and minimization of impacts shall be consistent with, Section D-6 of the HMP. Deviations from these guidelines shall require written concurrence of USFWS and CDFG. For temporary impacts, the work site shall be returned to pre-existing contours and revegetated with appropriate native species. All revegetation for temporary and permanent impacts shall occur at the rations specified in applicable permits. (e.g., 404 or 1603). Revegetation specifications shall ensure creation and restoration of riparian woodland vegetation to vireo quality. All revegetation plans shall be prepared and implemented consistent with Section F-2 (Habitat Restoration and Revegetation) and shall require written concurrence of USFWS and CDFG. If written objections are not provided by the wildlife agencies within 30 days of receipt of written request for concurrence by the local jurisdiction, then the deviation may proceed as approved by the local agency. The wildlife agencies shall provide written comments specifying wildlife agency concerns.
 - b) Projects shall be carried out consistent with the Standard Best Management Practices, provided at the end of this section.
 - c) Projects shall to the maximum extent practicable avoid impacts during the breeding season of the Flycatcher (May 1 to August 31). Projects that cannot be conducted without placing equipment or personnel in or adjacent to sensitive habitats shall be timed to ensure that habitat is removed prior to the initiation of the breeding season.
 - d) Construction noise levels at the riparian canopy edge shall be kept below 60 dBA Leq (measured as Equivalent Sound Level) from 5 a.m. to 11 a.m. during the peak nesting period of March 15 to July 15. For the balance of the day/season, the noise levels shall not exceed 60 decibels, averaged over a 1-hour period on an A-weighted decibel (dBA) (i.e., 1 hour Leq/dBA). Noise levels shall be monitored, and monitoring reports shall be provided to the jurisdictional city, USFWS, and CDFG. Noise levels in excess of this threshold shall require written concurrence from USFWS and CDFG within 30 days of receipt of request for written concurrence from the local jurisdiction and may require additional minimization/mitigation measures.
 - e) Brown-headed cowbirds and other exotic species which prey upon the flycatcher shall be removed from the site. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions shall require monitoring and control of cowbirds.
 - f) Biological buffers of at least 100 feet shall be maintained adjacent to occupied Flycatcher habitat, measured from the outer edge of riparian vegetation. Within this 100-foot buffer, no new development shall be allowed, and the area shall be managed for natural biological values as part of the preserve system. Buffers less than 100 feet shall require written concurrence of the USFWS and CDFG within 30 days of receipt of request for written concurrence from the local jurisdiction.
5. Suitable unoccupied habitat preserved within the FPA shall be managed to maintain or mimic effects of natural fluvial processes (e.g., periodic substrate scouring and depositions).

6. Natural riparian connections with upstream riparian habitat shall be maintained to ensure linkage to suitable occupied and unoccupied habitat within the County MSCP North Segment and City of San Diego MSCP Subarea Plan.

C) HARBISON'S DUN SKIPPER BUTTERFLY

1. Survey by qualified biologist using approved survey techniques all areas containing suitable habitat (oak woodlands and riparian areas, especially those supporting *Carex spissa*). Surveys should occur prior to any proposed impact as part of the project review process (e.g., CEQA process) both within and outside of the FPA.
2. Projects within the FPA shall ensure conservation consistent with the Subarea Plan including restricting activities that could degrade Harbison's dun skipper habitat by modifying stream flow, degrading water quality, or introducing nonnative plants into riparian systems.
3. Projects having direct or indirect impacts to the Harbison's Dun Skipper butterfly shall adhere to the following measures to avoid or reduce impacts:
 - a) The removal of native vegetation and habitat shall be avoided and minimized to the maximum extent practicable. Determination of adequate avoidance and minimization of impacts shall be consistent with Section D-6 of the HMP. Deviations from these guidelines shall require written concurrence of USFWS and CDFG. For temporary impacts, the work site shall be returned to pre-existing contours and revegetated with appropriate native species. All revegetation shall occur at the ratios specified in applicable permits (e.g., 404 or 1603). All revegetation plans shall be prepared and implemented consistent with Section F-2 (Habitat Restoration and Revegetation) and shall require written concurrence of USFWS and CDFG. If written objections are not provided by the wildlife agencies within 30 days of receipt of written request for concurrence by the local jurisdiction, then the deviation may proceed as approved by the local agency. The wildlife agencies shall provide written comments specifying wildlife agency concerns.
 - b) Projects shall be carried out consistent with the Standard Best Management Practices, provided below.
 - c) Biological buffers of at least 100 feet shall be maintained adjacent to occupied Harbison's dun skipper habitat, measured from the outer edge of oak woodland or riparian vegetation. Within this 100-foot buffer, no new development shall be allowed, and the area shall be managed for natural biological values as part of the preserve system. Buffers less than 100 feet shall require written concurrence of the USFWS and CDFG within 30 days of receipt of request for written concurrence from the local jurisdiction.
4. Suitable unoccupied habitat preserved within the FPA shall be managed to maintain or mimic effects of natural fluvial processes (e.g., periodic substrate scouring and deposition).
5. Natural riparian connections with upstream riparian habitat shall be maintained to ensure linkage to suitable occupied and unoccupied habitat within the County MSCP North Segment and City of San Diego MSCP Subarea Plan.

Standard Best Management Practices

- Do not allow land uses within 200 ft. of estuarine areas that would contribute to degraded water quality, changes in surface water or groundwater hydrology, or increased runoff, erosion, and sedimentation.
- Require that "best management practices" (BMP) be used to prevent pollution generated by agricultural and urban development activities from entering surface and groundwater. BMPs should also ensure that non-stormwater discharges (e.g. sewage, industrial wastes) are not discharged into stormwater drainage systems. BMPs may include:
 - a. Regulatory measures such as erosion control ordinances and floodplain restrictions
 - b. Structural measures such as detention or retention basins, filters, weirs, check dams, or drainage diversions
 - c. Vegetative controls that reduce runoff volume and accomplish pollutant removal by a combination of filtration, sedimentation, and biological uptake
 - d. Maintenance of pump stations, sewer lines and stormwater conveyance systems
 - e. Cultural practices such as restrictions on pesticide and fertilizer applications, storage or disposal of toxic chemicals, or washing of vehicles or equipment in areas that can drain to the estuary
 - f. Public education programs that educate residents about proper disposal of oil or chemicals and that provide opportunities (e.g. designated locations) for residents to properly dispose of contaminants.
- For clearing, grading, and other construction activities within the watershed, ensure that proper irrigation and stormwater runoff mitigation measures are employed to reduce sediment loads and to prevent contamination from pesticides, fertilizers, petroleum products, and other toxic substances.
- Restrict or limit recreational or other activities within 200 ft. of important foraging, breeding, and roosting areas.
- Require attenuation measures for activities that generate noise levels greater than 60 dB if occurring within 200 ft. of important breeding habitat during the nesting season.

The HMP does not anticipate that any substantial areas of vernal pool habitat occur in Carlsbad in addition to those known and documented herein. However, should additional vernal pools be discovered, there would be a strong priority given to preservation (avoidance), followed by mitigation for any unavoidable impacts. Any loss of vernal pool habitat would need to receive the concurrence of the wildlife agencies and would be subject to the Federal Clean Water Act Section 404 permit process. Impacts to highly degraded vernal pool habitat lacking sensitive species may be acceptable if the pools are isolated from other vernal pool complexes, lack sensitive vernal pool sensitive species, exhibit low native vernal pool species diversity, have low restoration potential, or would be infeasible to manage effectively. In these cases mitigation would need to provide no-net-loss of vernal pool area and vernal pool habitat value, and mitigation would need to occur in the City of Carlsbad.

**Table 9
MEASURES FOR HMP SPECIES**

Species	Habitat and Population/Location Conservation Goals	Management Recommendations and Impact Avoidance/Minimization Measures
<i>Acanthomintha ilicifolia</i> (San Diego Thorn-mint) Narrow Endemic	• Conserve vernal pool habitat and grassland habitat within preserve areas. • Conserve 4 of 5 major populations and 9 of 13 mapped localities within the City through existing or proposed hardline conservation areas or within a standards area. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control non-native competitive species, and maintain hydrology and water quality. • Enhance small populations by introduction of appropriate plant materials as necessary.
<i>Acanthamintha ilicifolia</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. Because it is a cryptic species of extremely limited range, surveys shall be conducted for this species in all Proposed Hardline Areas and Standards areas, and any areas outside of the Focus Planning Areas, containing suitable habitat. The long-term preserve management plan shall provide area specific management directives for the 13 known populations of San Diego Thorn-mint in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts and other direct and indirect impacts.		
<i>Ambrosia pumila</i> (San Diego Ambrosia) Narrow Endemic	• If found in Carlsbad, conserve consistent with the standards for Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Enhance small populations by introduction of appropriate plant materials as necessary.
<i>Ambrosia pumila</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. There currently are no known locations in Carlsbad. If any populations are found through subsequent surveys, the long-term preserve management plan shall provide area specific management directives, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. Coastal sage scrub revegetation projects should consider including this species, where appropriate, in order to expand its range.		
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i> (Del Mar Manzanita) Narrow Endemic	• Conserve approximately 300 acres of southern maritime chaparral mostly in existing or proposed hardline conservation areas, including a substantial proportion (80% and 92% respectively) of the two major populations in the vicinity of Agua Hedionda Lagoon and Green Valley/Olivenhain in core areas #6 and #8. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.

Species	Habitat and Population/Location Conservation Goals	Management Recommendations and Impact Avoidance/Minimization Measures
• <i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. The long-term preserve management plan shall provide area specific management directives for the two major populations of Del Mar Manzanita (and all conserved minor populations) in Carlsbad, including specific measures to address the autoecology and natural history of the species and to reduce the risk of catastrophic fire. Adaptive management measures to accomplish this may include prescribed fire.		
<i>Baccharis vanessae</i> (Encinitas Baccharis) Narrow Endemic	• Conserve approximately 300 acres of southern maritime chaparral and 700 acres of other chaparral types. • Conserve the major population on the slopes above Green Valley within an existing hardline conservation area. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Enhance small populations by introduction of appropriate plant materials as necessary. • Ensure that preserved populations retain appropriate ratios of male and female plants.
• <i>Baccharis vanessae</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. The long-term preserve management plan shall provide area specific management directives for the 1 known major population of Encinitas Baccharis in Carlsbad, including specific measures to address the autoecology and natural history of the species, reduce the risk of catastrophic fire, and maintain an appropriate ration between male and female plants. Adaptive management measures to accomplish this may include prescribed fire.		
<i>Brodiaea filifolia</i> (Thread-leaved Brodiaea) Narrow Endemic	• Conserve vernal pool habitat and grassland habitat within preserve areas. • Conserve the four major populations at Calavera Heights, Carlsbad Highlands, Rancho Carrillo, and Fox property, as well as smaller populations at Newton Business Center, and Fieldstone Northwest. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Enhance small populations by introduction of appropriate plant materials as necessary. • Outside of preserve areas, conduct focused surveys during the appropriate season on habitats that may support this species, (grasslands on clay soils).
<i>Brodiaea filifolia</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics. The long-term preserve management plan shall provide area specific management directives for the 5 known major populations (and all conserved minor populations) of Thread-leaved Brodiaea in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

Species	Habitat and Population/Location Conservation Goals	Management Recommendations and Impact Avoidance/Minimization Measures
<i>Brodiaea orcuttii</i> (Orcutt's Brodiaea) Narrow Endemic	• Conserve vernal pool habitat within preserve areas in conjunction with the City's no net loss of wetlands policy and application of the zone-specific guidelines. • Conserve the major population in the vernal pools near Poinsettia Lane. • Conserve other populations found in the City through designation of the species as a Narrow Endemic. • The population at Manzanita Partners (2 plants) is proposed to be taken.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control non-native competitive species, and maintain hydrology and water quality. • Enhance small populations by introduction of appropriate plant materials as necessary. • Conserve adjacent watershed habitat containing pollinators.
<i>Brodiaea orcuttii</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the 1 known major population of Orcutt's Brodiaea in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Ceanothus verrucosus</i> (Wart-stemmed Ceanothus)	• Conserve approximately 300 acres of southern maritime chaparral and approximately 700 acres of other chaparral habitats within the City. • Conserve substantial percentages of the major populations in the vicinity of Agua Hedionda Lagoon (approximately 95%), Green Valley (approximately 95%) and Palomar Airport Road (approximately 78%) in Core area #6, Linkage F and Core area #8.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.
<i>Ceanothus verrucosus</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the 3 known major populations of Wart-stemmed Ceanothus in Carlsbad, including specific measures to address the autoecology and natural history of the species and to reduce the risk of catastrophic fire. Adaptive management measures to accomplish this may include prescribed fire. Revegetation of any chaparral areas should consider use of this species.		
<i>Chorizanthe orcuttiana</i> (Orcutt's Spineflower) Narrow Endemic	• Conserve approximately 300 acres of southern maritime chaparral. • Conserve any populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Consider experimental reintroduction into preserve areas as appropriate.
<i>Chorizanthe orcuttiana</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics. Because it is a cryptic species of extremely limited range, focused surveys shall be conducted for this species in all Standards Areas, and any areas outside of the Focus Planning Areas that contain suitable habitat. If any populations are found, the long-term preserve management plan shall provide area specific management directives, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

Species	Habitat and Population/Location Conservation Goals	Management Recommendations and Impact Avoidance/Minimization Measures
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> (Summer Holly)	• Conserve approximately 300 acres of southern maritime and approximately 700 acres of other chaparral habitats within the City. • Conserve at least 75% of the major population in the vicinity of Agua Hedionda Lagoon within Core area #6 and Linkage F.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i>. Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the 1 known major population and any other conserved populations of Summer Holly in Carlsbad, including specific measures to address the autoecology and natural history of the species and to reduce the risk of catastrophic fire. Adaptive management measures to accomplish this may include prescribed fire. Revegetation of any chaparral are as should consider restoration of this species.		
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i> Del Mar Mesa Sand Aster Narrow Endemic	• Conserve approximately 300 acres of southern maritime chaparral, including the two major populations in the vicinity of Agua Hedionda Lagoon and Green Valley/Olivenhain. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Enhance small, or restore, extirpated populations by introduction of appropriate plant materials as necessary. • Use in revegetation program where appropriate.
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. The long-term preserve management plan shall provide area specific management directives for the 1 known major population and any other conserved populations of Del Mar Mesa Sand Aster in Carlsbad, including specific measures to address the autoecology and natural history of the species and to reduce the risk of catastrophic fire. Adaptive management measures to accomplish this may include prescribed fire.		
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> (Blochman's Dudleya) Narrow Endemic	• Conserve the small population identified on the Hieatt property (considered critical because it represents the southern-most known location for the species) as stated in the conservation standards for Zone 5. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, present trampling, and protect against frequent or catastrophic fires. • Enhance small populations by introduction of appropriate plant materials as necessary.
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics. Because it is a cryptic species of very limited range, surveys shall be conducted for this species in all Proposed Hardline Areas and Standards Areas, and any areas outside of the Focus Planning Areas, containing suitable habitat. The long-term preserve management plan shall provide area specific management directives for the one known population of Blochman's Dudleya and any newly discovered populations in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

Species	Habitat and Population/Location Conservation Goals	Management Recommendations and Impact Avoidance/Minimization Measures
<i>Dudleya viscida</i> (Sticky Dudleya)	• Conserve the major population along San Marcos Creek within an existing hardline conservation area.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.
<i>Dudleya viscida</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the 1 known major and critical population of Sticky Dudleya and any newly discovered populations in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Eryngium aristulatum</i> var. <i>parishii</i> (San Diego Button-celery) Narrow Endemic	• Conserve vernal pool habitat per the City's wetland policy. • Conserve the major population in the vernal pools near Poinsettia Lane. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Conserve adjacent watershed habitat containing pollinators.
<i>Eryngium aristulatum</i> var. <i>parishii</i> . Conditions for coverage. This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the one known major population of San Diego Button-celery in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other indirect and indirect impacts.		
<i>Euphorbia misera</i> (Cliff Spurge)	• Conserve coastal sage scrub and coastal bluff scrub habitats. • Conserve the one reported population in an existing hardline conservation area.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within vicinity, control nonnative competitive species. • Use in coastal bluff revegetation where appropriate.
<i>Euphorbia misera</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the 1 known population of Cliff Spurge and any newly discovered populations in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Ferocactus viridescens</i> (San Diego Barrel Cactus)	• Conserve approximately 300 acres of southern maritime chaparral, as well as 700 acres of other chaparral habitats and 2,000 acres of coastal sage scrub	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Salvage plants from impact areas where the impact cannot be avoided, and transplant into appropriate habitat.
<i>Ferocactus viridescens</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the 1 known population of San Diego Barrel Cactus and any newly discovered populations in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, unauthorized collecting, and other direct and indirect impacts.		
<i>Hazardia orcuttii</i> (Orcutt's Hazardia) Narrow Endemic	• Conserve approximately 300 acres of southern maritime chaparral. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.

<i>Hazardia orcuttii</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics. There currently are no known locations in Carlsbad. If any populations are found through subsequent surveys, the long-term preserve management plan shall provide area specific management directives, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Iva hayuseiana</i> (San Diego Marsh Elder)	• Conserve approximately 1,000 acres of cismontane alkali marsh, freshwater marsh, and disturbed wetlands and assure no net loss of these types within the City. • Conserve an estimated 70% of the two major populations along San Marcos Creed and Encinitas Creek within existing hardline conservation areas.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Use in wetland revegetation programs where appropriate.
<i>Iva hayuseiana</i> . Conditions for coverage - This is a wetland species. The long-term preserve management plan shall provide area specific management directives for the 2 known major and critical populations of San Diego Marsh Elder and any newly discovered populations in Carlsbad, including specific adaptive management measures to protect wetlands against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. This species should be considered for use in wetland restoration projects where soil and water conditions are appropriate.		
<i>Muilla clevelandii</i> (San Diego Goldenstar) Narrow Endemic	• Conserve native grassland habitat and grassland habitat on clay soils within the preserve areas. • Conserve 6 of 17 mapped locations of a critical population west and east of Rancho Santa Fe Road in the Village of La Costa, per the Villages of La Costa HCP. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to reduce encroachment by alien plants, minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires. • Where feasible, salvage corms from impact areas and transplant into appropriate habitat.
<i>Muilla clevelandii</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics. Because the one known population in Carlsbad will be reduced as a result of a previously approved take authorization, management shall include transplantation of the corms from the impact area to conserved area(s) with appropriate soils, and management of both the conserved site and transplantation site(s). The long-term preserve management plan shall provide area specific management directives to maintain or increase the population of this species in Carlsbad, including specific adaptive management measures to protect against detrimental edge effects from adaptive management measures to protect against detrimental edge effects from adaptive development, recreational impacts, and other direct and indirect impacts.		
<i>Myosurus minimus</i> <i>ssp. apus</i> (Little Mouseltail) Narrow Endemic	• Conserve vernal pool habitat per the City's wetland policy. • Conserve the population near Poinsettia Lane. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Conserve adjacent watershed habitat containing pollinators.
<i>Myosurus minimus</i> <i>ssp. apus</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. This long-term preserve management plan shall provide area specific management directives for the one known major population of Little Mouseltail in Carlsbad, including specific adaptive management measures to protect from adjacent development, recreational impacts, and other direct and indirect impacts.		

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<i>Navarreita fossalis</i> (Prostrate Navarreita) Narrow Endemic	• Conserve vernal pool habitat per the City's wetland policy. • Conserve the single known population near Poinsettia Lane. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Conserve adjacent watershed habitat containing pollinators.
<i>Navarreita fossalis</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the one known major population of Prostrate Navarreita in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Orcuttia californica</i> (California Orcutt Grass) Narrow Endemic	• Conserve vernal pool habitat per the City's wetland policy. • Conserve the one major population of this plant located south of the Poinsettia Commuter Rail Station. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, control access, limit disturbance, limit chemical use within immediate vicinity, control nonnative competitive species, and maintain hydrology and water quality. • Conserve adjacent watershed habitat.
<i>Orcuttia californica</i>. Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the one known major population of California Orcutt Grass in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Pinus torreyana</i> ssp. <i>torreyana</i> (Torrey Pine)	• Conserve approximately 300 acres of southern maritime chaparral mostly in existing or proposed hardline conservation areas within the City.	• Manage preserve areas to monitor for insect infestations.
<i>Pinus torreyana</i> ssp. <i>torreyana</i>. Conditions for coverage - None.		
<i>Quercus dumosa</i> (Nuttall's Scrub Oak)	• Conserve approximately 300 acres of southern maritime chaparral. • Conserve 100% of the two major populations in proposed hardline conservation areas. • Conserve approximately 60% of the other small populations mapped within the City.	• Manage preserve areas to minimize edge effects, prevent disturbance, and protect against frequent or catastrophic fires.
<i>Quercus dumosa</i>. Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the two known major populations and any other conserved populations of Nuttall's Scrub Oak in Carlsbad, including specific measures to address the autoecology and natural history of the species and to reduce the risk of catastrophic fire. Adaptive management measures to accomplish this may include prescribed fire. Revegetation of any chaparral areas should consider restoration of this species.		

<i>Quercus engelmannii</i> (Engelmann Oak)	• Conserve oak woodland and assure no net loss of oak woodland in the City. • Conserve 4 of 5 mapped individuals in the City.	• Manage preserve areas to protect against disturbance and fires.
<i>Quercus engelmannii</i> . Conditions for coverage - None.		
<i>Euphyes vestris harbisoni</i> (Harbison's Dun Skipper)	• Conserve approximately 25 acres of oak woodland and approximately 490 acres of riparian habitat within the City (total 87% conservation estimated). • Assure no net loss of riparian and oak woodland habitats within the City per the City's wetland policy.	• Manage preserve areas to minimize edge effects, control non-native plants, maintain hydrology and water quality, and protect habitats from physical disturbances. • Restrict human activities in occupied habitat. • Ensure that impacts to any population found constitute less than 87% of the population. Mitigation for any unavoidable impacts should include translocating any individuals by transplanting whole San Diego sedge plants to appropriate habitat. Translocation should be supervised by a qualified biologist.
<i>Euphyes vestris harbisoni</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the host plant (<i>Carex spissa</i>), including specific adaptive management measures to protect riparian areas against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. <i>Carex spissa</i> should be considered for use in wetland restoration projects where soil and water conditions are appropriate to increase the population of Harbison's Dun Skipper.		
<i>Lycaena hermes</i> (Hermes Copper) Narrow Endemic	• Conserve approximately 2,000 acres of coastal sage scrub. • Maintain regional linkages. • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserve areas to minimize edge effects, prevent livestock overgrazing, and restrict human disturbance. • Prepare and implement a fire management program for preserve areas as part of the detailed management plan. • Where opportunities arise, enhance and restore coastal sage scrub within preserve areas. • Conduct focused surveys in appropriate habitat. Avoid impacts to any populations to the maximum extent feasible. Mitigate unavoidable impacts by conserving another population elsewhere.
<i>Lycaena hermes</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the host plant (<i>Rhamnus crocea</i>), including specific adaptive management measures to protect populations of <i>Rhamnus crocea</i> against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. <i>Rhamnus crocea</i> should be considered for use in chaparral restoration projects where soil and aspect are appropriate to increase the population of Hermes Copper.		
<i>Streptocephalus woottoni</i> (Riverside Fairy Shrimp) Narrow Endemic	• Conserve the one known major/critical population in the City (Poinsettia Lane Commuter Rail Station pools). • Conserve vernal pool habitat in conjunction with the City's no net loss of wetlands policy.	• Manage preserves areas to minimize edge effects. • Prohibit introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds. • Protect vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat. • Manage surrounding watershed to maintain water quality and vernal pool hydrology.

<i>Streptocephalus woottoni</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the one known major population of Riverside Fairy Shrimp in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Panoquina errans</i> (Saltmarsh Skipper Butterfly)	• Conserve Saltmarsh habitat at Buena Vista, Agua Hedionda, and Batiquitos Lagoons consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh habitat within the City.	• Manage preserve areas to minimize edge effects, control invasive non-native plants, maintain Saltmarsh hydrology and water quality, and protect Saltmarsh habitat from physical disturbances. • Where opportunities arise, restore and enhance habitat in preserve areas. Control exotic plants. • Preserve habitat adjacent to the lagoons to the maximum extent possible.
<i>Panoquina errans</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for salt marsh habitats, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Branchinecta sandiegoensis</i> (San Diego Fairy Shrimp) Narrow Endemic	• Conserve known vernal pool habitat containing fairy shrimp. • Conserve the only known major/critical population in the planning area (Poinsettia Lane pools). • Conserve other populations found in the City through designation of the species as a Narrow Endemic.	• Manage preserved areas to minimize edge effects. • Prohibit introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds. • Protect vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat. • Manage surrounding watershed to maintain water quality and vernal pool hydrology.
<i>Branchinecta sandiegoensis</i> . Conditions for coverage - This species is on the HMP list of Narrow Endemics and is a vernal pool species. The long-term preserve management plan shall provide area specific management directives for the one known major population of San Diego Fairy Shrimp in Carlsbad, including specific adaptive management measures to protect vernal pools and their watersheds against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Cnemidophorus hyperythrus beldingi</i> (Orange-throated Whiptail)	• Conserve approximately 2,000 acres of coastal sage scrub, 700 acres of chaparral and 350 acres of southern maritime chaparral where this species may occur. • Maintain linkages between populations in Core Area 7 and areas to the southeast.	• Manage preserve areas to restrict activities that would degrade habitat; control predators. • If opportunities arise, consider establishing a relocation program (possibly in Core Area 3 or 7) to initiate new populations or enhance and maintain existing populations. • Provide management measures which facilitate movement between populations within the City as well as to regional linkages.
<i>Cnemidophorus hyperythrus beldingi</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for known or likely locations of Orange-throated Whiptail, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

<i>Falco peregrinus anatum</i> (American Peregrine Falcon)	• Conserve Saltmarsh habitat (i.e., foraging) at Buena Vista, Agua Hedionda and Batiquitos Lagoons and in SRAs consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh habitat within the City.	• Manage conserved areas to minimize edge effects, control invasive non-native plants, maintain Saltmarsh hydrology and water quality, protect Saltmarsh habitat from physical disturbances and control predators. • Where opportunities arise, restore and enhance habitat in preserve areas. • Habitat adjacent to the lagoons will be preserved to the maximum extent possible.
<i>Falco peregrinus anatum</i> . Conditions for coverage - None.		
<i>Passerculus sandwichensis beldingi</i> (Belding's Savannah Sparrow)	• Conserve Saltmarsh habitat at Buena Vista, Agua Hedionda, and Batiquitos Lagoons and in SRAs consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh habitat within the City. • Conserve all major populations of this species at Agua Hedionda and Batiquitos Lagoons.	• Manage conserved areas to minimize edge effects, control invasive non-native plants, maintain Saltmarsh hydrology and water quality, protect Saltmarsh habitat from physical disturbances, and control predators. • Where opportunities arise, restore and enhance habitat in preserve areas. • Habitat adjacent to the lagoons will be preserved to the maximum extent possible.
<i>Passerculus sandwichensis beldingi</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the major nesting areas at Agua Hedionda and Batiquitos Lagoons, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Speotyto cunicularia hypugaea</i> (Burrowing Owl)	• Conserve approximately 650 acres of grassland habitat.	• Manage preserve areas to minimize edge effects, prevent livestock overgrazing, and restrict human disturbance. • Prepare and implement a fire management program for preserve areas as part of the detailed management plan. • Where opportunities arise, enhance and restore native grassland within preserve areas, with priority given to creation of suitable Burrowing Owl conditions..
<i>Speotyto cunicularia hypugaea</i> . Conditions for coverage - Protocol surveys for Burrowing Owl shall be conducted in all Standards Areas and any areas outside of the Focus Planning Areas that contain suitable habitat,. If the species is present, the following mitigation measures shall be implemented. Development shall avoid direct impacts to the nest site to the maximum extent practicable. If impacts are unavoidable, any impacted individuals shall be relocated to a conserved area of suitable size and characteristics, using passive or active methodologies approved by the wildlife agencies. In addition, mitigation for impacts to occupied habitat must be provided according to established protocol standards. The long-term preserve management plan shall provide area specific management directives for any known or likely Burrowing Owl locations, including enhancement of known, historical and potential burrowing owl habitat. The long-term management plan also shall include monitoring of burrowing owl nest sites to determine use and nesting success, predator control, and establishing a 300 ft. wide avoidance area around occupies burrows within the preserve.		

<i>Pelecanus occidentalis californicus</i> (California Brown Pelican)	• Conserve Saltmarsh and estuarine habitats at Buena Vista, Agua Hedionda, and Batiquitos Lagoons consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh and estuarine habitats within the City.	• Manage preserved areas to minimize contamination by pesticides, oil, and other pollutants; reduce disturbances at important foraging and roosting areas, and maintain lagoon hydrology and water quality (e.g.; 100 foot setback from existing wetland habitats).
<i>Pelecanus occidentalis</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the major resting areas at Agua Hedionda, Buena Vista and Batiquitos Lagoons, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Sterna antillarum browni</i> (California Least Tern)	• Conserve Saltmarsh and estuarine habitats at Buena Vista, Agua Hedionda, and Batiquitos Lagoons (considered critical locations) consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh and estuarine habitats within the City.	• Manage preserved areas to minimize edge effects, control non-native plants, maintain hydrology and water quality, protect habitats from physical disturbances, control predators, and maintain vegetation to provide optimal conditions for breeding. • Where opportunities arise, restore and enhance habitat in preserved areas and preserve habitat adjacent to the lagoon. • Manage nesting sites at Batiquitos Lagoon.
<i>Sterna antillarum browni</i> . Conditions for coverage - The major and critical population at Batiquitos Lagoon shall be managed by the California Department of Fish and Game to control predators, control weed growth on nesting areas, and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. Incidental take of the species or occupied habitat during the breeding season is prohibited except as specifically authorized on a case-by-case basis. The long-term management plan shall address enhancement of other potential Least Tern nesting areas, such as Buena Vista Lagoon, including nesting sites and water quality.		
<i>Polioptila californica californica</i> (Coastal California Gnatcatcher)	• Conserve approximately 2,000 acres of coastal sage scrub. • Conserve mapped Gnatcatcher locations within conserved habitat. • Maintain regional linkages.	• Manage preserve areas to minimize edge effects, control cowbirds and predators, prevent livestock overgrazing, and restrict human disturbance. • Prepare and implement a fire management program for preserve areas as part of the detailed management plan. • Where opportunities arise, enhance and restore coastal sage scrub within preserve areas, with priority given to creation of Gnatcatcher breeding opportunities within constrained linkages.
<i>Polioptila californica californica</i> . Conditions for coverage - Within Standards Areas, 75% of gnatcatchers shall be conserved. The long-term preserve management plan shall provide area specific management directives for all conserved gnatcatcher locations and any other potential habitat, including specific measures to address control of domestic pets, to reduce other edge effects, to minimize disturbance during the nesting season, and to reduce the potential for habitat degradation due to unplanned fire. Adaptive management may include measures to maintain or improve overall habitat quality, including vegetation structure. No clearing of occupied habitat may occur between March 1 and August 15.		
<i>Accipiter cooperii</i> (Cooper's Hawk)	• Conserve approximately 525 acres of breeding and primary foraging habitat and approximately 3,500 acres of secondary foraging habitat. • Assure no net loss of wetland habitats.	• Manage preserve areas to minimize disturbances in breeding habitat, restrict removal of oak trees and riparian vegetation, restrict building of trails or roads immediately adjacent to or through breeding areas, and restrict introduction of pesticides or other contaminants. • To the extent practicable, design project to maintain appropriate distances between development and nest sites. • Protect documented nest sites during breeding season. • Where appropriate, enhance oak and riparian woodland habitats.

Accipiter cooperii. Conditions for coverage - In Proposed Hardline Areas and Standards Areas with oak woodlands or oak riparian forest, surveys shall be conducted for nesting Cooper's Hawks. If the species is present, no direct impacts to oak woodland or oak riparian forest shall be allowed in the nesting season, and a 300 ft. impact avoidance area around active nest sites shall be maintained. The long-term preserve management plan shall provide area specific management directives for oak woodlands and oak riparian forest, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.

<i>Sterna elegans</i> (Elegant Tern)	• Conserve Saltmarsh and estuarine habitats at Buena Vista, Agua Hedionda, and Batiquitos Lagoons consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh and estuarine habitats within the City.	• Manage preserved areas to minimize edge effects, control non-native plants, maintain hydrology and water quality, protect habitats from physical disturbances, control predators, and maintain vegetation to provide optimal conditions for breeding. • Where opportunities arise, restore and enhance habitat in preserved areas. • Habitat adjacent to the lagoons will be preserved to the maximum extent possible.
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Sterna elegans. Conditions for coverage - The long-term preserve management plan shall provide area specific directives to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. Incidental take of the species during the breeding season is prohibited except as specifically authorized on a case-by-case basis by the wildlife agencies. The long-term management plan shall address enhancement of other potential Elegant Tern nesting areas, such as Buena Vista Lagoon, including nesting sites and water quality.

<i>Passerculus sandwichensis rostratus</i> (Large-billed Savannah Sparrow)	• Conserve approximately 99% of Saltmarsh habitat at Buena Vista, Agua Hedionda, and Batiquitos Lagoons. • Assure no net loss of Saltmarsh habitat within the City.	• Manage conserved areas to minimize edge effects, control invasive non-native plants, maintain Saltmarsh hydrology and water quality, protect Saltmarsh habitat from physical disturbances, and control predators. • Where opportunities arise, restore and enhance habitat in preserve areas. • Habitat adjacent to the lagoons will be preserved to the maximum extent possible.
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Passerculus sandwichensis rostratus. Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for the potential nesting areas at Agua Hedionda and Batiquitos Lagoons, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.

<i>Vireo bellii pusillus</i> (Least Bell's Vireo)	• Conserve approximately 495 acres (86%) of riparian habitats. • Assure no net loss of riparian scrub within the City. • Conserve 95% of known point locations for Least Bell's Vireo within preserve areas.	• Manage preserve areas to minimize activities that would degrade riparian habitats, restrict the alteration or clearing of riparian vegetation, control exotic invasive vegetation, control cowbirds and predators, and maintain hydrology and water quality in riparian habitats. • Restrict activities in Vireo-occupied habitat during the breeding season, including no clearing of habitat (April 15 to September 15). • Where appropriate, restore or enhance riparian habitat suitable for vireos and other sensitive riparian species.
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Vireo bellii pusillus. Conditions for coverage - Incidental take of the species or occupied habitat during the breeding season (March 15 to September 15) is prohibited except as specifically authorized on a case-by-case basis. The long-term preserve management plan shall provide area specific management directives for known or potential Least Bell's Vireo nesting areas, including specific adaptive management measures to control brown-headed cowbirds, provide appropriate successional habitat, provide upland buffers for known populations, minimize night lighting, minimize noise impacts, and protect riparian areas against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.

<i>Rallus longirostris levipes</i> (Light-footed Clapper Rail)	• Conserve Saltmarsh habitat at Buena Vista, Agua Hedionda, and Batiquitos Lagoons consistent with the City's wetlands policy. • Conserve freshwater marsh used by Rails during the fall and winter. • Assure no net loss of Saltmarsh or freshwater marsh habitats within the City.	• Manage preserve areas to control non-native plants, maintain hydrology and water quality, control predators, and restrict physical disturbances. • Where opportunities arise, restore and enhance habitat in preserved areas. • Restrict human activity near nesting habitat during the breeding season (April 1 through August 31). • Where appropriate, introduce Clapper Rails into suitable, unoccupied habitat. • Pursue experimental cordgrass reintroduction at Batiquitos Lagoon.
<i>Rallus longirostris levipes</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for known or potential nesting areas at Agua Hedionda, Batiquitos and Buena Vista Lagoons and upstream freshwater marsh habitats, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Pandion haliaetus</i> (Osprey)	• Conserve habitat within Buena Vista, Agua Hedionda, and Batiquitos Lagoons (areas are considered critical locations for the species) consistent with the City's wetlands policy. • Assure no net loss of wetland habitats within the City.	• Manage preserve areas to maintain lagoon hydrology and water quality and restrict activities that would disturb nesting. • Consider provision of nesting platforms adjacent to foraging areas as part of detailed management plan.
<i>Pandion haliaetus</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for foraging areas at Agua Hedionda, Batiquitos and Buena Vista Lagoons and upstream freshwater marsh habitats, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Aimophila ruficeps canescens</i> (Southern California Rufous-crowned Sparrow)	• Conserve known locations within proposed and existing hardlined conservation areas. • Conserve approximately 2,000 acres of coastal sage scrub. • Maintain regional linkages.	• Manage preserve areas to minimize edge effects, control cowbirds and predators, prevent livestock overgrazing, and restrict human disturbance. • Prepare and implement a fire management program for preserve areas as part of the detailed management plan. • Where opportunities arise, enhance and restore coastal sage scrub within preserve areas, with priority given to creating of breeding opportunities within constrained linkages.
<i>Aimophila ruficeps canescens</i> . Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for known or likely locations of Rufous-crowned Sparrow, including specific adaptive management measures to protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Empidonax traillii extimus</i> (Southwestern Willow Flycatcher)	• Conserve approximately 495 acres of riparian habitats. • Assure no net loss of riparian habitats within the City. • Conserve 95% of any new populations.	• Manage preserve areas to minimize activities that would degrade riparian habitats, restrict the alteration or clearing of riparian vegetation, control exotic invasive vegetation, control cowbirds and predators, and maintain hydrology and water quality in riparian habitats. • Restrict human activities in Willow Flycatcher habitat during the breeding season, including no clearing of habitat (May 1 to September 15). • Where appropriate, restore or enhance riparian habitat suitable for Willow Flycatchers and other sensitive species.

<i>Empidonax traillii extimus</i>. Conditions for coverage - Incidental take of the species or occupied habitat during the breeding season (May 1 to September 15) is prohibited except as specifically authorized on a case-by-case basis by the wildlife agencies. The long-term preserve management plan shall provide area specific management directives for known or potential Willow Flycatcher nesting areas, including specific adaptive management measures to control brown-headed cowbirds, provide appropriate successional habitat, provide upland buffers for known populations, minimize night lighting, minimize noise impacts, and protect riparian areas against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		
<i>Charadrius alexandrinus nivosus</i> (Western Snowy Plover)	• Conserve Saltmarsh and estuarine habitats at Buena Vista, Agua Hedionda, and Batiquitos Lagoons consistent with the City's wetlands policy. • Assure no net loss of Saltmarsh and estuarine habitats within the City. • Conserve all major populations within the City, i.e., at Agua Hedionda and Batiquitos Lagoons. • Assure no direct impacts to nesting areas.	• Manage preserve areas to minimize edge effects, control non-native plants, maintain hydrology and water quality, protect habitats from physical disturbances, and control predators. • Where opportunities arise, restore and enhance habitat in preserved areas. • Restrict activities near nesting habitat during the breeding season (April 1 through August 31). • If populations are present during the non-breeding season, implement access control measures if warranted.
<i>Charadrius alexandrinus nivosus</i>. Conditions for coverage - The major and critical population at Batiquitos Lagoon shall be managed by the California Department of Fish and Game to control predators, control weed growth on nesting areas, and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts. Incidental take of the species or occupied habitat during the breeding season (April 1 through August 1) is prohibited except as specifically authorized on a case-by-case basis. The long-term management plan shall address enhancement of other potential Snowy Plover nesting areas, such as Buena Vista Lagoon, including nesting sites and water quality.		
<i>Plegadis chihi</i> (White-faced Ibis)	• Conserve approximately 1,150 acres of marsh, water, and estuarine habitat within preserve areas and assure no net loss of these habitats within the City. • Conserve populations at Buena Vista and Batiquitos Lagoons, including a critical breeding population at Buena Vista Lagoon.	• Manage preserve areas to minimize edge effects, control non-native plants, maintain hydrology and water quality, and protect habitats from physical disturbances. • Restrict human activities in occupied habitat during the breeding season (March to June). • Enhance habitat to increase breeding and wintering populations.
<i>Plegadis chihi</i>. Conditions for coverage - The long-term preserve management plan shall provide area specific management directives for foraging areas at Agua Hedionda, Batiquitos and Buena Vista Lagoons and upstream freshwater marsh habitats, including specific adaptive management measures to address water quality and protect against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

<i>Icteria virens</i> Yellow-breasted Chat)	• Conserve riparian habitat within preserve areas, and assure no net loss of riparian habitats within the City.	• Manage preserve areas to minimize activities that would degrade riparian habitats, restrict livestock overgrazing and the alteration or clearing of riparian vegetation, control exotic invasive vegetation, control cowbirds and predators, and maintain hydrology and water quality in riparian habitats. • Restrict human activities in occupied habitat during the breeding season. • Where appropriate, restore or enhance riparian habitat suitable for this and other sensitive species.
<i>Icteria virens</i> . Conditions for coverage - Incidental take of the species or occupied habitat during the breeding season is prohibited except as specifically authorized on a case-by-case basis. The long-term preserve management plan shall provide area specific management directives for known or potential Yellow-breasted Chat nesting areas, including specific adaptive management measures to control brown-headed cowbirds, provide upland buffers for known populations, and protect riparian areas against detrimental edge effects from adjacent development, recreational impacts, and other direct and indirect impacts.		

Table 10
Narrow Endemic Species

Scientific Name	Common Name
<i>Acanthomintha illicifolia</i>	San Diego Thorn-mint
<i>Ambrosia pumila</i>	San Diego Ambrosia
<i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i>	Del Mar Manzanita
<i>Baccharis vanessae</i>	Encinitas Baccharis
<i>Brodiaea filifolia</i>	Thread-leaved Brodiaea
<i>Brodiaea orcuttii</i>	Orcutt's Brodiaea
<i>Chorizanthe orcuttiana</i>	Orcutt's Spineflower
<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>	Del Mar Mesa Sand Aster
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's Dudleya
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego Button-celery
<i>Hazardia orcuttii</i>	Orcutt's Hazardia
<i>Muilla clevelandii</i>	San Diego Goldenstar
<i>Myosurus minimus</i> ssp. <i>apus</i>	Little Mousetail
<i>Navarretia fossalis</i>	Prostrate Navarretia
<i>Orcuttia californica</i>	California Orcutt Grass
<i>Lycaena hermes</i>	Hermes Copper
<i>Streptocephalus woottoni</i>	Riverside Fairy Shrimp
<i>Branchinecta sandiegoensis</i>	San Diego Fairy Shrimp

Table 11
Mitigation Ratios for Impacts to HMP Habitats

Habitat Group and Type	Mitigation Ratio/Requirement by Type of Impacted Habitat
A. Coastal salt marsh, alkali marsh, freshwater marsh, estuarine, salt pan/mudflats, riparian forest, riparian woodland, riparian scrub, vernal pools, disturbed wetlands, flood channel, fresh water Engelmann oak woodland, coast live oak woodland (1)	No net loss goal (mitigation ratio varies by type of replacement habitat)
B. Beach, southern coastal bluff scrub, maritime succulent scrub, southern maritime chaparral, native grass	3:1 (2)
C. Gnatcatcher - Occupied coastal sage scrub	2:1 (3)
D. Unoccupied coastal sage scrub, coastal sage/chaparral mix, chaparral (excluding southern maritime chaparral)	1:1 (4)
E. Annual (non-native) grassland	0.5:1 (4)
F. Disturbed lands, eucalyptus, agricultural lands	Mitigation Fee (4)

Footnotes:

1. Group A habitats are associated with wetlands. Impacts to these habitat types are subject to review under Section 404 of the federal Clean Water Act or Section 1600 of the California Fish and Game Code.
2. It is assumed that all habitat types in Group B will be included in the proposed preserve system. Small, isolated patches of low quality southern maritime chaparral may be located outside a preserve area and maximum avoidance and onsite conservation is preferred.
3. Maximum avoidance and onsite conservation of Group C habitat is encouraged.
4. Offsite mitigation for habitat in this group which is not conserved or mitigated onsite, shall pay a per acre in lieu mitigation fee in an amount to be determined by the City Council. This fee is discussed in more detail in Section E of the Plan.
5. City projects that impact Type D, E, and F habitats will not pay the fee and will mitigate at the Lake Calavera Mitigation Bank. These projects may mitigate out-of-kind because the objective is to build the preserve system by combining small mitigation requirements into a larger, contiguous area. City projects that impact Type A, B, and C habitats must mitigate in-kind at the ratios stated above

7. Additional Conservation Standards To Be Applied To Properties in the Coastal Zone.**7-1 Environmentally Sensitive Habitat Areas (ESHA)**

Pursuant to Section 30240 of the California Coastal Act, environmentally sensitive habitat areas, as defined in Section 30107.5 of the Coastal Act, shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

7-2 Coastal Sage Scrub

Coastal Sage Scrub is a resource of particular importance to the ecosystems of the Coastal Zone, due in part to the presence of the Coastal California gnatcatcher (Federal Threatened) and other species. Properties containing Coastal Sage Scrub located in the Coastal Zone shall conserve a minimum 67% of the Coastal Sage Scrub and 75% of the gnatcatchers onsite. Conservation of gnatcatchers shall be determined in consultation with the wildlife agencies.

7-3 Oak Woodland

An oak woodland is a closed to relatively open stand of trees within which a dominant tree species is a species of oak. In coastal southern California, that species is generally Coast Live Oak (*Quercus agrifolia*), which is commonly found on slopes and riparian situations. Shrubs vary from occasional to common, and the herb layer is often continuous and dominated by a variety of annual grasses.

7-4 Streams

A stream is a topographical feature with a clear bed and bank that periodically conveys water.

7-5 Ephemeral Drainages and Ephemeral Streams

Ephemeral drainages and ephemeral streams are topographic features that convey water, but only during and shortly after rainfall events in a typical year.

7-6 Wetlands

Pursuant to California Public Resources Code Section 30121 and Title 14, California Code of Regulations Section 13577(b), 'wetland' means lands within the coastal zone, which may be covered periodically, or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. Wetland shall include land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. A preponderance of hydric soils or a preponderance of wetland indicator species shall be considered presumptive evidence of wetland conditions.

Wetlands in the Coastal Zone shall be delineated following the definitions and boundary descriptions in Section 13577 of the California Code of Regulations.

Pursuant to California Public Resources Code Section 30233, no impacts to wetlands shall be allowed in the Coastal Zone except as provided in that Section.

7-7 Wetland Mitigation Requirements

If impacts to a wetland are allowed consistent with Policy 7-6 above, mitigation shall be provided at a ratio of 3:1 for riparian impacts and 4:1 for saltwater or freshwater wetland or marsh impacts.

7-8 No Net Loss of Habitat

There shall be no net loss of Coastal Sage Scrub, Maritime Succulent Scrub, Southern Maritime Chaparral, Southern Mixed Chaparral, Native Grassland, and Oak Woodland within the Coastal Zone of Carlsbad.

Mitigation for impacts to any of these habitat types, when permitted, shall include a creation component that achieves the no net loss standard. Substantial restoration of highly degraded areas (where effective functions of the habitat type have been lost) may be substituted for creation subject to the consultation and concurrence of the U.S. Fish and Wildlife Service and the California Department of Fish and Game (wildlife agencies). The Coastal Commission shall be notified and provided an opportunity to comment upon proposed substitutions of substantial restoration for the required creation component. Development shall be consistent with Policy 7-1 of this subsection, unless proposed impacts are specifically identified in the HMP; these impacts shall be located to minimize impacts to Coastal Sage Scrub and maximize protection of the Coastal California gnatcatcher and its habitat.

7-9 Upland Habitat Mitigation Requirements

Where impacts to the habitats stated in 7-1 are allowed, mitigation shall be provided as follows:

- a. The no net loss standard shall be satisfied as stated in 7-8. Typically this will consist of creation of the habitat type being impacted (or substantial restoration where allowed) at a ratio of at least 1:1 as provided in the HMP.
- b. Onsite preservation is not eligible for mitigation credit in the coastal zone. Onsite or off-site open space preserve areas may be utilized to satisfy required mitigation for habitat impacts associated with development if the preserve areas are disturbed and suitable for restoration or enhancement, or they are devoid of habitat value and therefore suitable for the 1:1 mitigation component requiring creation or substantial restoration of new habitat. Substantial restoration is restoration that has the effect of qualitatively changing habitat type and may meet the creation requirement if it restores habitat type that was historically present, but has suffered habitat conversion or such extreme degradation that most of the present dominant species are not part of the original vegetation. Substantial restoration contrasts with enhancement activities, which include weeding, or planting within vegetation that retains its historical character, and restoration of disturbed areas to increase the value of existing habitat which may meet other mitigation requirements pursuant to the HMP.
- c. Impacts to Coastal Sage Scrub shall be mitigated at an overall ratio of 2:1, with the creation component satisfying half of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.
- d. Impacts to Southern Maritime Chaparral or Maritime Succulent Scrub shall be mitigated at an overall ratio of 3:1, with the creation component satisfying one-third of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.

Impacts to Southern Mixed Chaparral, Native Grassland, and Oak Woodland shall be mitigated respectively at ratios of 1:1, 3:1, and 3:1, with the creation component satisfying the obligation or one-third of the total obligation. The remainder of the mitigation obligation shall be satisfied pursuant to the provisions of the HMP.

Mitigation for impacts within the coastal zone should be provided within the coastal zone if possible, particularly the 1:1 creation component, in order to have no net loss of habitat within the coastal zone. Mitigation measures on land outside the Coastal Zone may be acceptable if such mitigation would clearly result in higher levels of habitat protection and value and/or would provide significantly greater mitigation ratios, and the mitigation area is part of the HMP. Land area inside and outside the coastal zone which serves as mitigation for habitat impacts in the coastal zone shall be permanently retired from development potential and secured as part of the HMP preserve management plan as a condition of development approval.

- g. Habitat mitigation requirements other than the creation or substantial restoration component may be partially or wholly fulfilled by acquisition of existing like habitat and/or retirement of development credits on existing like habitat with permanent preservation as part of the HMP preserve management plan.
- h. All mitigation areas, onsite and offsite, shall be secured with a conservation easement in favor of the wildlife agencies. In addition, a preserve management plan shall be prepared for the mitigation areas, to the satisfaction of the City, the wildlife agencies, and the Coastal Commission. Phase 1 of the preserve management plan shall be incorporated into the Implementation Program of the LCP through an LCP amendment within one year of Commission certification of the HMP as part of the certified LCP. Phase 2 of the preserve management plan shall be incorporated into the Implementation Program in the same manner within three years of Commission certification of the HMP as part of the certified LCP. The preserve management plan shall ensure adequate funding to protect the preserve as open space and to maintain the biological values of the mitigation areas in perpetuity. Management provisions and funding for mitigation required to address habitat impacts shall be in place prior to the impacts for which the mitigation is required. At a minimum, monitoring reports shall be required as a condition of development approval after the first and third year of habitat mitigation efforts.
- i. If any conflict should arise between the provisions of the HMP and the policies of the LCP, the LCP shall take precedence.

7-10 Highly Constrained Properties

There are properties in the Coastal Zone that are entirely or almost entirely constrained by environmentally sensitive habitat area (ESHA). In these cases, one of the following additional standards shall apply:

- a. If more than 80% of the property by area is covered with ESHA at least 75% of the property shall be conserved, OR
- b. If the City, with the concurrences of the wildlife agencies and the Coastal Commission through an LCP amendment, approves a Hardline preserve boundary for any of these properties as part of the HMP, then the amount of onsite preservation as identified in the Hardline boundary shall apply.

7-11 Buffers and Fuel Modification Zones

Buffers shall be provided between all preserved habitat areas and development. Minimum buffer widths shall be provided as follows:

- a. 100 ft. for wetlands
- b. 50 ft. for riparian areas

- c. 20 ft. for all other native habitats (coastal sage scrub, southern maritime chaparral, maritime succulent scrub, southern mixed chaparral, native grassland, oak woodland).

Buffer widths shall be measured from the edge of preserved habitat nearest the development to the closest point of development. For wetlands and riparian areas possessing an unvegetated bank or steep slope (greater than 25%), the buffer shall be measured from the top of the bank or steep slope rather than the edge of habitat, unless there is at least 50 ft. between the riparian or wetland area and the toe of the slope. If the toe of the slope is less than 50 feet from the wetland or riparian area, the buffer shall be measured from the top of the slope.

Any proposed reductions in buffer widths for a specific site shall require sufficient information to determine that a buffer of lesser width will protect the identified resources. Such information shall include, but is not limited to, the size and type of the development and/or proposed mitigation (such as planting of vegetation or the construction of fencing) that will also achieve the purposes of the buffer. The California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Coastal Commission staff shall be consulted in such buffer determinations.

No development, grading, or alterations, including clearing of vegetation, shall occur in the buffer area, except for:

- a. Fuel modification Zone 3 to a maximum of 20 ft. for upland and non-riparian habitat. No fuel modification shall take place within 50 ft. of riparian areas, wetlands, or oak woodland.
- b. Recreation trails and public pathways within the first 15 feet of the buffer closest to the development, provided that construction of the trail or pathway and its proposed use is consistent with the preservation goals for the adjacent habitat, and that appropriate measures are taken for physical separation from sensitive areas.

Buffer areas that do not contain native habitat shall be landscaped using native plants. Signage and physical barriers such as walls or fences shall be required to minimize edge effects of development.

7-12 Grading and Landscaping Requirements

In addition to the requirements of the model grading ordinance in the Carlsbad Master Drainage Plan, permitted new development shall also comply with the following requirements:

- a. Grading activity shall be prohibited during the rainy season: from October 1st to April 1st of each year.
- b. All graded areas shall be landscaped prior to October 1st of each year with either temporary or permanent landscaping materials, to reduce erosion potential. Such landscaping shall be maintained and replanted if not well-established by December 1st following the initial planting.
- c. The October 1st grading season deadline may be extended with the approval of the City Engineer subject to implementation by October 1st of special erosion control measures designed to prohibit discharge of sediments off-site during and after the grading operation. Extensions beyond November 15th may be allowed in areas of very low risk of impact to sensitive coastal resources and may be approved either as part of the original coastal development permit or as an amendment to an existing coastal development permit.
- d. If any of the responsible resource agencies prohibit grading operations during the summer grading period in order to protect endangered or rare species or sensitive environmental resources, then grading activities may be allowed during the winter by a coastal development

permit or permit amendment, provided that appropriate best management practices (BMPs) are incorporated to limit potential adverse impacts from winter grading activities.

7-13 City Owned Lands Adjacent To Macario Canyon and Veterans Memorial Park

The City of Carlsbad owns approximately 521 acres in and adjacent to Macario Canyon, a portion of which is located in the Coastal Zone. A municipal golf course has been proposed for a portion of the property, and a public park is planned for another portion. Development of the property shall be subject to the following policies regarding protection of habitat:

- a. The impact and conservation areas for the municipal golf course are shown as a Hardline design in the HMP (Figure 8 Revised) and, which shall serve as the standard of review for determining areas in which development may occur in the future. Areas shown for conservation shall not be impacted or disturbed except for revegetation, restoration, and other similar activities related to mitigation. Areas shown for impact may be fully developed with appropriate mitigation.
- b. Any impacts to Coastal Sage Scrub shall be mitigated by on-site creation at a ratio of 2:1 in compliance with the no net loss standard stated in 7-1. Onsite revegetation or restoration may be done on agricultural, disturbed or non-native grassland areas. For impacts to the Coastal California gnatcatcher, additional mitigation shall be provided by acquisition and preservation at a 1:1 ratio of land supporting gnatcatchers. Impacts to dual criteria slopes shall not exceed 10%.
- c. In order to provide a viable north-south wildlife corridor across Macario Canyon, the area shown on the HMP Hardline map as "Veterans Memorial Park Wildlife Corridor" shall be conserved concurrent with any impacts to the Macario Canyon property. No development shall occur within the Wildlife Corridor except a designated trail and rest areas along the trail.
- d. Protection and management of all mitigation areas shall be consistent with 7-9(f) and (h).
- e. The area shown as "Veterans Memorial Park Development Area" is designated for public recreational use. It is the intent of this policy that the public park area be developed so as to maximize public access and provide a variety of recreational opportunities. Development within steep slopes and/or native vegetation shall be limited to passive recreational facilities, such as recreational trails and picnic areas. Within the proposed development areas, grading of steep slopes with native vegetation shall be limited to the minimum amount necessary to allow such uses.
- f. Segments of the Citywide Trail System viewpoints, and other opportunities for public access shall be incorporated into the development areas.
- g. In the riparian area of Macario Canyon Creek, two crossings shall be allowed, as shown in the HMP Hardline exhibit. Crossing #1 shall utilize the existing farm road. Crossing #2 shall utilize a bridge span structure. No riparian impacts shall occur for either crossing.
- h. The design of riparian buffers shall be as shown in the HMP. Buffers shall be landscaped with appropriate native, non-invasive plants to provide a natural transition between recreational areas and riparian habitat, as well as to discourage human intrusion into the riparian area. Appropriate signing and fencing will also be utilized.

7-14 Other Parcels – Specific Habitat Protection Standards

The following standards apply to those parcels in Zones 20 and 21 shown on Exhibit A (page 121) which are located within the biological core and linkage areas designated in the MHCP. They are in addition to the applicable, general conservation standards contained in 7-1 through 7-11 of the

HMP. The standards are intended to direct development to existing disturbed areas to the maximum extent feasible, limit impacts to native vegetation, and establish viable core and linkage areas as designated in the HMP. In general, each property shall be allowed to develop at least 25% of the site with appropriate mitigation as specified in 7-8 through 7-11. When individual properties are proposed for rezoning or development, detailed biological information will be required to determine whether the proposal is consistent with the HMP, subsection 7 and the standards below, based upon the actual type, location and condition of onsite resources, and the appropriate locations of development and preservation areas. One or more wildlife crossings under Poinsettia Lane of a sufficient size for larger species shall be provided if recommended by the wildlife resource agencies.

- a. Assessor's Parcel No. 212-120-33 (Heatt) – No impact to vernal pools. Minimize impact to vernal pool watersheds.
- b. Assessor's Parcel No. 212-010-3 (Kirgis) – Preserve 75% of property with development clustered immediately adjacent to Kelly Ranch.
- c. Assessor's Parcel No. 215-070-38 (Fernandez) – Cluster development on disturbed areas to the maximum extent feasible. Maximum 10% impact on CSS and SMC for access purposes.
- d. Assessor's Parcel No. 215-040-03 (Muroya) – Cluster development on disturbed areas to the maximum extent feasible. Maximum 10% impact on CSS and SMC for access purposes.
- e. Assessor's Parcel No. 212-040-50 (Emerald Point) – Development limited to disturbed non-native grassland areas. No impacts to native habitat allowed.
- f. Assessor's Parcel No. 215-020-06 (RWSB) – Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered to the maximum extent feasible along disturbed portions of the property adjacent to Cassia Road and the future Poinsettia Lane extension. Impacts to the SMC habitat shall be minimized. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property and designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.
- g. Assessor's Parcel No. 215-020-07 (Maldonado) –Development shall be concentrated along the Poinsettia Lane extension and shall be limited to the western half of the property. No impacts to the coast oak woodland and riparian area except for Poinsettia Lane extension. The eastern half of the property is recommended for offsite mitigation for other properties in Zone 21; however, at a minimum, a wildlife corridor linkage oriented generally north-south shall be provided on the eastern half of the property and designed to connect to neighboring properties with existing or potential wildlife corridor linkages. The corridor linkage shall include any onsite coast oak woodland area.
- h. Assessor's Parcel No. 215-050-21 (Namikas) – Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands except for Poinsettia Lane extension. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the onsite coast oak woodland area, and be designed to connect to neighboring properties with existing or potential wildlife corridors linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.

- i. Assessor's Parcel No. 215-050-22 (Sudduth) - Development shall be limited to a maximum of 25% of the property, not including Poinsettia Lane construction, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands except for Poinsettia Lane extension. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property including the onsite coast oak woodland area and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.
- j. Assessor's Parcel No. 215-050-44, 45, 46, 47 (Kevane) - Development shall be limited to a maximum of 25% of the property and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands shall be allowed. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the coast oak woodland, and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.
- k. Assessor's Parcel No. 215-050-12 (Reiter) - Development shall be limited to a maximum of 25% of the property, and shall be clustered on the western portion of the property. No impacts to coast oak woodland, riparian areas or wetlands shall be allowed. A wildlife corridor linkage oriented generally north-south shall be provided on the eastern portion of the property, including the coast oak woodland, and be designed to connect to neighboring properties with existing or potential wildlife corridor linkages. Impacts to native habitat shall require onsite mitigation through restoration and/or creation of habitat within the designated corridor linkage, in addition to any other required mitigation.
- l. Assessor's Parcel No. 215-050-73 (Levatino) – Maximum 25% development clustered on the southern portion of the property. Buffer widths may be reduced and/or additional impacts may be allowed to the extent necessary to obtain site access, and/or to accommodate Circulation Road improvements as identified in the certified LCP.

The parcel specific standards listed above are adopted because hardline preserve boundary lines were not established at the time of preparation of the HMP. The purpose of the standards is to ensure that future development is sited to preserve the maximum amount of ESHA within the coastal zone, and to establish a viable habitat corridor and preserve area in Zones 20 and 21. If the City, with the concurrence of the wildlife agencies and the Coastal Commission through an LCP amendment, subsequently approves a Hardline preserve boundary for any of the above-described properties as part of the HMP, then the onsite preservation included in the Hardline preserve boundary shall apply.



E. Local Plan Implementation Process

1. Regulatory Implementation

Upon approval of the HMP, and issuance of citywide permits from the wildlife agencies, the City will use its land-use regulatory authority to fully implement the provisions of the Plan. Regulatory implementation shall consist of the following actions:

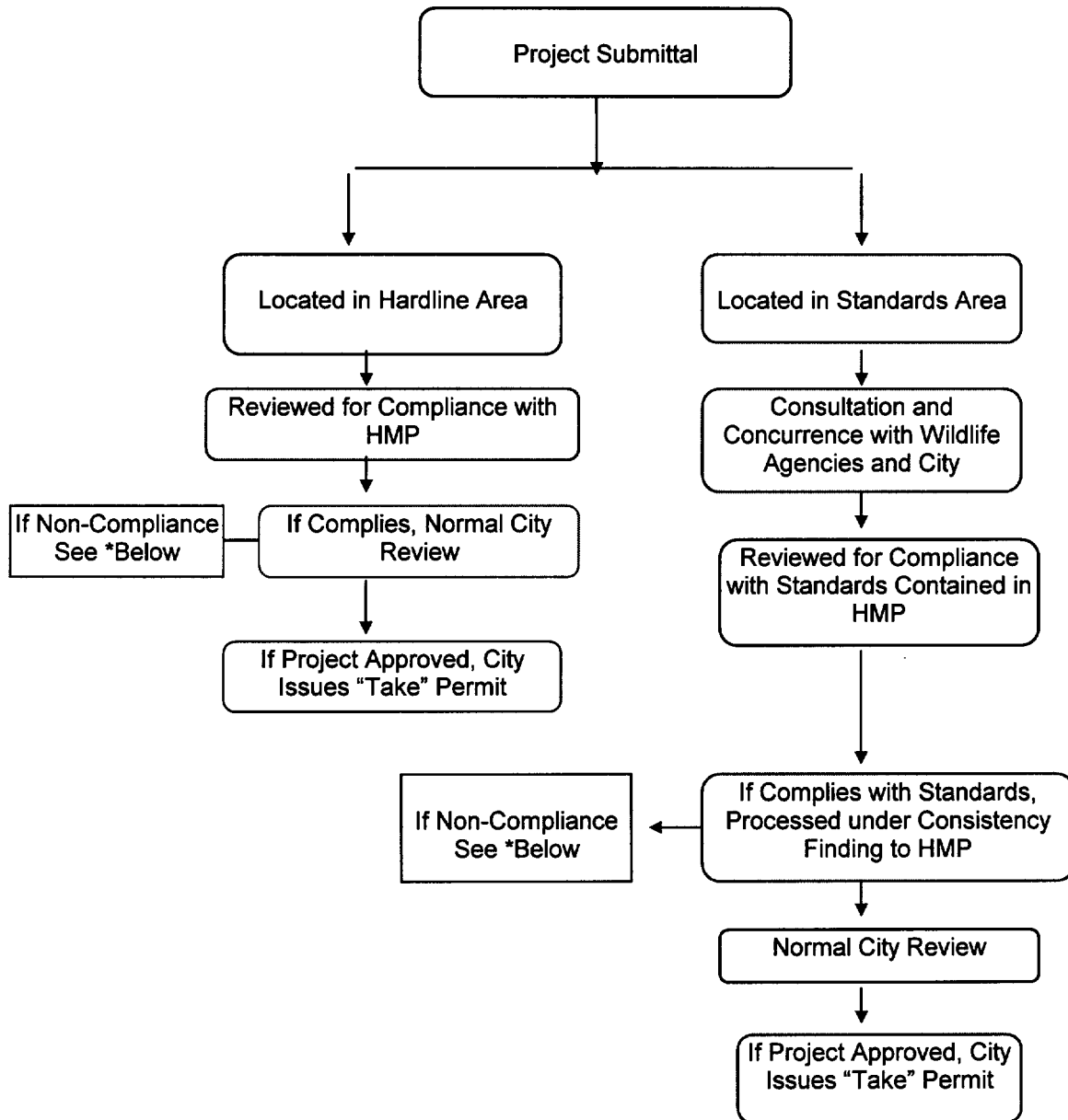
- A. Immediately upon approval of the HMP, the City will adopt an urgency ordinance as permitted by California Government Code Section 65858, to require compliance with the plan while permanent regulatory measures are being drafted and approved.
- B. The City will amend the Open Space and Conservation Element of the General Plan to incorporate the HMP by reference. Both the Open Space Map contained in the Element, as well as the Land Use Map contained in the Land Use Element will be amended to show the Existing and Proposed Hardline Preserve Areas as Open Space. If necessary or applicable, existing goals, objectives or policies contained in the Element may be amended to strengthen the City position regarding implementation of the HMP. (See Appendix D for recommended amendment wording.)
- C. The City's Open Space Ordinance (Section 21.53.230, Carlsbad Municipal Code) will be amended to add conserved habitat lands, as identified in the HMP, as undevelopable open space lands. (See Appendix D for recommended amendment wording.)
- D. The Carlsbad Municipal Code will be amended by the addition of a new section to require lands located within the standards areas of the HMP to comply with the specific conservation standards contained in Section D of the HMP. (See Appendix D for recommended wording.)
- E. The City's Growth Management Plan contains a requirement that an additional 15% of the otherwise developable land within a LFMZ be set aside for open space purposes. Priorities for use of the 15% standard are contained in the City's Open Space and Conservation Resource Management Plan. The City will amend this Plan to make the conservation of habitat as identified in the HMP a priority use for the 15% standard in the LFMZs where it is appropriate. (See Appendix D for an example.)
- F. The City will comply with all terms and conditions of the IA with USFWS and CDFG.

2. Project Processing Implementation

Because the City is establishing a substantial regulatory framework (i.e., ordinance amendments), project processing will not need to deviate from the normal City process in most instances.

The one major difference is for projects which are located in standards areas. These projects will require additional consultation with the City and the wildlife agencies to determine whether the proposed project complies with the standards as discussed in Section D of the HMP and a consistency finding with the HMP before they can proceed through the normal City review process. Figure 24 shows the HMP compliance process and the difference between proposed projects located within hardline areas vs. standards areas. The details for processing a project in a standards area are provided on Page E-3 and will require coordination with and concurrence by U. S. Fish and Wildlife Service and the California Department of Fish and Game regarding compliance with the standards.

FIGURE 30 HMP COMPLIANCE PROCESS



- Non-Compliance Processing Alternatives Include:
 - 1) Redesign Project
 - 2) Submit for Plan Amendment to HMP

3. Plan Amendments

Amendments to the HMP may be necessary over time, including:

- Minor Changes to the maps showing boundaries of the Plan area or existing or proposed hardline areas;
- Conversion of standards areas to hardline areas; and
- Possible future additions to the list of covered species.

To facilitate the processing of such changes, the Plan amendment process described below will apply.

Minor Amendments

A. Equivalency Findings

Minor changes to HMP maps to show actual, precise boundaries of conserved habitat, and which do not reduce the acreage or quality of the habitat, will be treated as automatic amendments under an Equivalency Finding. The City will provide written notice of the Equivalency Findings to USFWS and CDFG, and unless USFWS and CDFG object within 30 days after notification, the change will be considered approved. If objections are raised, the City will meet with the agencies to resolve the issue; and written approval of the resulting change will be required. Minor boundary changes will also not require an amendment to the General Plan Open Space and Conservation Element.

B. Consistency Findings

The habitat conservation planning for any properties located in the standards areas of the HMP and the conversion of these properties to proposed hardline areas, shall be processed as a Consistency Finding.

Some City projects are addressed in this Plan by means of proposed hardlines. These projects are automatically permitted with approval of the Plan. City projects not shown as proposed hardlines shall also be processed as a Consistency Finding.

Projects proposed within the Standards areas would be required to demonstrate how they comply with the standards before they could be approved by the City. To begin the consistency process, the property owner(s) or project proponent would first refer to the zone-level conservation requirements described in Section D of the Plan. After determining zone-level requirements, the project proponent would contact the City to arrange for informal project review and site visits. The review and site visits would be conducted with the assistance of a qualified biologist retained by the City and paid for by the project proponent. Specific conservation and mitigation measures would then be proposed by the project proponent, taking into account zone-level and species-specific requirements.

All projects within the Standards Areas will be required to submit a project description and maps that identify:

1. The project's location in relationship to existing conserved habitat within the City;
2. The habitat types and any known occurrence of HMP Species and other species of concern in and adjacent to the project area;
3. The expected location, type, and intensity of habitat impacts in the project area;

4. Any open space requirement identified for the area under the General Plan; and
5. Specific conservation measures to ensure compliance with zone-level and species-specific standards.

When impacts and measures have been identified, the project proponent will submit the documentation to City's Planning Department for review. The consulting biologist also will be part of this review. If the Planning Director determines that the measures are consistent with the HMP and the conservation standards, the City will consult with the wildlife agencies and begin CEQA review. If the measures are determined to be inconsistent with the HMP and the standards, a revised proposal will be required. If wildlife agencies concur that the measures are consistent, the project shall be considered consistent with the HMP. Following public review under CEQA, the City will formally consider the consistency of the project with the HMP in its findings regarding the project. Upon approval of the project by the City Council, and conditioned on implementation of the approved HMP measures for the project, the City's authorization for take would apply to the project.

For City projects not proposed as hardline areas, the City shall review the project for compliance with measures to reduce impacts to HMP species (Table 9 contained in Section D) and mitigation requirements at the City mitigation bank (Lake Calavera). If the City project complies, it shall be determined to be consistent with the HMP and a Consistency Finding shall be made.

C. Major Amendments

Removal of lands from conserved areas, or reconfiguration of hardline areas resulting in a decrease of acreage or quality of habitat, shall constitute a Major Amendment to the HMP. Once the subregional MHCP is completed and/or as additional biological analysis and information becomes available, additions to the Covered Species list shall also require a Major Amendment to the Plan. Major Amendments shall require environmental review and will be subject to the amendment process described below.

1. The City will initiate a pre-amendment review with the USFWS and CDFG. In this review, the City will present a report to USFWS and CDFG that identifies the affected species; identifies the level of take authorization being sought; and discusses how existing HMP measures provide for the species. The purpose of the review meeting will be to determine whether adequate information is available to consider approval of the change.
2. Within 90 days of the review meeting or receipt of the report (whichever occurs later), the agencies will notify the City that they:
 - Have sufficient information to act on the proposed change;
 - Have specific items of additional information necessary to properly evaluate the proposed change; or
 - Have determined that additional data collection and analysis is necessary for adequate evaluation of the impacts of the proposed change.
3. Where specific items of additional information are requested, the City will provide the information to the extent it is reasonably available or can be obtained at reasonable costs within 90 days. Where additional data collection and analysis are requested, the agencies will provide a detailed explanation of what is required and why.

4. Once the additional information is received, the agencies shall notify the City within 30 days whether the change is approved. If approved, the change shall constitute an amendment of the Plan.

4. Coordination with Regional Conservation Efforts

As other subarea and subregional Plans are prepared and implemented under the NCCP program in San Diego County, the following measures will be implemented:

- A. To the extent reasonable and feasible, the City will coordinate establishment and management of the preserve system within Carlsbad with adjacent jurisdictions;
- B. As described in detail in Section D, the City has identified and will cause to be conveyed offsite mitigation lands for the FLCA HCP in locations that contribute to regional significant biological resources;
- C. The City will continue to participate in the MHCP and NCCP planning process;
- D. The City will ensure that implementation of the HMP does not preclude conservation of regionally significant biological resources; and
- E. The City will consider participation in any regional efforts to secure funding for habitat acquisitions and management from public and private sources. The City's participation in any regional funding effort or proposal will be subject to the limitations stated in the Implementation Agreement.

5. Additional Implementation Measures

In order to further Plan implementation, the City will accomplish the following:

- A. Record keeping. Record keeping will consist of maintaining current records of progress made toward meeting citywide conservation goals; actual conserved habitat within the preserve network, habitat removed by HMP covered projects; and incidental taking of gnatcatchers and any other listed species. The City will maintain its Geographic Information System (GIS) database of biological resources, updating it annually and providing the agencies with the update information. This information shall be provided both in a locational (spatial) format as well as a data (tabular) format.
- B. Annual review. An annual meeting will be held between the City, USFWS and CDFG to monitor HMP implementation, discuss pertinent issues, and coordinate activities relating to overall preserve system monitoring, maintenance and planning. At this annual meeting, the City will report on projects approved during the preceding year and progress made toward meeting HMP conservation goals. Items to be considered in the review include, but are not limited to, any and all contributions toward the preservation of habitat lands through mitigation land donations, land acquisitions, and management activities undertaken or proposed on habitat lands. The City will not be subject to any annual, quantitative habitat preservation requirement, given the uncertainties created by economic and land development fluctuations, which may dictate schedules for capital improvement projects. Should the agencies determine that overall progress is inconsistent with the HMP, they will work cooperatively with

the City to assure that satisfactory overall progress is achieved as quickly as possible. Actions to improve progress could include redirected conservation, management, and acquisition activities, provided that the changes are within the scope of the approved HMP.

Preserve Management Plan. The City will prepare a Preserve Management Plan, which addresses in detail implementation of the recommendations contained in Section F of the HMP (Preserve Management). The Plan shall be completed in two phases as follows. Phase 1 shall be completed within one year of approval of the HMP and shall include at a minimum:

1. A detailed fire management plan for preserve areas including permissible brush clearance and fuel reduction zones;
2. Standards for recreational use of the preserve system and mechanisms to ensure the standards are enforced;
3. The timing of ongoing status reports for review by the wildlife agencies;
4. Identify and prioritize areas for exotic species control.

Phase 2 shall be completed within three years of approval of the HMP and shall include:

1. Identify and prioritize preserve areas needing erosion control;
 2. A detailed plan to implement zone-specific preserve management recommendations. This plan shall also review the feasibility of providing undercrossings and/or bridges in certain zones where major roads cross linkage areas. It is recognized that this could add to the cost of these public improvements and the effectiveness of an undercrossing or bridge needs to be weighed against the additional costs.
 3. The proposed entity that will provide permanent, long-term management of the preserve system and the need for a preserve manager.
- C. Educational Program. Once the HMP is approved by the Wildlife Agencies, the City shall institute a proactive educational program to inform current and new citizens, schools, the business community, and environmental groups about the Plan, including the importance of future management and ongoing maintenance of the preserve system.

6. Financing

It is not anticipated that the HMP will require any public acquisition of privately owned habitat lands within the City unless the City chooses to acquire land or mitigation credits to provide additional mitigation for public facility projects. Funding associated with implementation of the Plan will be necessary and consists of the following components:

- A. MHCP Core Area Participation. The City has agreed to effectuate the conservation and conveyance of 307.6 acres of land in the MHCP core area to satisfy its participation in this area and fulfill the responsibilities associated with the Fieldstone HCP. Funding for the land acquisition required for the City's participation include the following:
1. Bank of America obligation - As part of the Fieldstone HCP, the Bank of America is obligated to provide \$1 million in funding at the time they develop the northwest portion of the Villages of La Costa. They have agreed to provide the funds at this time to be used for acquisition in the MHCP core area.

2. Fieldstone HCP reimbursement to the City - The Fieldstone HCP required Bank of America to reimburse the City \$150,000 for work on the HCP. The City is proposing to use these funds for acquisition in the core area.
3. Rancho Carrillo Mitigation Funds - The developers of the Rancho Carrillo Master Plan were required to pay \$500,000 for future offsite acquisition to mitigate for impacts to habitat associated with their project. Both the wildlife agencies and the City have agreed to use these funds for acquisition in the MHCP core area.
4. Municipal Golf Course Mitigation - The City has agreed to acquire 51.6 acres of land in the MHCP core to provide for a portion of the mitigation requirements for construction of its municipal golf course.
5. Habitat In Lieu Mitigation - Remaining funding needed to obtain a total of 307.6 acres in the MHCP core area could be generated through the establishment of a Habitat In Lieu Mitigation Fee within the City of Carlsbad. This fee can be justified for two reasons:
 - ◆ In the biological analyses of the Gnatcatcher and other species, the wildlife agencies have indicated that conservation of an additional 200 to 300 acres of high quality habitat is necessary for the City to obtain approval of the HMP. This additional conservation could have been achieved through a higher level of onsite preservation on properties within Carlsbad. However, the opportunities for accomplishing this objective in Carlsbad are limited by many factors, including variations in habitat quality, existing take agreements, high land costs, and public facilities needs. For this reason, the City and the wildlife agencies agreed that the additional 200 to 300 acres of high quality habitat could be conserved outside of Carlsbad, within an area that has been identified as a Core Area for Gnatcatchers and a critical linkage between conserved habitat areas in Carlsbad and adjacent jurisdictions. The City will incur substantial costs to conserve 296 acres within the Core Area. Without the acquisition of this additional acreage, it is unlikely that the HMP would have been approved.
 - ◆ The City has incurred significant costs in preparing and approving the HMP. These costs are conservatively estimated to be in excess of \$750,000 in consultant costs and an unquantified amount in staff time. A portion of this cost is of benefit to the citizens generally, and it is reasonable for the City to absorb that portion of the costs. However, approval of the HMP also provides a benefit to persons who own or develop vacant land by addressing in a comprehensive fashion issues related to endangered/threatened species and wildlife. If the City had not prepared the HMP, individual developers would have been required to obtain their own federal and state permits to take species listed as endangered or threatened. Without a comprehensive plan such as the HMP, the permitting process would likely be significantly more expensive, lengthy, and uncertain. In addition, it would have been necessary for developers to address impacts to species and habitats in conformance with the California Environmental Quality Act (CEQA). Without the HMP, it would be more difficult to deal with the cumulative impacts to wildlife.

Although the exact amount of the fee has not yet been approved by the City Council, the necessary studies and analysis of the fee have been conducted. In order to completely fund the acquisition and maintenance of the previously described land in the MHCP core area, which has not already been funded through other agreements, the per-acre in-lieu mitigation fee is estimated to be \$800 for agriculture, disturbed and eucalyptus (Group F Habitat), \$4,000 for grassland (Group E Habitat) and \$8,000 for coastal sage scrub (unoccupied by gnatcatcher) and chaparral (Group D Habitat).

The fee will be administered according to the following rules:

1. The fee will be required in addition to any mitigation required of a project by the HMP or CEQA.
 2. The fee will be calculated on a per acre basis according to the mitigation ratios contained Table 11, (page D-95) for habitat impacted and not conserved onsite. Only Habitat Groups D, E and F as shown in Table 11 shall be eligible to pay the fee for impacted habitat. Groups A, B and C shall be subject to offsite mitigation for impacted habitats according to the ratios contained in Table 11.
 3. Habitat Group F on Table 11 (disturbed lands, agriculture lands, and eucalyptus) Although it will be necessary to conduct the fee study required by AB 1600, based on staff's initial analysis, staff anticipates the fee for impacting disturbed habitat/agriculture land should be set at no more than \$500 per acre.
 4. The fee will not be assessed against any parcel that has been graded pursuant to a valid grading permit within the past five (5) years.
 5. The fee will not be required where at least 67% of the habitat on a property or project is being conserved.
 6. The fee will be calculated and collected at issuance of Grading Permit.
- B. Preparation of a Preserve Management Plan. As described in Section E of the HMP, the City will prepare a two-phased Plan to provide detailed implementation measures regarding management of the preserve system. The cost of the Plan is estimated to be \$50,000 and be completed within one year of permit issuance. The cost of phase two of the Plan is also estimated to be \$50,000, and will be completed within three years. California Department of Fish and Game has approved a grant to the city in the amount of \$60,000 to assist in the preparation of both phases of the management plan.
- C. Education Program. After approval of the HMP, funds may need to be budgeted from the General Fund to support a proactive education program.
- D. Habitat management. Habitat management and monitoring will be provided primarily by the fee owner of the conserved habitat (e.g., the City will be responsible for management of City-owned lands in the preserve system; owners of conservation banks will be responsible for management of those lands; owners of habitat conserved in conjunction with development will manage those areas). The specifics regarding habitat management are contained in Section F of the HMP. It is estimated that management of the preserve lands will not exceed \$75.00 per acre per year over the life of the HMP. The Preserve Management Plan may recommend one public entity to maintain and manage the entire citywide preserve system.
- E. Program administration. Administrative and technical tasks for program administration include oversight of habitat management and monitoring, review and processing of public and private development projects for compliance with the HMP resources, coordination of public access and passive recreational use of the preserve system, and tracking of developed and conserved habitat and reporting to the wildlife agencies on the status of the Plan. The responsibilities of program administration and clerical support could be combined with those of the City's open space and trails program. If determined to be necessary, a biologist could be retained under a consulting agreement with a qualified firm. It is estimated that the annual cost of program administration would not exceed \$50,000 per year. Funds for program administration could be made part of the Habitat Take Permit Fee.

F. Preserve Management

As an urban preserve plan for wildlife, the HMP will enhance the region's quality of life, providing the Carlsbad community with recreational and educational opportunities while conserving its unique biodiversity and maintaining populations of sensitive resources. To succeed in these goals, the HMP will require management practices and some land use restrictions on conserved lands that give special consideration to the interface between developed lands and open space. Adaptive management measures and good land use planning will minimize impacts to individuals or populations of covered species from development abutting the preserve.

1. Interim and Permanent Management

The HMP preserve system will be assembled over time as the City of Carlsbad builds out. Thus, there is a need for interim arrangements to manage existing conserved habitat areas, as well as arrangements for management of the completed preserve system in perpetuity.

Interim management will cover the first three years following approval of the HMP. Management activities will generally be the responsibility of the owners of the conserved lands unless other arrangements have been provided. For example, the City of Carlsbad will manage City-owned conserved lands, and private property owners will manage their conserved lands.

During the three year interim period, a plan for permanent management will be developed by the City in cooperation with existing reserve managers, private owners of conserved lands, and the wildlife agencies. The permanent management plan will seek to consolidate existing long-term funding sources for management and may establish new funding sources. An example of a new funding source would be endowments funded by private development projects that involve impacts to habitats.

The conserved lands within the HMP will be owned and managed by various public and private entities. For many of these properties, management funding and arrangements are already in place. Although these individual ownerships and/or management arrangements may later be delegated to a unified management scheme for the HMP or MHCP, the management arrangements described below will remain in place at least on an interim basis. In some cases, such as land owned by the State of California, the arrangements described below and as shown on Figure 31 are likely to be the permanent ownership and management arrangements.

A. STATE OF CALIFORNIA

The State of California owns a significant amount of land under a number of agencies and departments.

- 1) The **University of California** owns the Dawson-Los Monos Reserve which lies partially in LFMZ 15 and partially in the City of Vista. The Reserve is approximately 163 acres in size within Carlsbad. The UC system through its budgetary processes has in the past funded ongoing maintenance and management. Employees or contractors of the UC system carry out actual management activities. Some volunteer labor may also be provided. It is assumed that the UC system will continue to fund such activities and carry out the management function.

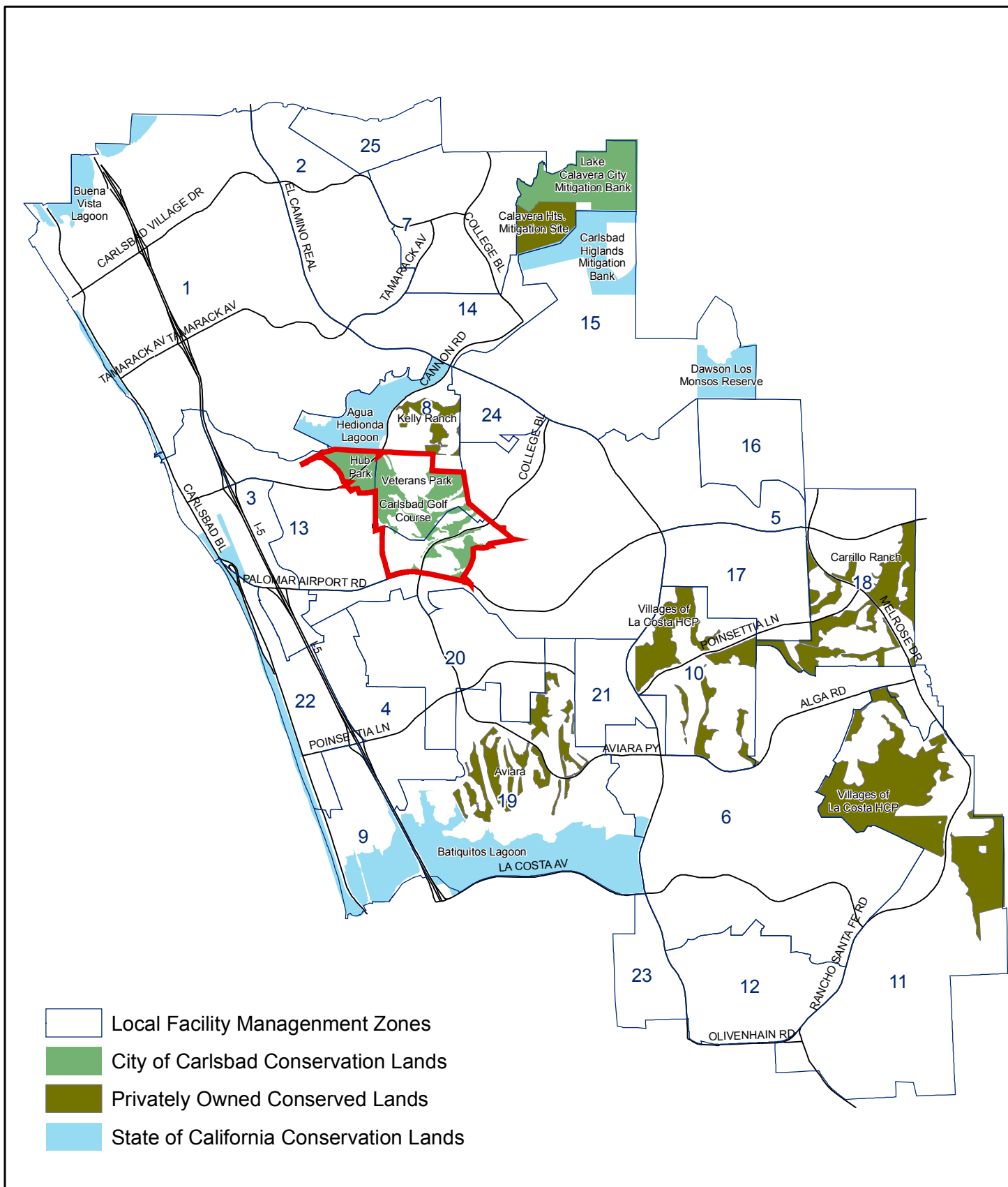


Figure 31
Existing Management
Of Preserve Lands



- 2) The **Department of Fish and Game** owns the wetland area of Batiquitos Lagoon and Buena Vista Lagoon. In addition, there is an irrevocable offer to dedicate approximately 200 acres of wetlands at the eastern end of Agua Hedionda Lagoon to the department. Batiquitos Lagoon was the subject of an enhancement effort funded by the Port of Los Angeles as mitigation for Port construction activities. The Port has established an endowment in the amount of \$8 million to fund ongoing management of Batiquitos Lagoon. No such endowment exists for Buena Vista and a small endowment has been established for Agua Hedionda as a result of Cannon Road. The City will cooperate with the Department of Fish and Game in efforts to assemble adequate and additional endowment amounts for these two lagoons. The Department also owns and manages approximately 180 acres in the Carlsbad Highlands Mitigation Bank. An endowment for management was included in the sale of mitigation credits.
- 3) The **State Parks Department** owns 35 acres along the immediate coastline of Carlsbad, known as South Carlsbad State Beach. Some portions of South Carlsbad State Beach contain Maritime Succulent Scrub or other sensitive habitats, or areas that are potentially restorable. The State Parks Department currently maintains and manages all of its land through funds derived from the state budget. It is assumed that this funding will continue. Employees or contractors of the State Parks Department currently carry out actual management activities, and that arrangement is likely to continue.

B. CITY OF CARLSBAD

The City (or its subsidiary districts) owns several properties that will be part of the HMP preserve system. The properties are described below. Funding for management of all of these properties will be provided through the City's annual budget process. Funding for management is estimated to be \$75 per acre per year, although the funding in any given year may fluctuate due to management needs or the availability of unobligated funds. Prior to preparation of the long term management plan, management activities will focus on maintaining existing habitat values, and will include trash removal, basic access controls, and fire prevention.

- 1) The **Lake Calavera** property is located in the northeastern corner of the City in LFMZ 14. Approximately 266 acres are being placed in permanent conservation as a mitigation bank for City public works projects. Minimal management is currently being provided, funded as part of the operating budget of the Carlsbad Municipal Water District (CMWD), and management activities are currently carried out by employees or contractors of the District. As City projects utilize mitigation credits from this bank, an endowment amount will be deposited in a fund to provide for long-term management.
- 2) Portions of the **Municipal Golf Course** totaling approximately 50 acres have been committed to permanent conservation as part of the HMP. Minimal management activities are currently being provided, funded as part of the operating budget of the Parks Department. Upon construction of the golf course, a higher level of management will begin, with funding provided annually through the City's budgetary process as part of the operating budget for the golf course itself.
- 3) The **Veterans Memorial Park and Hub Park** properties, though not contiguous, can be considered as one unit for management

purposes. Veterans Memorial Park is City owned land. Hub Park is owned by San Diego Gas and Electric (Semptra Energy), and the City holds a long-term lease on the property. Portions of each will be used for active or passive park uses, and approximately 100 acres is being contributed to permanent conservation. Minimal management is currently being provided. Upon approval of the HMP, a higher level of management will be provided. Upon construction of park improvements, the full management program will be instituted. Funding will be provided through the City's annual budgetary process for the Parks Department.

C. PRIVATELY OWNED CONSERVED LANDS

- 1) **Villages of La Costa.** This property, formerly owned by the Fieldstone Company, is covered by a Habitat Conservation Plan that was approved in 1995. That HCP addresses management provisions, and the reader is referred to that document for further detail. (Fieldstone HCP Implementing Agreement Section V.) In summary, management activities are currently limited in scope and are the responsibility of the property owner. At the time of the first development impacts within the plan area, the conserved lands must be dedicated to an appropriate conservation entity, along with recordation of a conservation easement, and full management activities must commence. An endowment of approximately \$1 million is required to fund management in perpetuity.
- 2) **Calavera Heights Mitigation Property.** In 1993 this approx. 110 acres parcel in northeast Carlsbad was purchased by the developer of Villages Q and T of Calavera Heights as mitigation for the impacts of constructing those two villages. Approximately \$93,000 was deposited with the City to cover startup costs. A mitigation agreement between the City and the developer provides for the possibility of an endowment to cover long-term management (Mitigation Agreement dated March 15, 1993, between the City of Carlsbad and Lyon/Copley Carlsbad Associates). In 1998 the developer donated title to the mitigation parcel to The Environmental Trust (TET), a local non-profit conservation entity. An Open Space easement in favor of the City has been recorded. Management activities are now being carried out on a limited basis by TET utilizing the startup funding. Provisions for the long-term endowment will be considered within the next 2 years and will be incorporated into the final HMP Management Plan.
- 3) **Aviara Open Space.** The Aviara Master Plan area dedicated approx. 244 acres to permanent conservation. Deed Restrictions have been placed on the conserved areas. Currently, funding and actual management for the conserved areas are provided by the Aviara Master Home Owners Association (Final Maps for CT 85-35, Units A - E; CT 89-37; and CT 92-03). For long-term management, two alternatives are possible. The Master HOA could continue to fund and carry out management, or arrangements could be made between the City and the Master HOA to allow the conserved areas to be managed as part of the unified HMP management program, should one be developed.
- 4) **Rancho Carrillo Open Space.** This Master Plan dedicated approx. 182 acres to permanent conservation. Open Space easements in favor of the City have been recorded. Currently, funding and actual

management for the conserved areas are provided by the Rancho Carrillo Master Home Owners Association (Final Map for CT 93-04). For long-term management, two alternatives are possible. The Master HOA could continue to fund and carry out management, or arrangements could be made between the City and the Master HOA to allow the conserved areas to be managed as part of the unified HMP management program, should one be developed.

- 5) **Kelly Ranch Open Space.** This recently approved major project will dedicate significant conserved lands to the preserve system. Approximately 200 acres of wetlands is the subject of an irrevocable offer of dedication in favor of the California Dept. of Fish and Game, as described previously on Page F-5. However, no funding for management was attached to that offer of dedication. In addition, approx. 53 acres of upland habitats will be committed to permanent conservation. Minimal management is currently occurring. Prior to commencement of grading, an open space easement over the conserved lands will be dedicated to the City. Funding for management of the conserved uplands will be provided by the Kelly Ranch Master HOA (Tentative Map CT 97-16 and Final Map CT 96-07). For long-term management, two alternatives are possible. The Master HOA could continue to fund and carry out management, or arrangements could be made between the City and the Master HOA to allow the conserved areas to be managed as part of the unified HMP management program, should one be developed.

2. Management and Monitoring Actions

This section provides a framework for consistent and coordinated management of the current and future preserve areas. Management goals specific to each local facilities management zone are also provided at the end of this section. Area-specific management directives will be developed in accordance with this framework plan and the zone-level goals to address management issues at the site-specific level. Area-specific management directives will be prepared as lands are conserved and incorporated into the preserve and will include any species-specific management required as conditions of the take authorizations.

This framework management plan generally addresses the following management actions:

- Habitat restoration and revegetation
- Hydrology and flood control
- Recreation and public access
- Species reintroduction
- Enforcement
- Adaptive management
- Monitoring

Management on some of the preserve areas will be minimal, consisting primarily of enforcing land use restrictions, such as off-road vehicle restrictions, no-hunting regulations, and other existing ordinances or regulations. Some of the smaller, more fragmented preserve areas may require more active management to achieve their biological potential as part of the preserve system. The majority of the preserve is currently constrained by adjacent development and disturbed habitat areas. Some of

these areas will require active habitat restoration or enhancement to protect or improve their value as habitat linkages and wildlife movement corridors.

A. Habitat Restoration and Revegetation

Management Issues

Restoration is the process of re-establishing or enhancing historic biological functions and values to degraded habitats. Restoration methods range from active revegetation to passive management. Generally, labor-intensive restoration methods involving active landscaping take less time to achieve biological goals but at greater cost than more passive management techniques, such as fencing to limit further disturbance.

Active revegetation and restoration projects rely on techniques that encourage natural regeneration or use intensive horticultural methods such as planting, seeding, transplanting, and salvaging. The source of seeds and plants used for such projects has tremendous genetic implications. Non-local planting stock can introduce novel, undesirable, or maladapted genotypes into the ecosystem. Use of non-local stock may also result in mortality or problems with growth and reproduction. Thus, active restoration programs should use propagules from sources close to the restoration site.

Management Recommendations

Although large scale restoration projects are not planned nor required by the HMP, restoration is necessary to enhance linkages and disturbed habitats and should include reintroduction of native species and eradication of nonnative ones. Project-specific mitigation plans should identify where restoration is most needed. Appendix C identifies restoration priorities based on the need for connectivity, territory size, and the potential to enhance habitats of sensitive species. Restoration feasibility should be based on an assessment of the level of effort required, costs, access, physical factors, biological conditions, and adjacent land uses.

Restoration plans should be prepared where active revegetation methods are proposed, with formal construction documents and seed and plant procurement specifications. Propagules should be utilized only from sources near the restoration site. Site protection, irrigation, and maintenance standards should be specified, along with monitoring, success criteria, contingency measures, and exotic species removal to ensure that restoration is successful.

Where revegetation is proposed as part of a project-specific mitigation plan, a detailed restoration management plan should be prepared according to the following guidelines:

- 1) **Evaluate Restoration Needs and Feasibility**
 - Identify and prioritize potentially restorable areas based on HMP conservation objectives (see also Appendix C).
 - Evaluate potentially restorable areas based on the level of effort and cost needed to restore them as functional habitat. Cost estimates should include implementation and monitoring efforts.

- Assess existing site quality, site access, adjacent land uses, difficulty of achieving restoration goals, and cost of available restoration techniques appropriate to the site conditions.
- Assess the physical factors of the restoration sites, including topography, slope, aspect, elevation, drainage, soils, hydrologic regime, and climatic regime.
- Assess existing biological conditions, past management practices, and sources of disturbance.
- Collect reference data from an adjacent or nearby habitat in good condition to serve as a planning guide and as a subsequent comparison with monitoring data from the restoration site.

2) Develop Mitigation Plans for Proposed Restorations

- Develop a conceptual mitigation plan, followed by formal plans and specifications for those areas in which active revegetation methods (installation or maintenance) are proposed. Identify restoration goals and objectives, restoration design criteria, project management and implementation responsibilities, scheduling constraints, planting materials, equipment constraints, evaluation criteria, and remedial measures. Most restoration plans will be a combination of long-term management changes combined with more active landscaping where feasible.
- Develop formal construction documents that address the specific responsibilities and authorities of applicable personnel (e.g., the land manager, contractors, monitors, etc.). Specifications should include all pertinent conditions, coordination requirements, schedules, warranty periods, protected areas, and restricted activities. These plans will be installed by a registered landscape contractor or a qualified ecological restoration specialist, whichever is most qualified, although volunteer help may be used if correctly supervised.
- Specify seed and plant procurement procedures at least a year in advance of actual planting. Do not allow species substitutions unless approved by the project restorationist. Integrate genetic conservation considerations (Center for Plant Conservation 1991; Brown and Briggs 1991) into procurement specifications.
- Require exotic plant control and debris removal prior to restoration planting and during establishment of the plantings. Exotic plant control specifications should describe techniques, target species, safety precautions, and compliance with laws and regulations. Such specifications must be developed by a licensed pest control advisor if chemical controls are recommended.
- Utilize mycorrhizal fungi, where appropriate. A mutualistic relationship exists between plant roots and mycorrhizae. Certain plant species benefit from increased ability to take up nutrients and withstand drought when mycorrhizae are present. Site disturbances, especially the removal or disturbance of the top soil layers, can cause mycorrhizae to die out on a site. Weed invasion can further lower

mycorrhizal presence in the soil. Mycorrhizal inoculation of the soil will reintroduce the fungi to sites where it has been lost. Such inoculation can be accomplished through planting inoculated container plants or the introduction of litter, duff, or soil from an infected site. The best source of mycorrhizal fungi is salvaged topsoil taken from an infected site, although the fungi can be killed if the soils are stored improperly. Topsoils may also contain other essential ecosystem components such as humus and soil fauna.

- Specify irrigation necessary to establish restoration plantings. Irrigation operation specifications should also include system maintenance and coverage monitoring. Irrigation of restoration projects differs from conventional landscaping where irrigation is provided indefinitely. In restoration projects, the goal is to aid plant establishment to the point that the plants become self-sufficient on natural sources of precipitation. Some types of restoration may not need irrigation.
- Delineate site protection measures both during construction and afterward during the establishment period. Protection may include the use of fences, flagging, signs, trails, patrols, and other barriers. Protection of the site often requires management of offsite resources and contaminants, drainage, exotic plant species, vandalism, and trash.
- Establish maintenance standards to ensure restoration success. Intensive maintenance at least once a month during the first two years after planting is usually required and may include irrigation, weed control, debris removal, replanting, reseeding, staking, erosion control, fertilization, pest control, and site protection. Maintenance should be conducted until the plants have demonstrated that they can sustain themselves (generally 3-5 years) without significant maintenance such as irrigation or weeding.

3) Develop a Monitoring Program

- Monitoring program will be developed in consultation with Fish and Game and the Fish and Wildlife Service to be consistent with other NCCP monitoring plans.
- Where any active revegetation is necessary to accomplish restoration goals, provide clearly defined contractor education and construction monitoring programs to ensure proper installation and maintenance and to protect sensitive resources adjacent to the restoration area.
- Establish long-term biological and horticultural monitoring programs following restoration landscaping.

Biological monitoring: Collect field data to assess whether project goals are being met, including species composition, mortality of plantings, cover at different vegetation levels, species distribution and diversity, and wildlife monitoring. Collect similar data from reference sites for comparison.

Horticultural monitoring: Supervise the actions of the maintenance contractor and recommend remedial actions to ensure proper

erosion control, debris removal, weed and pest control, irrigation scheduling and cessation, and protective fencing.

- Specify performance standards by which the restoration will be judged. These are usually developed from a combination of existing reference site data and prior measurements in other restoration endeavors. Design monitoring of restoration sites to supply data to evaluate these standards. Develop remedial measures in advance of project implementation should performance standards not be met.

B. Recreation and Public Access

Management Issues

Public access is appropriate in selected areas of the preserve to allow entry to recreational areas and promote understanding and appreciation of the natural resources. Excessive or uncontrolled access, however, can result in habitat degradation through trampling and erosion (e.g., along trails) and disruption of breeding and other critical wildlife functions at certain times of the year.

Passive recreational activities (e.g., hiking, bird watching) are anticipated within the preserve and are generally compatible with HMP conservation goals. In general, passive activities pose a significant threat to biological resources only when the level of recreational use becomes too intense. Active recreational activities such as picnicking, and mountain biking may also occur in or adjacent to the preserve, if restricted to selected areas, as determined by the Management Plan in consultation with the Wildlife Agencies. These activities are conditionally compatible with biological objectives.

Most active recreational uses require some additional level of development, such as access roads, parking lots, service facilities, maintenance buildings, and landscaping. Construction of these facilities can cause habitat fragmentation and can result in increased traffic, auto emissions, and petrochemical runoff; pesticide and fertilizer runoff; use of invasive nonnative plants in landscaping; use of outdoor lighting; and changes in local drainage patterns. These activities may have adverse impacts to air and water quality as well as wildlife use of the area and should not be sited within the preserve boundaries.

Adverse impacts of off-road vehicle use include reductions in air quality due to automotive exhaust and creation of dust, soil erosion and sedimentation into local waters, noise, and habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. For these reasons, off-road vehicle use is not compatible in the preserve.

Management Recommendations

Although the primary purpose of conserved lands is protection of plant and wildlife species, some types of recreational uses can be appropriate within the preserve system. Recreational uses of the preserve, where allowed, must be consistent with the protection and enhancement of biological resources. Existing recreational facilities should be managed to promote the maintenance of habitat value surrounding these facilities. New recreational facilities or uses will be considered based on the following guidelines:

1) Follow Guidelines for Future Recreational Expansion

- Recognize that conservation is the first priority for the preserve system; new recreational uses can be allowed only where compatible with the conservation objectives.
- Determine appropriate levels of activity within the preserve, depending on the resources to be protected, season, and successional stage.
- Avoid construction or excessive recreational activities on highly erosive soils or implement appropriate erosion control measures.
- Ensure proper drainage of roads and parking areas to prevent erosion.
- Use native species for landscaping at the edges of the preserve, and avoid the use of nonnative invasive plant species.
- Locate roads, trails, and other recreational use areas away from sensitive or high value biological areas.
- Require dust, erosion, and noise controls on new recreational construction.
- Require lighting use restrictions consistent with existing city lighting guidelines within 200 feet of the preserve. Direct lighting in adjacent areas away from the preserve.

2) Develop a Recreation Plan or Review Existing Plans for Compliance

- Identify opportunities and constraints to future recreational use development and for monitoring existing recreational activities that are consistent with biological goals.
- Concentrate facilities in disturbed areas or lower quality habitats away from sensitive plant populations or sensitive breeding areas.
- Develop design standards for new trail construction that address the avoidance of sensitive species, unique habitats, erosion control, and developed access to major features.
- Establish a volunteer program to patrol the trails and monitor use of the preserve.
- Emphasize the use of "fire-safe" native plants in landscaping along preserve edges. Prohibit the use of invasive exotics, and adopt an exotic plant control plan.
- Require any recreational construction projects to control dust, noise, and erosion, and to adhere to seasonal and time-of-day restrictions.

3) Specific Recreational Activities

- Passive Uses

- ◇ Limit or restrict passive uses in critical wildlife areas during the breeding season, as determined appropriate.
- ◇ Minimize adverse effects of passive recreation, such as trampling vegetation and erosion.
- ◇ Provide litter control measures, such as closed garbage cans and recycling bins, at access points for the preserve.
- Day Use
 - ◇ Site picnic areas or other day use facilities at the edges of the preserve lands or in buffer zones.
 - ◇ Collect garbage frequently and instruct day users not to feed wildlife.
- Mountain Biking
 - ◇ Limit mountain bike trails to areas not highly susceptible to erosion and out of wetlands and other sensitive areas.
 - ◇ Construct trails wider than foot trails (minimum 6 feet) to prevent trail edge disturbance and on grades no greater than 25 percent.
 - ◇ Rotate bike use by closing trails periodically to prevent trail degradation if a problem develops.
 - ◇ Construct barriers to restrict access to sensitive areas.

4) Public Access

- Ensure that public access of the preserve is consistent with the protection and enhancement of biological resources. Monitor existing access areas to ensure that they do not degrade or inhibit biological values, and prioritize future access areas for protection of biological resources.
 - ◇ Seasonally restrict access to certain trails if deemed necessary to prevent disturbance of breeding activities.
 - ◇ Close unnecessary trails to minimize biological impacts. Abandon and revegetate steep eroding trails.
 - ◇ Locate new trails away from sensitive resources or restrict their use.
 - ◇ Construct trails to any prominent features or viewpoints that are likely to attract hikers, thereby preventing extensive trampling and compaction.
 - ◇ Install waterbreaks on steep trails to prevent accelerated runoff and erosion.

- ◊ Establish patrols to identify trail maintenance needs, garbage, vandalism, and habitat degradation.

C. Hydrology and Flood Control

Management Issues

Native habitats have evolved based, in part, on the distribution and flow characteristics of water. Key water-related issues potentially affecting the preserve include the magnitude, quality, and duration of flows; episodic disturbances; and sediment transport.

The seasonal and annual variations in the flows of many streams and coastal lagoons have changed over the years as a result of flow regulation, discharge of treated effluents, groundwater pumping, channelization, agricultural and urban runoff, and reservoir construction. Urban runoff and treated effluent discharges can contribute toxic substances to surface waters, and channelization can alter sediment transport regimes which can change certain habitat characteristics and quality.

Episodic disturbance associated with floods, extensive wildfires, or large landslides are characteristic of channels and riparian corridors in coastal watersheds. These events periodically establish new bed conditions and patterns of habitat along drainages. The frequencies and magnitudes of disturbance will often determine the composition and structure of habitats along drainages, and disturbance is integral for maintenance of high wildlife quality in many habitats.

Sediment transport in drainages can be altered by factors such as mineral extraction operations, upland land uses, control structures, channelization, and habitat alteration.

Management Recommendations

- 1) Magnitude, Quality, and Duration of Flows
 - Maintain existing natural drainages and watersheds and restore or minimize changes to natural hydrological processes.
 - Evaluate proposed structures and activities for effects on hydraulics, and implement remedial actions as needed.
 - Use Best Management Practices both within and outside the preserve system to maintain water quality.
- 2) Episodic Disturbances
 - Design construction within and adjacent to preserve areas to accommodate large floods and debris flows.
 - Design detention basins with earthen berms to allow growth of natural vegetation.

3) Sediment Transport

- Prohibit mineral extraction operations within and upstream of preserve areas.

D. Species Introduction

Management Issues

Species reintroduction refers to relocating a sensitive plant or animal species into native habitat within its historic range to enhance species survival. Reintroduction can be costly and is not yet widely conducted or overly successful. Although *in situ* conservation is always more desirable than reintroduction, reintroduction may be the only hope for species on the brink of extinction.

Management Recommendations

Reintroductions will require appropriate federal and state permits and should only be conducted at their recommendation. The decision to reintroduce a species depends on a number of species-specific and site-specific factors, and reintroduction requires detailed planning and monitoring.

E. Enforcement

Issues

Enforcement programs are needed to ensure compliance with land use plans and restrictions, such as zoning, and to ensure that recreational uses are compatible with preserve goals.

Recommendations

Access control and other restrictions within the preserve should be strictly enforced. The City of Carlsbad and preserve managers should work together on a public education program to explain goals and regulations as well as educate the public on the area's resources. The ultimate level of enforcement lies in the implementing agreement with the wildlife agencies, because degradation of resources could result in loss or revocation of federal and state take authorizations.

F. Adaptive Management

The adaptive management approach requires adjusting management activities to reflect changes in the populations or conditions being managed. This requires periodic updating of the information on which management decisions rely. Preserve managers should monitor populations of some covered species on a regular basis to determine their status and trends, and to determine whether remedial actions are necessary.

In addition, the NCCP process and conservation guidelines require periodic surveys of covered species populations and their habitats. These surveys should supplement existing project-specific monitoring activities in Carlsbad, such as at Batiquitos Lagoon. Carlsbad will also participate in the subregional monitoring plan developed as part of the MHCP process. This monitoring effort is expected to be implemented as part of the regional NCCP monitoring program.

G. Monitoring

Monitoring of the performance of the preserve system is important in determining whether management activities are meeting their objectives. It includes methods for assessing the habitat quality of conserved lands, estimating populations of species, and coordinating local data with region-wide data. As with other aspects of the overall management program, there is a need for both interim arrangements and long-term arrangements. Interim monitoring, during the first three years after approval of the HMP, will be limited to annual reporting as described in section E.5. A long-term monitoring component of the Management Plan will be coordinated with other regional monitoring efforts, and will be designed to function as either a stand alone Carlsbad program or a component of the North County MHCP.

3. Adjacency Standards

The HMP will result in an urban wildlife preserve system in which conserved habitat areas are adjacent to development of various types. In order to prevent negative effects of either area on the other, these adjacency standards must be addressed in the planning of any development/habitat interface:

- Fire management
- Erosion control
- Landscaping restrictions
- Fencing, signs and lighting
- Predator and exotic species control

A. Fire Management

Management Issues

Fire management must accomplish two potentially different objectives: (1) achievement of biological resources goals, and (2) hazard reduction for humans and their property. Biological resources goals recognize that fire is a natural process in ecosystems. Many vegetation communities in the study area depend on a regular cycle of burning for maintaining a balance of species, seed viability, and reproduction. The natural fire cycle is affected by human activities, both by increasing fire frequency in some locations and decreasing it in others through fire prevention measures.

Fire management for human safety is one of the City's highest priorities. With proper planning, this can be accomplished in a manner that is compatible with conservation of biological resources. Fire management for human hazard reduction involves providing adequate setbacks for new development from conserved habitat areas, educating the public regarding effective fire prevention methods, reducing fuel loads in areas where fire may threaten human safety or existing development, suppressing fires once they have started, and providing access of fire suppression equipment and personnel.

Management Recommendations

A detailed fire management plan should be prepared by the City so that both biological and safety goals are met. Brush management to reduce fuel and protect urban uses will occur where existing development is adjacent to the preserve. The fire management plan should, to the degree feasible, be

consistent with the recommendations of the Wildland/Urban Interface Task Force. It should:

- 1) Identify potential fuel reduction zones or firebreak locations as well as access routes for fire equipment in the event of wildland fires that pose safety concerns.
- 2) To the degree feasible, site fuel reduction zones, firebreaks, and access routes to avoid sensitive biological resources, preferably at the top or bottom of a slope rather than across a slope. Use existing firebreaks (e.g., natural ridge lines, roads, fire roads) where available.
- 3) In smaller fragmented preserve areas, manage fuel loads primarily for human safety, using mechanical fuel control measures such as chopping, crushing, disking and chaining, removal, and herbicides. Additional methods of value in smaller areas include mowing, trimming, and hand clearing. In general, chopping and crushing are the recommended methods based on biological and fuel reduction values and safety concerns. Crushing with a device called a "sheep's foot" may be an alternative form of fuel control in some situations.
- 4) In larger preserve areas, such as in northeast and southeast Carlsbad (Core Areas 5 and 7), manage both for biological resources needs and for safety considerations. Use prescribed burning, where practical, given safety and cost considerations. Fire management practices should be based primarily on the risks of uncontrolled wild fire in proximity to developed areas.

Where preserve areas are planned adjacent to existing developed areas, the fuel management zone may encroach into the preserve. Where new development is planned, brush management will be incorporated within the development boundaries and will not encroach into the preserve.

B. Erosion Control

Management Issues

Erosion is promoted by the combination of erodible soils, steep slopes, soils with low water-holding capacity, sparse to no vegetation, and hydrologic condition of the soils. Erosion can be aggravated by human disturbance and fire-control activities. Erosion hazards to biological resources include pollution and sedimentation of important water sources and the loss of vegetative cover from landslides.

Management Recommendations

- 1) Identify and Prioritize Areas for Erosion Control
 - Identify areas of moderate to severe erosion within and adjacent to the preserve;
 - Determine causes of erosion; and
 - Rank identified erosion areas according to threats to biological resources. Include an assessment of cost for erosion control measures.

2) **Develop Erosion Control Plans**

- Develop and implement an erosion control plan for high priority erosion control areas. In general, this will include establishing physical features to slow surface flow and dampen initial precipitation impact, and revegetation of eroded surfaces for long-term protection. In steep areas, rock areas, and areas of high storm flow, permanent rock or concrete revetments may be required to stabilize undesirable erosive forces.

3) **Address Slope Stabilization and Surface Drainage**

- Prepare contingency native seeding plans for highly erosive areas temporarily disturbed by fire.
- Prohibit bare surface grading for fire control on slopes. Ensure that all techniques implemented for fire control leave (or replace) adequate vegetation cover to prevent surface erosion.
- Ensure that all areas identified for revegetation are adequately stabilized by either a binder or straw cover after planting to minimize surface erosion.
- Ensure that no new surface drainage is directed into the preserve.

C. Landscaping Restrictions

Management Issues

Landscaping (i.e., the introduction of native or nonnative plant species around developed areas) is often in direct conflict with biological objectives. Of particular concern are (1) the introduction of nonnative, invasive plant species that can displace native species in natural communities; (2) horticultural regimes (irrigation, fertilization, pest control, and pruning) that alter site conditions in natural areas, thereby promoting shifts in species composition from a native to a nonnative flora; and (3) genetic contamination from the introduction of native cultivars not collected onsite or in proximity to the site.

Management Recommendations

Because preserve lands are designated as biological open space, active landscaping should be absent or minimal. However, where problems are anticipated in preserve areas due to landscaping in nearby developed areas, the following guidelines should be followed:

1) **Control Exotic Plant Species**

- Prohibit the use of nonnative, invasive plant species in landscaping palettes in preserve areas or for new public projects immediately adjacent to the preserve. This includes container stock and hydroseeded material.
- Revegetate areas of exotic species removal with species appropriate to the biological goals of the specific preserve area.

- In the Coastal Zone, the use of invasive plant species in the landscaping for developments, such as those identified in Table 12 of the HMP, shall be prohibited.

2) Monitor Horticultural Regimes

- Control irrigation of landscaping material adjacent to the preserve to prevent runoff into the preserve. Irrigation runoff alters conditions in natural areas that are adapted to xeric (dry) conditions, thereby promoting establishment of nonnative plants and displacement of native species. In addition, irrigation runoff can carry pesticides into natural areas, adversely affecting both plants and wildlife.
- Monitor and limit, to the degree feasible, fertilization of ornamental plants on areas draining into the preserve, to reduce excess nitrogen runoff to areas of native vegetation. Excess nitrogen is detrimental to plant mycorrhizal growth and fosters exotic weed invasion. Initiate fertilizer management programs that apply the minimal amount of fertilization required for all public horticultural areas adjoining the preserve.
- Limit ornamental pest control activities adjacent to the preserve, to the degree feasible.

3) Avoid Genetic Contamination

Avoid genetic contamination of native plant species by prohibiting the introduction of cultivars of native species from different geographic regions. If these introductions are similar enough genetically to native species in the preserve, then cross-breeding or hybridization could occur. All stock introduced into the preserve that has the potential for breeding with native species already present onsite should be propagated from material collected in the vicinity. Special attention should be given to the elimination of native plant landscaping cultivars of coastal sage scrub and chaparral species taken from central or northern California locations, or from islands off the coast of southern California.

D. Fencing, Signs and Lighting

Management Issues

Fencing plays an important role in the use of the landscape by humans, domestic animals, and wildlife. Fencing can control human access, particularly off-highway vehicles. Fencing can direct wildlife to road undercrossings and prevent road kills. However, fencing also can restrict normal wildlife movement, restrict access to food and water, and guide wildlife onto roads.

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules of the preserve (campfires, firearms usage, camping, etc.) are most effective at public entrance points. Signs for educational nature trails and on roads near wildlife corridors (to reduce road kills) also should be posted at appropriate locations.

Artificial lighting adversely impacts habitat value of the preserve, particularly for nocturnal species. Therefore, lighting should not be permitted in the preserve

except where essential for roadways, facility use, and safety. Along preserve edges, major highway lighting should be limited to low pressure sodium sources directed away from preserve areas.

Management Recommendations

1) Fencing

- Dismantle existing fencing inside the preserve, except where needed to:
 - ◊ Limit road kills; fencing should be used to funnel wildlife away from at-grade road crossings and toward undercrossings; fencing at wildlife undercrossings should be 10 feet high.
 - ◊ Protect particularly sensitive species or habitats; use perimeter fencing in linkage areas where preserve widths are narrower and there is greater exposure to adverse effects.
 - ◊ Direct human access; limit human access to designated trails using natural vegetation, topography, signs, and limited fencing.
- Design and locate fences within the preserve so they do not impede wildlife movement.

2) Signs

- Provide educational brochures, interpretive centers, and signs to educate the public about the resources and goals of the HMP and preserve.
- Establish signs for access control and education at the periphery of the preserve that are open to human access. Post signs to prohibit firearms and pets.
- Use signs for educational nature trails.
- Limit the use of signs to attract attention to sensitive species, since such designation may invite disturbance of their habitat.
- Use temporary signs to indicate habitat restoration or erosion control areas.
- Use barriers and informational signs to discourage shortcuts.

3) Lighting

- Eliminate lighting in or adjacent to the preserve except where essential for roadway, facility use, and safety and security purposes.
- Use low pressure sodium illumination sources. Do not use low voltage outdoor or trail lighting, spot lights, or bug lights. Shield light sources adjacent to the preserve so that the lighting is focused downward.
- Avoid excessive lighting in developments adjacent to linkages through appropriate placement and shielding of light sources.

E. Predator and Exotic Species Control

Management Issues

Native species are often at a disadvantage after exotic species or nonnative predators are introduced, so special management measures to control exotic species and nonnative predators are recommended. Nonnative plant and animal species have few natural predators or other ecological controls on their population sizes, and they thrive under conditions created by humans. These species may aggressively outcompete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals also prey on small native wildlife species. Agricultural areas, livestock holding areas, and golf courses provide resources for increased populations of parasitic cowbirds, which adversely affect native songbird populations. Litter and food waste from migrant worker camps and picnickers can contribute to an increase in Argentinean ant populations which outcompete native ants, the primary food resource of San Diego horned lizards.

Management Recommendations

1) Feral and Domestic Animal Control

- Document evidence of feral or domestic animal use in the preserve.
- Establish an education program for homeowners regarding responsible pet ownership. The program should encourage (a) keeping pets indoors, especially at night; (b) having pets neutered or spayed to reduce unwanted reproduction and long-range wanderings; (c) bellling of cats to reduce their effectiveness as predators; (d) discouraging release of unwanted pets into the wild; and (e) keeping dogs on leashes when walking them on trails in preserve areas.
- Fence areas between selected areas of the preserve and adjacent housing to keep pets out of particularly sensitive areas.
- Establish a feral animal removal program.

2) Cowbird Trapping Program

- Document and monitor the extent of cowbird parasitism on target species nests in the preserve.
- If necessary, establish a cowbird trapping program to increase nesting success of target species affected by cowbird parasitism.

3) Native Predator Control

- Monitor population levels of selected native predators (bobcat, coyote).
- Institute an educational program to explain the role and necessity of large native predators within the ecosystem and the need to protect them from disturbance.
- If key native predator species (coyote, bobcat) are extirpated from the preserve, initiate a program to control mesopredators (gray fox, skunks, raccoon, and opossum).

4) Exotic Plant Control

Prioritize areas for exotic species control based on aggressiveness of invasive species and degree of threat to the native vegetation.

- Eradicate species based on biological desirability and feasibility.
- Use an integrated pest management approach, (i.e., use the least biologically intrusive control methods, at the most appropriate period of the growth cycle, to achieve the desired goals).
- Consider both mechanical and chemical methods of control. Only herbicides compatible with biological goals should be used. Only licensed pest control advisers are permitted to make specific pest control recommendations.
- Properly dispose of all exotic plant materials that are removed from preserve lands (e.g., in offsite facilities).
- Revegetate exotic weed removal areas with species appropriate to biological goals.

5) List of Invasive Exotic Plants

The following is a list of invasive exotic plants occurring or potentially occurring in the City of Carlsbad.

Table 12

INVASIVE EXOTIC PLANTS
Occurring or Potentially Occurring in the City of Carlsbad

Scientific Name	Common Name	Comments
<i>Acacia</i> spp.	Wattle, acacia	Invades wetlands
<i>Ageratina adenophora</i>	eupatory	Invades coastal canyons
<i>Agrostis avenacea</i>	Pacific bent grass	Invades vernal pools
<i>Agrostis stolonifera</i>	creeping bentgrass	Invades wetlands
<i>Ailanthus altissima</i>	tree of heaven	Invades wetlands
<i>Ammophila arenaria</i>	European beachgrass	Invades coastal dunes
<i>Anagallis arvensis</i>	scarlet pimpernel	Invades wetlands and uplands
<i>Aptenia cordifolia</i>	red apple iceplant	Invades uplands and wetlands
<i>Atriplex semibaccata</i>	Australian saltbush	Invades coastal grasslands, scrub, and marsh
<i>Atriplex glauca</i>	saltbush	Invades uplands
<i>Arcotothera calendula</i>	Capeweed	Invades uplands and wetlands
<i>Arundo donax</i>	giant reed	Invades riparian areas
<i>Asclepias</i> sp.	Milkweed	Common weed
<i>Avena barbata</i>	slender wild oat	Non-native grass; invades grasslands
<i>Avena fatua</i>	wild oat	Non-native grass; invades grasslands
<i>Bassia hyssopifolia</i>	bassia	Invades alkaline habitats
<i>Brassica nigra</i>	black mustard	Common weed in uplands
<i>Bromus</i> spp.	Brome grasses	Non-native grass; invades grasslands
<i>Carpobrotus edulis</i>	ice plant	Invades coastal communities
<i>Centaurea melitensis</i>	toçalote	Invades grasslands
<i>Chenopodium ambrosioides</i>	Mexican tea, goosefoot	Common wetland weed
<i>Chrysanthemum</i> sp.	Daisy	Commonly invades uplands and wetland edges
<i>Cirsium arvense</i>	Canada thistle	Invades riparian areas
<i>Cirsium vulgare</i>	bull thistle	Invades riparian areas, marshes, meadows
<i>Conium maculatum</i>	poison hemlock	Mainly in disturbed areas
<i>Conyza canadensis</i>	horseweed	Invades uplands
<i>Cortaderia jubata</i>	Andean Pampas grass	Invades coastal habitats
<i>Cortaderia selloana</i>	Pampas grass	Invades coastal habitats/wetlands
<i>Cotula coronopifolia</i>	brass buttons	Invades wetlands
<i>Cynara cardunculus</i>	artichoke thistle	Invades grasslands and uplands
<i>Cynodon dactylon</i>	Bermuda grass	Invades wetlands and uplands
<i>Cyperus involucratus</i>	African umbrella-plant	Invades wetlands
<i>Cytisus scoparius</i>	Scotch broom	Invades coastal scrub, oak woodlands
<i>Delairia odorata</i>	Cape ivy	Invades coastal and riparian areas
<i>Eucalyptus globulus</i> & other species	Tasmanian blue gum / eucalyptus	Spreads in riparian areas, grasslands, moist slopes
<i>Erodium</i> spp.	Filaree	Common weed
<i>Ficus carica</i>	edible fig	Invades riparian woodlands
<i>Foeniculum vulgare</i>	fennel	Invades grasslands, roadsides

Scientific Name	Common Name	Comments
<i>Gastidium ventricosum</i>	nit grass	Invades vernal pools
<i>Hedera canariensis</i>	Algerian ivy	Invades wetlands
<i>Hedera helix</i>	English ivy	Spreads in riparian areas
<i>Hordeum spp.</i>	Barley	Non-native grass; invades grasslands
<i>Hydrilla verticillata</i>	hydrilla	Invades wetlands
<i>Hypochaeris glabra</i>	smooth cat's ear	Common weed
<i>Lactuca serriola</i>	prickly or wild lettuce	Invades wetlands
<i>Lepidium latifolium</i>	perennial pepperweed	Invades marshes
<i>Lolium spp.</i>	Rye	Non-native grass; invades grasslands
<i>Lonicera japonica</i>	Hall's honeysuckle	Invades wetlands
<i>Medicago sp.</i>	Black medic	Invades uplands
<i>Melilotus spp.</i>	Sweet-clover	Invades wetlands and uplands
<i>Mesembryanthemum crystallinum</i>	crystalline ice plant	Invades coastal bluffs, scrub and grasslands
<i>Myoporum laetum</i>	myoporum	Invades wetlands
<i>Myriophyllum aquaticum</i>	parrot's feather	Invades streams, lakes, ponds
<i>Nicotiana glauca</i>	tree tobacco	Invades wetlands
<i>Pennisetum clandestinum</i>	Kikuyo grass	Non-native grass; invades grasslands
<i>Pennisetum setaceum</i>	fountain grass	Invades grasslands, roadsides
<i>Phalaris aquatica</i>	Harding grass	Invades coastal sites
<i>Phragmites communis</i>	Reed	Invades brackish wetlands
<i>Piptatherum miliaceum</i>	smilo grass	Invades wetlands
<i>Plantago sp.</i>	Plantain	Invades wetlands and uplands
<i>Polypogon monspeliensis</i>	annual beard grass/rabbit's foot	Invades vernal pools
<i>Reama monsperma</i>	bridal broom	Invades coastal scrub, oak woodland
<i>Ricinus communis</i>	castor-bean	Invades coastal riparian and upland habitats
<i>Rorippa nasturtium-acuaticum</i>	water cress	Invades wetlands
<i>Rubus discolor</i>	Himalayan blackberry	Invades riparian areas, marshes, oak woodlands
<i>Salsola iberica</i>	Russian thistle	Invades wetlands and uplands
<i>Senecio mikanioides</i>	German ivy	Invades wetlands
<i>Schinus molle</i>	Peruvian peppertree	Invades wetlands
<i>Schinus terebinthifolius</i>	Brazilian pepper	Invades riparian areas
<i>Sonchus spp.</i>	Sow thistles	common weed
<i>Spartium junceum</i>	Spanish broom	Invades coastal scrub, oak woodland; roadcuts
<i>Tamarix spp.</i>	Tamarish, salt cedar	Invades riparian areas
<i>Tropaeolum majus</i>	garden nasturtium	Invades wetlands
<i>Vivia villosa</i>	hairy vetch	Invades wetlands and uplands
<i>Vinca major</i>	periwinkle	Invades riparian areas, oak woodlands
<i>Washington filifera</i>	fan palm	Invades wetlands
<i>Xanthium strumarium</i>	cocklebur	Invades wetlands

4. Institutional Arrangement and Guidelines for Habitat Management

Roles and responsibilities for management of conserved habitat will be specified in the Implementation Agreement. In general, management of conserved habitat within the preserve system will occur through a combination of existing institutional arrangements for public lands and existing reserves and arrangements identified for lands added to the system over time. To assist with and coordinate day to day management of conserved habitat, the City will select or form an entity for that purpose. The City may also request technical assistance or seek advice on specific issues from other parties with expertise in those areas. For example, the California Department of Forestry and Fire Protection and the City's Fire Marshal would be consulted regarding fire management and emergency response in areas within and adjacent to conserved habitat. Existing reserve managers (such as the University of California Natural Reserve System) would be consulted regarding habitat management in and adjacent to their reserves.

If regional institutional arrangements for habitat management are established in connection with the MHCP/NCCP planning efforts, some or all of the management activities for the HMP preserve system ultimately could be merged with the regional program.

5. Zone-level Recommendations

This section summarizes preserve management goals and guidelines for each of the City's 25 Local Facilities Management Zones (Zones). These zone-specific goals supplement the general preserve management guidelines presented above, which apply generally throughout the city's preserve system. These zone-specific goals serve to focus overall preserve management based on more site-specific biological conditions by highlighting specific management issues within each zone.

Zone 1

Prepare and implement fire management plans to minimize removal of conserved habitats to the extent feasible, given safety concerns. Use fencing and signs, as necessary, to minimize human intrusion in or near nesting, loafing, or roosting areas for HMP species, such as pelicans, terns, and rails.

Zone 2

Manage preserve areas to increase breeding habitat value for California gnatcatchers. Improve the regional gnatcatcher linkage by restoring grasslands to sage scrub and enhancing gnatcatcher nesting habitat via a habitat enhancement plan. Any conversion of grassland to coastal sage scrub should avoid impacts to narrow endemic species. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of natural habitats to the extent feasible, given safety concerns.

Zone 3

No zone-specific preserve management guidelines.

Zone 4

No zone-specific preserve management guidelines.

Zone 5

Restore or enhance sage scrub habitat within the north-south linkage between Palomar Airport Road and Veteran's Memorial Park. Maintain, enlarge, or create sage scrub patches of sufficient size (minimum 6 acres) and quality, based on site

data and the biology of the species, to support six gnatcatcher breeding territories between Palomar Airport Road and Veteran's Memorial Park. Patches should be contiguous, with no more than 800 feet between any two patches. Any restoration of grassland to coastal sage scrub should avoid impacts to narrow endemic species. Transplantation of any minor narrow endemic populations, not deemed critical populations, may be considered as a management option if onsite preservation is not feasible. Such transplantation shall be done in consultation with the Wildlife Agencies. Said transplantation should be treated as experimental, with detailed monitoring and management plans prepared in advance. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed.

Zone 6

Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, minimizing the removal of natural habitats to the extent feasible, given safety concerns.

Zone 7

Manage preserve areas to maintain and enhance breeding habitat value for California gnatcatchers. Remove exotic plant species, including eucalyptus trees, from within natural habitat areas and linkages. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, minimizing the removal of natural habitats to the extent feasible, given safety concerns.

Zone 8

Restore and enhance coastal sage scrub, southern maritime chaparral, marsh, and riparian habitats. Develop restoration, management, and monitoring plans for sensitive species occurring in these habitats. Create new marsh and wetland habitat by converting disturbed upland habitat where hydrology is appropriate for wetland vegetation. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed. Implement cowbird trapping programs, as needed. Prepare a management and monitoring plan to minimize adverse water quality impacts upstream of the Agua Hedionda Lagoon system. Restrict fuel reduction for fire management to areas immediately adjacent to existing structures, minimizing the removal of natural habitats to the extent feasible, given safety concerns.

Zone 9

Monitor breeding populations of terns, plovers, and sparrows, and continue predator control programs where necessary. Use fencing and signs, as necessary, to minimize human intrusion in or near nesting, loafing, or roosting areas for HMP species, such as pelicans, terns, and rails.

Zone 10

Manage the dedicated biological open space consistent with the Villages of La Costa HCP Guidelines. Develop management and monitoring plans for sensitive species occurring in the conserved areas. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 11

Manage the dedicated biological open space consistent with the Villages of La Costa HCP Guidelines. Develop management and monitoring plans for sensitive species occurring in the conserved areas. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 12

Manage the dedicated biological open space consistent with HMP guidelines. Develop management and monitoring plans for sensitive species occurring in the conserved areas. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed.

Zone 13

Enhance and restore disturbed habitat areas within biological open space with appropriate natural vegetation. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed. Monitor the California least tern, western snowy plover, Belding's Savannah sparrow, and least Bell's vireo populations, and implement predator control programs and cowbird trapping programs where necessary.

Zone 14

Prepare and implement restoration plans to create a continuous and viable habitat linkage connecting Core Areas 3 and 4 (Linkage Area B). The linkage should include a mosaic of natural habitats, such as coastal sage scrub, grassland, and riparian vegetation communities, in a natural configuration that takes into account topography, hydrology, and existing vegetation. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 15

Manage preserve areas for habitat value for California gnatcatchers. Restore or enhance coastal sage scrub to improve connectivity and gnatcatcher nesting habitat within Linkage Area C. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns. Remove exotic plant species, including eucalyptus trees and pampas grass, from within natural habitat areas and linkages.

Zone 16

Manage preserve areas for habitat value for California gnatcatchers and other sage scrub species. Restrict fuel reduction for fire management to areas immediately adjacent to existing development, and minimize removal of conserved habitats to the extent feasible, given safety concerns. Remove exotic plant species, including eucalyptus trees and pampas grass, from within natural habitat areas and linkages.

Zone 17

Restore and enhance coastal sage scrub and riparian habitat to improve habitat connectivity and quality within preserve areas. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns. Remove exotic plant species, including eucalyptus trees and pampas grass, from within natural habitat areas and linkages.

Zone 18

Manage to maintain and enhance narrow endemic plant populations, gnatcatcher nesting habitat, and wildlife movement habitat. Restore or enhance coastal sage scrub to improve connectivity and value as gnatcatcher nesting habitat. Implement exotic species removal measures, if necessary, to protect habitat values against invasive plant species. Restrict fuel reduction for fire management to areas

immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 19

Manage to maintain narrow endemic plant populations and wildlife movement habitat. Restore or enhance coastal sage scrub and southern maritime chaparral. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns. Monitor California least tern, western snowy plover, and Belding's savannah sparrow populations, and implement predator control programs, where necessary.

Zone 20

Manage preserve areas for habitat value for California gnatcatchers and narrow endemic plants. Restore and enhance disturbed areas contiguous with conserved habitats. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 21

Manage preserve areas for habitat value for California gnatcatchers and narrow endemic plants. Restrict fuel reduction for fire management to areas immediately adjacent to existing housing, and minimize removal of conserved habitats to the extent feasible, given safety concerns.

Zone 22

Manage vernal pool habitat to minimize adverse edge effects and maintain/enhance water quality of the pools. Stabilize sensitive species populations by removing impacts or potential impacts, including trampling, vehicular traffic, illegal dumping, collecting, and invasion of non-native plants. Use fencing and signs to restrict human intrusion and educate the public about vernal pool resources. Implement runoff or erosion control measures on adjacent properties, as necessary, to maintain appropriate amounts of water runoff into pool watersheds, while protecting water quality against potential pollutants. Monitor the status of preserved populations to ensure they remain viable.

Zone 23

Manage to avoid edge effects on the natural habitats in this zone. Develop management and monitoring plans for the narrow endemic species and riparian bird species. Implement a fire management program in the southern maritime chaparral, as feasible, and cowbird trapping in the riparian areas, as necessary. Ensure that existing agriculture and future development activities do not encroach on the riparian buffer area. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed.

Zone 24

Develop management and monitoring plans for the narrow endemic species. Manage the coastal sage scrub for gnatcatcher breeding and movement. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed.

Zone 25

Manage riparian habitat to maintain vireo nesting habitat quality. Implement cowbird trapping as necessary. Implement exotic species removal measures, if necessary, to protect habitat values against such invasive species as pampas grass and giant reed. Manage upland areas as California gnatcatcher nesting habitat. Restore and enhance the existing grassland and coastal sage scrub mosaic to increase connectivity of coastal sage scrub patches and improve gnatcatcher nesting habitat

value. Any conversion of grassland to coastal sage scrub should avoid impacts to narrow endemic species.

G. Take Authorization and Assurances, and Provisions for Unforeseen Circumstances

1. Take Authorization and Assurances from Wildlife Agencies

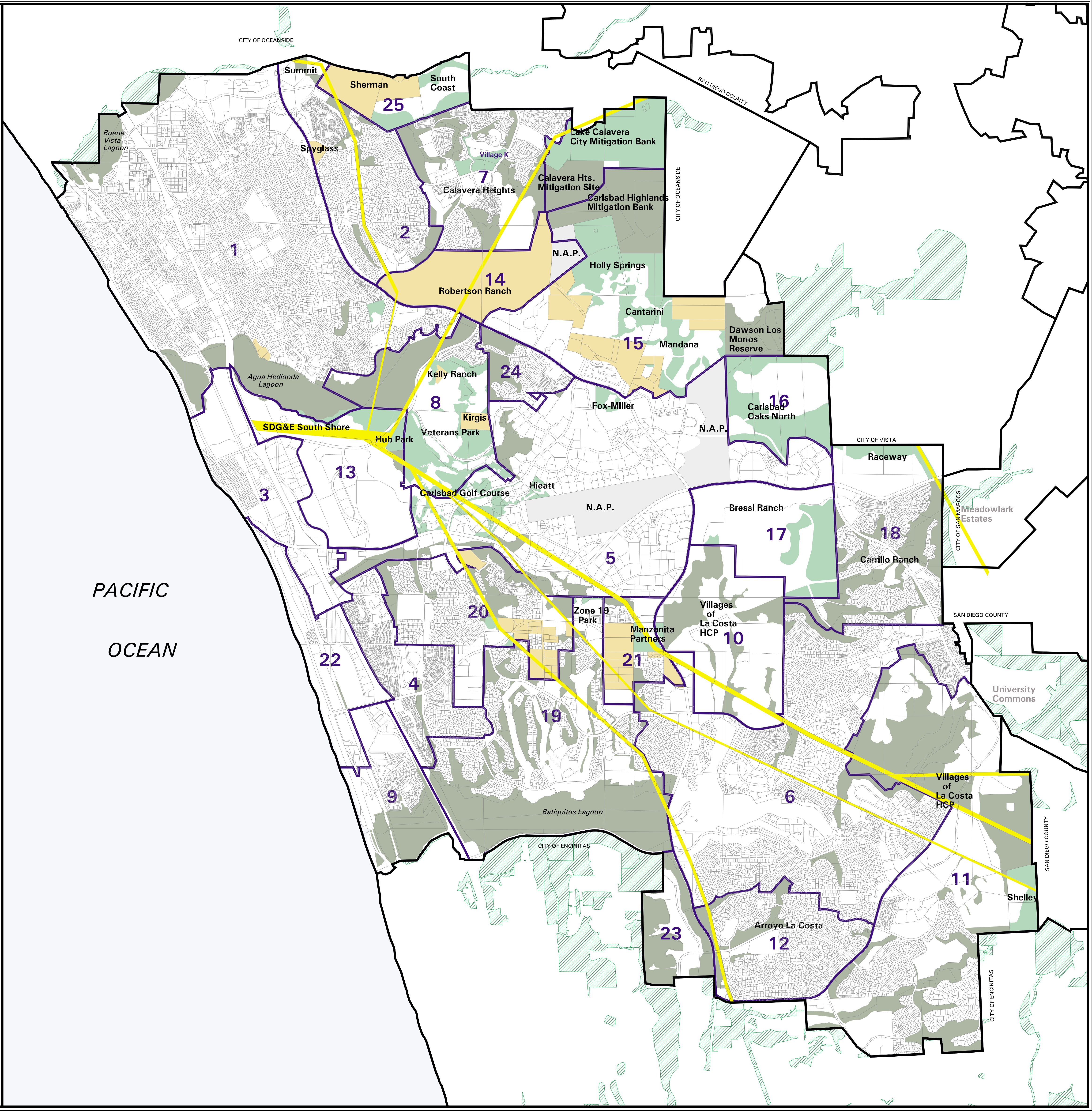
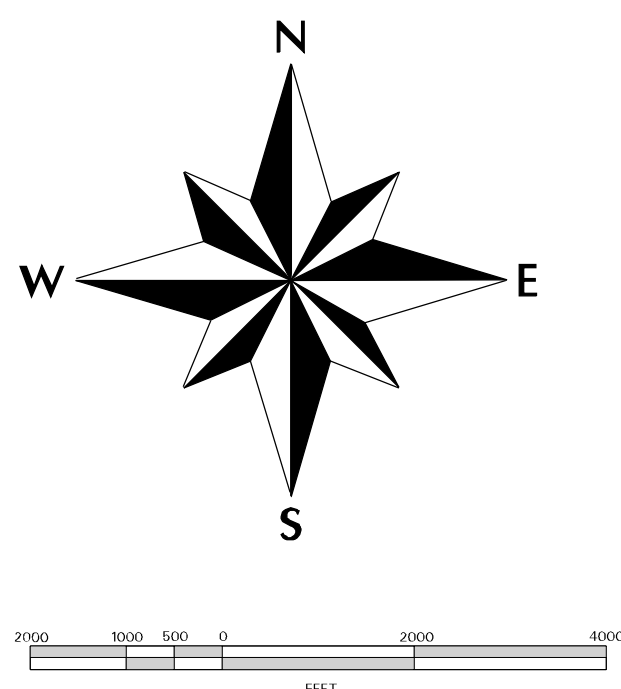
Implementation of the conservation strategy and the HMP by the City is predicated on assurances from USFWS and CDFG regarding authorization for take and approval of mitigation for impacts to HMP species. The authorizations and assurances that the City is seeking will be specified in detail in the Implementing Agreement (IA) that accompanies this HMP. These assurances from the agencies include:

- A. **Take authorization.** Projects covered by the HMP will be allowed to take California Gnatcatchers and the other species included on the HMP species list (Table 2), subject to the measures and conditions contained in Table 9 and Appendix C of the Plan. The justification for this authorization is implementation of the HMP. The specific justification on a species-by-species basis is contained in Appendix C. Take authorization for any species not identified on Table 2 is not being requested or approved at this time.
- B. **Elimination of the cap on CSS impacts.** Upon approval of the plan, the current 5% cap pursuant to the Federal 4(d) rule on CSS impacts will no longer apply to the City of Carlsbad.
- C. **Comprehensive mitigation for impacts.** Implementation of the measures identified in the HMP will be accepted as comprehensive mitigation for all impacts to HMP Covered Species and their habitats, including cumulative or growth-inducing impacts. Wetland impacts and mitigation will be subject to the City's wetland standards contained in Section D of the Plan. USFWS and CDFG will not require the City to commit additional land, additional land restrictions or additional financial compensation for impacts to HMP species beyond that provided in the Plan without the city's consent.
- D. **Other permits.** The authorizations and approvals only cover take of HMP Covered Species and impacts to natural upland vegetation. Other federal and state permit applications are still required for some projects, such as a Section 404 permit pursuant to the Clean Water Act or Section 1601/1603 agreement with CDFG. The HMP requires a no net loss of wetlands. Where such permits or agreements are required, the approved HMP shall be the mitigation program for all impacts to species included on the HMP covered species list (Table 2), however, all impacts to wetlands shall comply with the wetland standards contained in Section D of the Plan. In addition, habitat enhancement or creation measures required of projects under wetland and riparian protection laws will be coordinated with establishment and management of preserve system under the HMP.
- E. **Mitigation for City projects.** Lake Calavera will be utilized for mitigation credit for impacts to City projects consistent with a conservation bank agreement.
- F. **Severability from MHCP.** The Carlsbad HMP is a "stand-alone" plan for the conservation and coverage of the HMP species included on Table 2 of the Plan. The conservation levels for the covered HMP species are not dependent on any other regional or Subarea plan. Because of this and the City's contribution to the MHCP Core-Area as described in Section D of the Plan, the HMP is severable from the MHCP.

CITY OF CARLSBAD

HABITAT MANAGEMENT PLAN - Figure 28

- Existing Hardline Conservation Areas
- Proposed Hardline Conservation Areas
- Proposed Standards Areas
- Not A Part (N.A.P.)
- Development Areas
- SDGE Transmission Corridors
- Focused Planning Areas of Adjoining Jurisdictions
- Local Facility Management Zones



2. Provisions for Changed and Unforeseen Circumstances and "No Surprises" Rule

The HMP has been prepared recognizing that changed circumstances may occur after approval of the Plan. Changed circumstances are those changes affecting a species or geographic area covered by the HMP that can reasonably be anticipated at the time of preparation of the Plan and for which can be planned. Changed circumstances are natural occurrences such as fires, drought or flooding. The HMP has attempted to plan for these occurrences so that they do not result in an adverse change in the status of an HMP species. However, unforeseen circumstances may occur which could not have reasonably been anticipated when the HMP was prepared and which may result in a substantial and adverse change in the status of an HMP species. Unforeseen circumstances are those changes in circumstances which are not "changed circumstances," i.e., those circumstances affecting a species or geographic area covered by an HMP that could not reasonably have been anticipated by the City and the Wildlife Agencies at the time of the HMP development and that result in a substantial and adverse change in the status of a species covered by the HMP. The Services bear the burden of demonstrating that unforeseen circumstances exist, using the best available scientific and commercial data available, and considering certain specific factors.

The No Surprises rule generally provides that, as long as the HMP is being properly implemented, the federal government will not require additional land or money from the permittee in the event of unforeseen circumstances, and that any additional measures to mitigate reasonably foreseeable changed circumstances will be limited to those changed circumstances specifically identified in the HMP (and only to the extent of the mitigation specified in the Plan) without the City's consent.

The Rule has the following two major components:

- (A) Changed Circumstances: if additional conservation and mitigation measures are deemed necessary to respond to changes in circumstances that were provided for the HMP, the landowner will be expected to implement the measures as identified in Subsection 3 below, but only those measures and no others; and
- (B) Unforeseen Circumstances: the Services will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources, even upon a finding of unforeseen circumstances, unless the landowner consents. Upon a finding of unforeseen circumstances, the Services are limited to modifications within conserved habitat areas and the HMP's operating conservation program. Additional conservation and mitigation measures will not involve the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources.

3. Changed Circumstances

Changed circumstances are defined by regulation as "changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the USFWS and that can be planned for." Changed Circumstances to be addressed by the Carlsbad Habitat Management Plan (HMP) as described in this Implementing Agreement (IA) include the following:

1. Fire, occurring in the same location as a previous fire no sooner than three years following nor longer than ten years subsequent to an initial fire, and damaging up to 5 acres of Preserve habitat.
2. Flood events occurring within the Preserve Floodplains associated with the Encinitas, San Marcos, Agua Hedionda, Encinas and Buena Vista Creeks and their associated tributaries, at less than 50-year levels, as determined by the Carlsbad Department of Public Works.
3. Climatic drought up to three years in length, as declared by the California State Department of Water Resources and/or the San Diego County Water Authority.
4. An increase of invasive species within the Preserve to the extent that, as determined by the City in consultation with the Wildlife Agencies, such increase is of sufficient magnitude to significantly, adversely affect any Covered Species.
5. Disease, including West Nile Virus.
6. Listing of Non-Covered Species.

The USFWS and the City agree that the Changed Circumstances defined by this Exhibit to the Implementing Agreement represent all Changed Circumstances to be addressed by Carlsbad. These Changed Circumstances provisions reflect changes in circumstances that can reasonably be anticipated to occur to Covered Species or within dedicated Preserve areas. These Changed Circumstances provisions are not intended to cover the same or similar circumstances outside City jurisdiction nor if they occur within the Carlsbad HMP but outside of the Preserve and where the City has no legal authority to carry out the Planned Responses, nor if they occur within the proposed hard-line Conservation Areas depicted on Figure 6 of the HMP but before the land is lawfully dedicated or conveyed to the Preserve.

Except for the future Listing of a non covered species, each of the defined Changed Circumstances includes an assessment of risk, a description of preventative measures, and a summary of Planned Responses (measures to be undertaken in the case of Changed Circumstances). Preventative measures are those measures that are or will be undertaken by the City to reduce the potential for occurrence of the Changed Circumstances, and/or that reduce the potential for damage to the Preserve resulting from a Changed Circumstance event. Planned Responses are the specific responses that will be undertaken in the event of a Changed Circumstance. Planned Responses will not include any actions beyond those expressly identified in this Exhibit, nor for any event not specifically identified as a Changed Circumstance. Planned Responses will be implemented to the extent that it is possible to do so and remain consistent with the primary goal to prevent harm to the public health, safety and welfare. Planned Responses will be implemented by using the funding sources described in Section 14 of the IA for each of the Changed Circumstances, and only to the extent provided by the identified funding sources.

1. Repetitive Fire

For the purpose of defining Changed Circumstance, Repetitive Fire is defined as fire, occurring in the same location as a previous fire no sooner than three years following nor longer than ten years subsequent to an initial fire, and damaging up to 5 acres of Preserve habitat.

1.1 Risk Assessment

Because fire is a natural feature within the chaparral and coastal sage scrub vegetation communities, under normal circumstances natural re-growth of habitat is expected. However, the Wildlife Agencies have indicated that certain Repetitive Fires within the same location of the Carlsbad Preserve may adversely affect the Covered Species conserved by the HMP as a result of habitat type conversion from existing habitat(s) to invasive or non-native weeds.

USFWS has indicated that if the habitat types prevalent in this Preserve, including coastal sage scrub, maritime succulent scrub and riparian habitat, burn within the same footprint within ten years of the original burn, the fires can adversely hamper natural re-growth and interrupt the ability of the habitat to rejuvenate. After twenty years, habitat types prevalent in the Preserve are expected to be fully re-established and capable of natural regeneration. A "Repetitive Fire" (a fire anticipated to occur and to

create the potential for type conversion) is therefore considered a fire incident which occurs in the same location as a previous fire incident (initial fire) no more than ten years subsequent to the initial fire.

In addition, Carlsbad Fire Department (CFD) officials note that vegetation that has been burned requires approximately five years to grow before becoming a potentially hazardous fuel load. It is therefore not anticipated that Repetitive Fire, if it were to occur, would occur in the same location for at least three-to-five years subsequent to an initial fire. For the purpose of defining Changed Circumstances, the City has determined that a Repetitive Fire occurring within the first three years subsequent to an initial fire is therefore not reasonably anticipated.

The Carlsbad Fire Department has responded to 80 incidents involving fire in brush or wildland areas within the City.

1999	54 fires	Acres burned 16.3	Average 0.3
2000	18 fires	Acres burned 26.7	Average 1.5
2001	4 fires	Acres burned 6.1	Average 1.5
2002	3 fires	Acres burned 1.2	Average 0.4
2003	1 fire	Acres burned 0.5	Average 0.5

As the City has developed much of the wildland interface, the number of fires has been dramatically reduced as reflected in these statistics.

As Carlsbad experiences higher humidity than inland cities, fog and cooler temperatures, the moisture content tends to be higher and temperatures less severe. Higher moisture content and cooler temperatures make large fire incidents greater than 5 acres, rare. In addition, Carlsbad is flanked on all sides by urban development and has built out much of the open space replacing such with commercial and residential development thus also reducing the likelihood of a fire occurring greater than 5 acres in size. Thus, the scope of fire incidents within the Preserve is expected to be much smaller than that of wildland fires in less urban situations.

Because implementation of the HMP will result in larger areas of undeveloped, protected habitat than previously existed within City boundaries, the Carlsbad Fire Chief assessed the potential that future repetitive fire incidents may burn areas greater than five acres before containment, during the life of the permit.

All of the Management Units are primarily surrounded by and often times broken up by urban, residential, and commercial development, limiting the ability of fire to easily spread from area to area. The Calavera, Poinsettia/Aviara and Villages of La Costa Management Units will be the largest contiguous areas of habitat within the City. The Villages of La Costa unit is adjacent to County Preserve land to the east and is the area most vulnerable to fire originating from outside the City with the potential to burn a large area.

Cores 4 and 8 include Agua Hedionda and Batiquitos Lagoons respectively and associated riparian habitats. Moist marsh and riparian vegetation does not represent high-risk fire fuel loads and, in fact, will serve to hinder fire activity in these areas.

Based on review of available data, knowledge of existing fire fuel loads, fire suppression experience and anecdotal information, the Carlsbad Fire Chief has determined that fire damage from Repetitive Fire within the Preserve up to 5 acres is foreseeable during the life of the permit. Damage greater than 5 acres due to Repetitive Fire is not foreseeable and would be considered an Unforeseen Circumstance.

1.2 Preventative Measures

Preventative measures to reduce the likelihood of, or harm from a single fire in the Preserve are included in the adaptive management provisions as specified in the draft Open Space Management Plan and will be more specifically identified in the Fire Management Plans for each Management Unit.

Proximity of Fire Services to Preserve Areas

The Carlsbad Preserve is primarily an urban Preserve that is almost entirely surrounded by urban uses. Although the presence of urban uses may increase the potential for fire incidents, it greatly decreases the potential for large, non-contained fires due to the proximate location of buildings. Additionally, urbanization causes fire department responders to be located closer to the Preserve areas facilitating a rapid response. Rapid response leads to fewer acres burned. The average response time to fire incidents within the City is approximately five minutes.

Brush Abatement Program

In order to further reduce the risk of fire, the City has instituted a weed abatement urban-wildland-interface management program. This program focuses predominately on areas interfacing urban and open space Preserve lands. Through this Preserve urban-wildland-interface fire risk management program, interface areas are inspected annually for fire load and fire risk. Areas determined to be at risk for the spread of fire from open space to structures are ordered abated. Using this program, the City is able to annually implement its urban-wildland-interface management program as it relates to proximity to structures to reduce fire risk in the areas between development and the Preserve.

Fire Management Plan

The City will update its Fire Management Plans (Section 3.1.4 of the Open Space Management Plan) to identify the procedures the City will implement both prior to and during any single fire in the Preserve. The Fire Management Plans will provide that the City will coordinate an emergency notification and response system that will strive to protect the Covered Species and the Preserve, to the extent that it is possible to do so and remain consistent with the primary goal of containing and extinguishing the fire to prevent harm to the public health, safety and welfare. The Fire Management Plans will provide for a triage system that includes notification of the Wildlife Agencies as soon as feasible after the onset of the fire. The Fire Management Plans will also provide for restricted public access to portions of the Preserve in times of severe drought, or whenever the Fire Department determines that a fire hazard may be high.

1.3 Planned Responses to Repetitive Fires

Upon the occurrence of a Repetitive Fire Changed Circumstance as defined by this Exhibit, the City will notify the Wildlife Agencies pursuant to the protocol which will be established by the City's Fire Management Plans. Within 30 days of the Repetitive Fire incident, the City will assess the damage cause by the Repetitive Fire within the Preserve. Depending upon the extent and severity of the fire damage, and as determined by the City, with concurrence of the Wildlife Agencies, the City will take the following action:

Develop and implement a monitoring program to monitor natural re-growth within the damaged area for a period of up to 2 years. The monitoring program will provide for site visits on a regular basis, as determined by the City and the Wildlife Agencies to be appropriate to the scope and severity of the burn. Management of the burned area will emphasize removal of weeds and preventing infestation by invasive species. Should monitoring observations indicate that invasive species control efforts have not been effective and there is an unacceptable level of invasion by exotic species and/or increased potential for type conversion, the Preserve management program in effect at the time will be modified to eliminate the infestation and reduce the potential for such invasion and/or type conversion.

2. Flood

For the purpose of defining Changed Circumstance, Flood is defined as natural rain runoff events occurring within and causing damage to Preserve floodplains associated with the City's four watersheds, Batiquitos, Agua Hedionda, Encinas and Buena Vista, and their associated creeks and tributaries, at less

than 50-year levels, as determined by the Carlsbad City Engineer. Damage to the Preserve due to Flood at greater than a 50-year level is defined as Unforeseen.

2.1 Risk Assessment

The Federal Emergency Management Agency (FEMA) provides local jurisdictions with mapping that defines the areas that may be affected, or inundated, by flood. FEMA typically addresses the 100-year flood event and its consequences for people and structures. A 100-year flood, as defined by FEMA, produces a magnitude of inundation that has a one percent chance of occurring in any given year. A 50-year event is not specifically addressed by FEMA but is often referred to by hydrologists as an intermediary scale of event. The 50-year storm has a 2% chance of occurring in any given year. Both the 100 year and 50 year events are capable of causing significant damage to property through inundation, erosion, and mud flows. However, flooding is a natural event and is not anticipated to cause damage sufficiently severe to prevent natural regeneration of existing habitats within the Preserve.

Information on flooding potentials is available from several sources. FEMA maps on file with the City of Carlsbad Engineering Department identify the 100-year flood zones located within the Preserve. Areas that would be subject to flooding in a 50-year event are not mapped by FEMA but can be generally inferred. These areas primarily follow the creeks which form the watersheds named above, and are essentially confined to natural drainage channels and riparian areas, where water has historically been known to occur.

Information is also available from the County of San Diego's Hydrology Manual dated June 2003, which examines flooding potentials on a regional basis. The City of Carlsbad has a Flood Plain Ordinance (Chapter 21.110 of the Municipal Code), which outlines the requirements for development within floodplains.

With the exception of Encinas Creek, the watersheds within Carlsbad terminate in coastal lagoons or estuaries which are themselves part of the preserve. The City's three lagoons – Buena Vista, Agua Hedionda, and Batiquitos – have direct connections with the Pacific Ocean. Batiquitos and Agua Hedionda Lagoons have permanent openings to the ocean and are therefore primarily saltwater ecosystems. Buena Vista Lagoon has a weir near its mouth, which regulates water level and produces a primarily freshwater ecosystem. Encinas Creek flows directly to the ocean.

These lagoons have significant capacity for receiving floodwaters and transferring them to the ocean without impacts to the lagoon ecosystems. This analysis will therefore look at possible effects upstream from the lagoons. The upstream conditions of the four watersheds differ in several respects, and each is discussed below.

Buena Vista Watershed – Buena Vista Creek is the primary drainage within this basin. It originates in Vista and flows through highly urbanized and disturbed areas before entering Carlsbad. Within Carlsbad it flows through a longstanding rock and gravel processing facility, passing into a largely undeveloped floodplain valley with a well-developed willow riparian corridor. The creek again enters an urbanized zone before entering the Buena Vista Lagoon. The creek receives some runoff from adjacent Highway 78. Portions of the creek are lined or channelized. Major bridge structures exist at El Camino Real, I-5, Carlsbad Boulevard, and the railroad trestle. Culverts exist at other road crossings. Although the topography of the creek valley is relatively gentle, the creek does develop significant flows quantities and velocities during storm events.

Agua Hedionda Watershed – The sources of this basin are Calavera Creek and Agua Hedionda Creek. Calavera Creek originates in Oceanside and enters Carlsbad at Lake Calavera, a man-made reservoir. From the lake, the creek descends steeply to currently agricultural land before entering Agua Hedionda Lagoon. None of Calavera Creek is presently lined or channelized. Agua Hedionda Creek originates in Vista and enters Carlsbad at the Dawson-Los Monos Reserve. There is one tributary known as Little Encinas Creek. The creeks descend steeply through agricultural land until they reach El Camino Real

where they merge and enter the lagoon. The portion of Agua Hedionda Creek passing through Rancho Carlsbad is channelized and a portion of Little Encinas Creek is riprap lined. Major bridge structures are at I-5, the railroad trestle, and Carlsbad Boulevard. Culverts exist at other road crossings. Flood quantities and velocities can be high.

Encina Watershed – This is the smallest basin, originating in Carlsbad near El Camino Real and Palomar Airport Road. Nearly the entire length is urbanized, although some portions support small stands of native riparian vegetation. Portions are channelized. There is significant infestation of Pampas Grass at the western end. Flood quantities and velocities are relatively low. There are no major bridges. The creek outlets to the ocean through a small bridge on Carlsbad Boulevard.

Batiquitos Watershed – San Marcos Creek and Encinitas Creek are the major flows into Batiquitos Lagoon. The watershed of San Marcos Creek is large and originates well outside of Carlsbad. For current purposes we will begin at Lake San Marcos. The creek flows through a very steep, rock walled canyon. Quantities and velocities can be very high. At the bottom of the canyon the creek passes through the La Costa Golf Course before entering the lagoon. Major bridge structures exist at Rancho Santa Fe Road and at El Camino Real. Encinitas Creek originates in the southeastern corner of Carlsbad. It flows through partially developed areas of both Carlsbad and Encinitas. A well-developed willow riparian corridor exists in the Green Valley area, just before the creek enters the lagoon. There are no major bridge structures. Quantities and velocities are moderate.

For purposes of new development, City land use policies require construction of lined channels, storm drains, detention basins, and other improvements to accommodate floods up to and including a magnitude of 100-year, and require that drainage facilities manage flows into tributary streams to approximate natural flows. This is intended to enable floodplains to function in their natural capacity, permitting unobstructed flows through natural riparian courses during flood events. However, the actual behavior of floods in natural stream courses is difficult to predict or control. Vegetated streams that are not lined or armored may respond to flood waters very differently from urbanized storm drain facilities, particularly in very large storm events. Thus, for purposes of habitat conservation planning, the 50-year event is used as the definition of Changed Circumstance because it is the magnitude of event that can be reasonably anticipated and planned for.

2.2 Preventative Measures

Preventative measures to reduce the likelihood of or harm from flooding in the Preserve are included in the adaptive management provisions as specified in Section 1.1 of the Open Space Management Plan. City land use policies ensure that public and private improvements accommodate flood events that approximate the rate, magnitude and duration of natural flood flows.

All development projects approved by the City will also include implementation of Best Management Practices for storm water and surface runoff pursuant to the standards promulgated by the California Regional Water Quality Control Board (RWQCB). For all discretionary projects approved by the City, the City will include mitigation measures or other conditions, as appropriate, to reduce the likelihood that a flood would adversely impact Covered Species and the Preserve. As a co-permittee of the RWQCB National Pollution Discharge Elimination System (NPDES) Permit, the City is required to adopt a Standard Urban Storm Water Mitigation Plan (SUSMP). The large majority of new development projects and significant redevelopment projects must meet SUSMP requirements to reduce pollution and runoff flows. The City's SUSMP will include a list of recommended source control and structural treatment Best Management Practices (BMPs).

2.3 Planned Responses for Flood

Upon the occurrence of a Changed Circumstance Flood as defined by this Exhibit, the City will notify the Wildlife Agencies pursuant to the protocol established by the City's Open Space Management Plan. Within 30 days of the Flood incident, the City will assess the damage caused by the Flood within the

affected drainages to determine, with concurrence of the Wildlife Agencies, if a monitoring program is required. Damage would typically be expected to consist of erosion to the main channel or bank, possibly with loss of riparian vegetation.

Should the extent and severity of the Flood damage indicate a need for monitoring, the City will develop and implement a monitoring program for a period of up to two years, to monitor natural re-growth within the damaged area. The monitoring program will provide for site visits on a regular basis, as determined by the City and the Wildlife Agencies to be appropriate to the scope and severity of the Flood damage.

At any time during the monitoring program, should monitoring observations indicate that allowing habitat to re-grow without interference is resulting in increased opportunity for invasion by exotic species and/or increased potential for type conversion, as determined by the City, the Preserve management program, in effect at the time, will be modified to reduce the potential for such invasion and/or type conversion, consistent with the Open Space Management Plan and the terms of the IA. One or more of the following management activities will be incorporated into the modified management program, as appropriate for the circumstance:

- Bank stabilization
- Removal of sediment and/or debris; and/or
- Controlling non-native weeds and other invasive species through approved techniques.

3. Drought

For the purpose of defining Changed Circumstance, Drought is defined as climatic drought for three consecutive years in length, as formally declared by the California State Department of Water Resources and/or the San Diego County Water Authority (CWA).

3.1 Risk Assessment

Drought is a cyclical weather phenomenon that is beyond human control. Drought is not uncommon in Southern California, and it is a phenomenon to which local natural habitats and species have of necessity adapted over time. Drought occurs slowly over a multi-year period, differing from the catastrophic events of fire and flood, which occur rapidly and afford little time for preparing for disaster response. Drought conditions may adversely affect the Covered Species and the conserved vegetation communities, if the species and/or habitats are unable to adapt to the changing conditions.

The potential for drought to impact the Preserve increases with the length of a drought. As Preserve species and habitats begin to react to a prolonged reduction in rainfall, carry-over supplies in reservoirs are depleted and water levels in groundwater basins also decline, making imported water resources less available for non-potable uses. Both San Diego County and the City rely heavily on imported water. However, according to the California Department of Water Resources (DWR) in their document "Droughts in California," droughts exceeding three years are rare in Northern California, the area of California that is the source of much of the State's developed water supply and of imported water for Southern California. A drought period of over three years in length, which restricts availability of water for Preserve purposes, is therefore not foreseeable, and would be considered an Unforeseen Circumstance.

3.2 Preventative Measures

The HMP does not contain measures to prevent climatic drought because drought is not preventable by human intervention.

The City of Carlsbad is served by the Carlsbad Municipal Water District (CMWD), which is a member of, and purchases imported water from, the San Diego CWA. In order to reduce reliance upon imported water, CMWD is developing a recycled water plant adjacent to the Encina Wastewater Treatment Plant. Recycled water distribution lines are planned for construction throughout the City, including areas adjacent

to the Preserve in all Management Units. Recycled water is used for non-potable water requirements such as landscape and park maintenance. In the event of drought, recycled water would be used to supply any supplemental water for Preserve maintenance, greatly reducing the risk of impact from drought on Preserve species and habitats.

To prepare for a potential diminished water supply, the City will assess its use of recycled water Citywide, and will consider directing recycled water to Preserve areas undergoing active restoration where water is needed, and where it is possible to do so. It is acknowledged that it may not be feasible to use recycled water for active restoration areas in times of drought or diminished water supply. However, to the extent that it is able, the City will work with responsible water agencies to determine whether adequate recycled water supplies would be available to serve restoration areas in the Preserve.

3.3 Planned Responses to Drought

Upon the occurrence of a drought Changed Circumstance as defined in this exhibit, the City and the Wildlife Agencies will assess the condition of the Preserve to determine, if a monitoring program is required for all or portions of the preserve.

Based upon the extent and severity of the Drought, the Wildlife Agencies will develop and implement an assessment of the condition of the Preserve to determine whether target species are being affected or whether there is the potential for damage to the Preserve. Based on the results of the assessment, the Wildlife Agencies will implement a monitoring program to monitor natural re-growth within the damaged area for a period of up to two years. The monitoring program will provide for site visits on a regular basis, as determined by the City and the Wildlife Agencies to be appropriate to the drought situation.

At any time during the monitoring program, should monitoring observations indicate that allowing habitat to re-grow without interference is resulting in increased opportunity for invasion by exotic species and/or increased potential for type conversion, as determined by the City in consultation with the Wildlife Agencies, the Preserve management program in effect at the time will be modified to reduce the potential for such invasion and/or type conversion, consistent with the terms of the IA. One or more of the following management activities will be incorporated into the modified management program, as appropriate for the circumstance:

- (i) Providing temporary irrigation to strategic areas of the Preserve; and/or
- (ii) Controlling non-native weeds and other invasive species through approved techniques.

4. Invasion of Exotic Species

For the purpose of defining Change Circumstance, invasion of exotic species is defined as an increase of invasive species within the Preserve to the extent that, as determined by the City in consultation with the Wildlife Agencies, such increase is of sufficient magnitude to significantly, adversely affect any Covered Species. For the purpose of implementing the actions specified by this Exhibit, species to be considered potentially invasive are those included in Section 3.1.5 of the Open Space Management Plan.

4.1 Risk Assessment

Although invasive, exotic, or pest species of plants and/or animals may currently be present within the Preserve, an unexpected and/or sudden increase in certain invasive species may create the potential for impacts to one or more of the Covered Species within the Preserve. Opportunities for increases in invasive species could occur as urban development expands in areas surrounding the Preserve. The occurrence of a catastrophic event, including Changed Circumstances defined above, may precipitate sudden increases of invasive species. Planned Resources to the Changed Circumstances, however, include measures to reduce the opportunity for invasion by exotic species.

4.2 Preventative Measures

Establishment of the Preserve and the management actions that will be undertaken as part of the implementation of the HMP will reduce the probability of sudden increases in invasive species. Section 3.1.5 of the Open Space Management Plan contains measures specifically designed to prevent invasive species from threatening the Preserve. These measures include restrictions on the use of invasive plant species in landscape palettes, visitor/resident invasive species education, and working with adjacent properties to prevent runoff into the Preserve. Through implementation of the Open Space Management Plan and Area Specific Management Directives associated with the HMP, invasive species will, under normal circumstances, be discovered prior to becoming a threat to Covered Species. When invasive species are discovered, the Preserve management program is designed to be tailored to reduce and/or eliminate such species.

4.3 Planned Responses

If, as determined by the City in consultation with the Wildlife Agencies, an increase in invasive species has occurred within the Preserve at a magnitude sufficient to present a significant adverse affect to any Covered Species, the City will notify the Wildlife Agencies pursuant to the protocol established by the City's Open Space Management Plan described in Section 3.1.5. If the influx of invasive species involves a species included on the CalEPPC "List A" or the NBII list (Appendix N), within 30 days of such notice to the Wildlife Agencies the City will assess and implement changes to the adaptive management program in effect at that time, that may be necessary to control the invasive species. If the influx of invasive species involved a species listed on the CalEPPC "Red Alert" list (Appendix N), the City will also notify other relevant agencies as recommended by CalEPPC. Within 30 days of obtaining responses from the agencies contacted, the recommendations of the agencies will be used by the City with concurrence of the Wildlife Agencies to determine appropriate modifications to be made to the adaptive management program in effect at that time.

Modification of the adaptive management program to address an invasive species Changed Circumstance will include implementation of a monitoring program of up to two years, as determined by the City. The monitoring program will provide for site visits on a regular basis, as determined by the City and the Wildlife Agencies to be appropriate to the type, scope and location of the exotic species infestation.

5. Disease – West Nile Virus

West Nile Virus (WNV) is a mosquito-borne disease that infects both wild and domesticated bird species, livestock, humans, and various other species. The disease can be fatal. WNV was first detected in the United States in the State of New York in 1999. The illness has spread from East to West across the United States by birds and mosquitoes. WNV was first detected in California in Imperial County on August 20, 2003. In 2003, the virus has since been discovered in dead birds collected from Los Angeles County, Riverside County, Imperial County, Orange County, and San Diego County. WNV has shown positive in one horse and 5 dead birds in San Diego County in 2003. In 2004, additional WNV positive birds and positive sentinel chicken flocks have been found, including dead infected birds in Carlsbad.

WNV is a region-wide issue, not restricted to Carlsbad. It is addressed here as a Changed Circumstance because we are aware that there are infected birds in Carlsbad and throughout the region. It is not possible at this time to define with any precision a threshold between Changed Circumstances due to WNV and Unforeseen Circumstances. The following discussion is offered to describe what we currently understand about the disease and efforts to respond to it.

5.1 Risk Assessment

Thus far WNV has not killed large numbers of wild birds, but the overall extent of the infection in wildlife is not well understood. There is the potential for the disease to become a significant mortality factor to

certain bird species. On the other hand, because the disease is a threat to human health, current prevention activities (as outlined below) are likely to reduce the threat to both humans and wildlife. Because public health officials use bird deaths to gauge the effectiveness of their WNV prevention programs, any significant increase in bird deaths is likely to produce public concern, leading to intensified efforts to halt spread of the disease.

5.2 Preventive Measures

Mosquito control is probably the single most important and effective element in inhibiting spread of WNV to all species. In San Diego County, mosquito abatement is carried out by the Vector Control Program of the County Department of Environmental Health. Concern about WNV and other mosquito-borne diseases has led Vector Control to expand its efforts to control mosquito populations. These activities have included aerial spraying/application of mosquito larvicide (*Bacillus sphaericus* (Bs) and *Bacillus thuringiensis israelensis* (Bti)) of large bodies of fresh water, spot spraying or hand broadcasting of bascillus (Bs and Bti) of smaller waterbodies, distribution of fish that eat mosquito larvae to property owners with ponds, and public education to encourage abatement of miscellaneous sources of standing water. These preventive measures have been largely effective as evidenced by the relatively low death rate from the disease.

A secondary preventive measure is the heightened public awareness of the fact that the disease can be fatal to birds. County Vector Control and other agencies have carried out an extensive educational campaign to inform the public that dead birds should be reported to them. Tests are performed on dead birds to determine whether the bird was infected with WNV. Although this level of monitoring of bird deaths is far from complete, it provides the best information available about the extent and virulence of the disease in wild bird populations.

5.3 Planned Responses to WNV

Any indications of increase in human or animal mortality due to WNV would be treated as a very serious public health concern and would receive a high level of response. Mosquito abatement activities by County Vector Control would be intensified, as well as public information activities directed toward elimination of standing water and reporting of dead birds. Any chemical response to WNV other than application of *Bacillus* (Bs and Bti) larvicide would need consultation and approval by the Wildlife Agencies prior to such application to ensure impacts to other species covered by the MHCP would not be adversely affected beyond that currently analyzed.

Because of the potential risk to human health, normal budgetary limitations would not be allowed to constrain efforts to halt the disease. These activities will benefit bird species and well as people, so that it is not necessary to have programs directed solely toward addressing the disease in wildlife. In addition, planned responses to the disease are carried out on a regional basis. Carlsbad would not be alone in attempting to respond to a major outbreak.

6. Future Listings of Non-Covered Species

The City recognizes, as noted in the USFWS discussion of its "Habitat Conservation Plan Assurances ('No Surprise') Rule," (63 F.R. 8859; February 23, 1998), that the future listing of a species whose conservation was not provided for in the MHCP to a level sufficient to include the species as a Carlsbad Covered Species can be viewed as a Changed Circumstance. In the event that a species, which is not a Covered Species pursuant to this Plan and associated Take Authority is listed by USFWS subsequent to the issuance of Take Authority pursuant to the HMP, such listing will be considered a Changed Circumstance.

In the event of a non-covered species, the City and Wildlife Agencies will jointly identify measures that the City will follow to avoid take, jeopardy and/or adverse modification of any designated Critical Habitat within the Subarea, until and unless the City's permit is amended to include coverage for the newly-listed species as a Carlsbad Covered Species or the Wildlife Agencies notify the City that such measures are no longer

required to avoid jeopardy, take or adverse modification of designated Critical Habitat of the newly-listed species. Among other measures, the City will require that prior to the City's issuance of any permit for land development, clearing and/or grubbing, applicants must obtain Take Authority for any listed, non-covered species through appropriate federal and/or state permit processes.

Changed Circumstances Not Provided for in the HMP

Pursuant to the "No Surprises" rule at 50 C.F.R. 17.22(b)(5)(ii), the USFWS may not require (1) any conservation or mitigation measures in addition to those provided for under Sections 5.8.1 – 5.8.4 in response to a Changed Circumstance; or (2) additional conservation or mitigation measures for any Changed Circumstance that is not identified in Sections 5.8.1 – 5.8.4 without the consent of the City, provided the City is properly implementing the HMP.

As recognized in the "No Surprises" rule at 50 C.F.R. 17.22(b)(6) and 17.32(b)(6), the USFWS, any Federal, State or local agency, or a private entity may take additional actions at their own expense to protect or conserve a species covered under the HMP.

Appendix

A

Habitat Types within the City of Carlsbad

A. Grassland.....	A-3
1. Native Grassland.....	A-3
2. Non-Native Grassland	A-3
B. Coastal Sage Scrub.....	A-3
1. Maritime Succulent Scrub.....	A-3
2. Diegan Coastal Sage Scrub	A-4
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C. Chaparral.....	A-4
1. Southern Mixed and Chamise Chaparral	A-4
2. Southern Maritime Chaparral	A-5
D. Woodland.....	A-5
1. Oak Woodland	A-5
2. Eucalyptus Woodland.....	A-5
E. Riparian	A-5
1. Riparian Scrub.....	A-5
2. Riparian Woodland	A-6
3. Riparian Forest.....	A-6
F. Marsh.....	A-6
1. Southern Coastal Salt Marsh	A-6
2. Freshwater Marsh	A-6
G. Other Wetland and Aquatic Types	A-7
1. Disturbed Wetland	A-7
2. Estuaries.....	A-7
3. Freshwater/Open Water	A-7
4. Vernal Pools	A-7
5. Cismontane Alkali Marsh.....	A-7

A. Grassland

Both native and non-native grasslands occur within the City. There are approximately 1,807 acres of grasslands within Carlsbad.

1. Native Grassland

Native grassland is characterized by perennial bunch grasses such as needlegrass (*Nassella*) and herbaceous annuals and perennials such as Cleveland's shooting star (*Dodecatheon clevelandii*), blue-eyed grass (*Sisyrinchium bellum*), fascicled tarweed (*Hemizonia fasciculatum*), sanicles (*Sanicula* spp.), and mariposa lily (*Calochortus* spp.). This habitat type is often associated with clay soils and frequently occurs as open patches within coastal sage scrub.

Under California regulations and policies, native grassland is considered a sensitive habitat. This status reflects its limited distribution, potential to support sensitive plant species, use as raptor foraging habitat, and continuing decline as a result of development and agricultural activities. Areas with at least 10% cover of *Nassella pulchra* or *N. lepida* are identified in the California Natural Diversity Data Base (CNDDB) as priority areas for monitoring and restoration efforts.

In Carlsbad, native grassland is extremely limited and is characterized as valley needlegrass and valley and foothill needlegrass. Existing patches are too small to be mapped at the scale used for the HMP vegetation data base.

2. Non-Native Grassland

Non-native grassland is characterized by non-native grasses such as wild oats (*Avena* spp.), bromes (*Bromus* spp.), and others (e.g., *Gastridium ventricosum*, *Vulpia* spp.). Other species present in this habitat type include invasive natives such as telegraph weed (*Heterotheca grandiflora*), fascicled tarweed, doveweed (*Eremocarpus setigerus*), and weedy introduced species such as Russian-thistle (*Salsola tragus*), black mustard (*Brassica nigra*), and tocalote (*Centaurea melitensis*).

Non-native grassland is not considered a sensitive habitat; however, in a few locations it may be a significant resource for raptor foraging, may support sensitive plant species, and may serve as a habitat linkage.

B. Coastal Sage Scrub

Coastal sage scrub types within Carlsbad include maritime succulent scrub, Diegan coastal sage scrub, and coastal sage scrub-chaparral scrub. Approximately 3,315 acres of coastal sage scrub exist within the City.

1. Maritime Succulent Scrub

Maritime succulent scrub includes a variety of succulents, such as fish-hook cactus (*Mammillaria dioica*), coast cholla (*Opuntia prolifera*), shore cactus (*Opuntia littoralis*), California desert thorn (*Lycium californicum*), cliff-spurge (*Euphorbia misera*), bladder-pod (*Cleome isomeris*), and several species of dudleya (*Dudleya* spp.), mixed with typical Diegan sage scrub species.

Under California regulations and policies, maritime succulent scrub is considered a sensitive habitat.

This habitat also has regional significance in that all mapped maritime succulent scrub in northern San Diego County occurs in Carlsbad.

2. Diegan Coastal Sage Scrub

Diegan coastal sage scrub is a drought-deciduous community comprised of aromatic shrubs and subshrubs with a diverse understory of annual and perennial herbs, perennial and annual grasses, and grass-like plants. It occurs primarily on dry south-facing slopes and hillsides or on clay-rich soils adjacent to chaparral or upslope from riparian woodlands. Characteristic species include coastal sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and purple needlegrass (*Stipa pulchra*). It also supports a variety of sensitive plant species, including California adolphia (*Adolphia californica*), ashy spike-moss (*Selaginella cinerascens*), Del Mar mesa sand-aster (*Corethrogyne filaginifolia*), and several others.

Under California regulations and policies, Diegan coastal sage scrub is considered a sensitive habitat; it is given the highest inventory priority in the CNDDDB.

In Carlsbad, the largest remaining tracts of Diegan coastal sage scrub are found in the vicinity of Lake Calavera, southeast of Agua Hedionda Lagoon, and near Rancho Santa Fe Road.

3. Coastal Sage Scrub-Chaparral Scrub

Coastal sage scrub-chaparral scrub is a transitional community between coastal sage scrub and chaparral types. Within the context of the North County Multiple Habitat Conservation Program (MHCP), it is categorized as a sub-type of coastal sage scrub and is considered a sensitive habitat. It is found primarily in Zone 16.

C. Chaparral

Chaparral habitat in the City has been grouped into two categories: undifferentiated (including southern mixed and chamise chaparral) and southern maritime chaparral. There are approximately 989 acres of undifferentiated chaparral in Carlsbad. Approximately 392 acres are mapped as southern maritime chaparral, although this number could change as a result of site-specific surveys.

1. Southern Mixed and Chamise Chaparral

Southern mixed chaparral is a fire- and drought-adapted community composed of a variety of woody shrubs, many of which are "stump sprouters" that regenerate rapidly from underground undamaged tissues following fires or other ecological perturbation. It is a heterogeneous community type (i.e., the dominant shrubs vary from site to site). In most situations the dominants include chamise (*Adenostoma fasciculatum*), Nuttall's scrub oak (*Quercus dumosa*), mission manzanita (*Xylococcus bicolor*), laurel sumac, lemonadeberry, and toyon (*Heteromeles arbutifolia*). Understory plants include rush-rose (*Helianthemum scoparium*), deerweed (*Lotus scoparius*), wreathplant (*Stephanomeria* spp.), and a variety of aster and daisy relatives (*Asteraceae*). Chamise chaparral is a community where chamise is the overwhelming dominant plant. Chamise may account for over 90 percent of the relative cover. The remaining species include shrubs and understory plants common in other types of chaparral.

As types, southern mixed and chamise chaparral are not sensitive habitats. However, raptors and other sensitive species are known to use these types.

These chaparral types have a patchy distribution throughout the City, occurring on more mesic north- and west-facing slopes, alternating with coastal sage scrub, grasslands, and oak woodlands.

2. Southern Maritime Chaparral

Southern maritime chaparral is similar to southern mixed chaparral but occurs on sandstone. It is the most limited chaparral type in distribution, particularly in Carlsbad, and is characterized by several endemic shrubs, including Del Mar manzanita (*Arctostaphylos glandulosa* ssp. *crassifolia*), wart-stemmed ceanothus (*Ceanothus verrucosus*), coast spice bush (*Cneoridium dumosum*), and Nuttall's scrub oak. Other dominant shrubs encountered in this community are the same as those listed above for southern mixed chaparral. Sensitive plant species associated with this type include wart-stemmed ceanothus, summer-holly (*Comarostaphylis diversifolia* var. *diversifolia*), Del Mar manzanita, ashy spike-moss, and western dichondra (*Dichondra occidentalis*).

Under California regulations and policies, southern maritime chaparral is considered a sensitive habitat by the CDFG.

In Carlsbad, the major stands of southern maritime chaparral are located: northeast of the junction of Palomar Airport Road and El Camino Real; east and west of El Camino Real between Palomar Airport Road and Alga Road; slopes above Green Valley; and east and west of El Camino Real between La Costa Avenue and Olivenhain Road.

D. Woodland

Two woodland types occur in the City: oak woodland and eucalyptus woodland. There are approximately 29 acres of oak woodland and 257 acres of eucalyptus woodland in Carlsbad.

1. Oak Woodland

Oak woodland, as discussed here, is dominated by coast live oak, with scattered individuals of other tree species.

2. Eucalyptus Woodland

Eucalyptus woodland is a non-native community. It is dominated by various species of planted eucalyptus (*Eucalyptus* spp.) that survived around old dwellings or in entire groves (e.g., the Hosp Grove). The understory is usually poorly developed or absent owing to the allelopathic (toxic) effect of eucalyptus leaves that acts to inhibit the growth of other plants. Although this habitat supports no sensitive plant or wildlife species, it is often used for nesting by raptors and other birds or roosting by bats.

E. Riparian

Riparian types within the City include riparian scrub, riparian woodland, and riparian forest. Riparian habitats are considered sensitive under federal and state regulations and policies. There are approximately 572 acres of riparian habitat in Carlsbad.

1. Riparian Scrub

As used herein, "riparian scrub" includes several natural and semi-disturbed wetland communities, including mule fat scrub, southern willow scrub, and baccharis/tamarisk scrub. These communities occur along river courses and seasonally moist drainages. In Carlsbad, some riparian scrub communities also are the result of urban or agricultural run-off. Riparian scrub typically is dominated by willows (*Salix* spp.) and Fremont cottonwood (*Populus fremontii*), or by mule fat (*Baccharis salicifolia*), broom baccharis, or tamarisk (*Tamarix* sp.), an introduced species. The understory is variable depending upon canopy coverage, disturbance history and water availability, and usually includes poison-oak (*Toxicodendron diversilobum*), desert grape (*Vitis girdiana*), western ragweed (*Ambrosia psilostachya*), rushes (*Juncus* spp.), and a variety of other hydrophytic (wetland) species.

Characteristic areas of riparian scrub occur: along El Camino Real south of Batiquitos Lagoon; extending east from the mudflats at the eastern end of Agua Hedionda Lagoon (e.g., Macario Canyon); and along the northern portion of the City south of Highway 78 in Buena Vista Creek.

2. Riparian Woodland

As used herein, "riparian woodland" includes sycamore-alder riparian woodland and other riparian woodland. Sycamore-alder woodland is an open to moderately closed, winter-deciduous, broadleaved riparian woodland, dominated by well-spaced western sycamore (*Plantanus racemosa*). The community typically includes individuals of several other tree species, including willow, coast live oak (*Quercus agrifolia*) Mexican elderberry (*Sambucus mexicana*), and Fremont cottonwood. This community occurs in broad channels of intermittent streams, usually with a cobbly substrate.

Sycamore-alder woodland is uncommon, occurring primarily in the Sunny Creek area and along a narrow drainage south of Lake Calavera.

3. Riparian Forest

Riparian forest, as discussed here, includes southern coast live oak riparian forest. This type is dominated by coast live oak, with scattered individuals of other tree species, such as western sycamore, willow, and Mexican elderberry. The understory includes toyon, laurel sumac, California wild rose (*Rosa californica*), poison-oak, and currant (*Ribes* spp.).

F. Marsh

Marsh and wetland habitats in Carlsbad include southern coastal Salt Marsh, freshwater marsh, the unvegetated mud flats and open water areas of estuaries, and several other aquatic habitat types. All marsh habitats are considered sensitive and are regulated under federal and state regulations and policies. There are approximately 1,466 acres of marsh habitats within the City.

1. Southern Coastal Salt Marsh

Southern coastal Salt Marsh is a wetland community that develops in low, flat estuaries at the mouths of rivers and streams. Tidal inundation or excessive evaporation results in highly saline conditions around the margins of lagoons, and it is under these conditions that Salt Marshes develop. This community is characterized by low-growing succulents such as pickleweed (*Salicornia* spp.), salty-Susan (*Jaumea carnosa*), salt-cedar (*Monanthochloe littoralis*), and other halophytic (salt-tolerant) species.

Within Carlsbad, Salt Marsh habitat is present surrounding portions of Batiquitos Lagoon and Agua Hedionda Lagoon. The habitat type also occurs in limited amounts around Buena Vista Lagoon. Several researchers have described distinct zones within southern coastal Salt Marsh (e.g., Zedler 1982).

2. Freshwater Marsh

Freshwater marsh occurs in drainages, seepages, and other perennially moist low places. This community is characterized by perennial, emergent monocots 2-3 m (6-10 feet) tall, such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.). Understory species include curly dock (*Rumex crispus*), Salt Marsh fleabane (*Pluchea odorata*), and a variety of hydrophytic grasses and herbs. Sensitive plants frequently encountered in the vicinity of this community are spiny rush (*Juncus acutus leopoldii*) and San Diego Marsh-elder (*Iva hayesiana*).

Patches of this habitat are present at the upper ends of Buena Vista, Agua Hedionda, and Batiquitos lagoons, where a mixture of plants of salt and freshwater habitats is encountered. Smaller freshwater marshes grow around the perimeter of Lake Calavera and within riparian scrub communities.

G. Other Wetland and Aquatic Types

Other wetland and aquatic types include disturbed wetland, estuaries, freshwater/open water, vernal pools and cismontane alkali marsh.

1. Disturbed Wetland

Disturbed wetland is not a native plant community. It typically occurs where the natural wetland vegetation has been degraded by mechanical activities or invaded by weedy, non-native species. This habitat is characterized by open and patchy vegetation that includes both native and introduced species. The dominant shrubs include mule fat, broom baccharis, and scattered willow trees. Other species present in varying density include coastal goldenbush (*Isocoma menziesii*), curly dock, castor-bean (*Ricinus communis*), cockle-bur (*Xanthium strumarium*), spiny rush, and pampas grass (*Cortaderia* spp.).

2. Estuaries

Estuarine habitat consists of a semi-enclosed body of water that has a free connection with the open ocean and within which seawater is measurably diluted with fresh water derived from land drainage.

3. Freshwater/Open Water

This aquatic habitat lacks vascular vegetation and includes lakes, ponds, and reservoirs. The area surrounding the open water is almost always characterized by freshwater marsh, Salt Marsh, or riparian habitats. Excluding the three major coastal lagoons (Baticuitos, Agua Hedionda, and Buena Vista), the largest open water area in the City is Lake Calavera. There also are a number of smaller natural or artificial ponds throughout the City.

4. Vernal Pools

Vernal pools are a highly restricted, unique wetland habitat type that contains high numbers of endangered, sensitive, and endemic plant and animal species. This type occurs in several scattered locations throughout the City on marine terraces. The most prominent occurrences of vernal pools are in Zone 22 along the railroad tracks and in Zone 21.

5. Cismontane Alkali Marsh

Areas in Carlsbad classified as cismontane or alkali marsh are typically disturbed riparian freshwater marsh that have changed in vegetative character due to agriculture or other disturbance. Plant species found in these locations are often those associated with saltmarsh, as well as exotic or weedy species. Areas of cismontane alkali marsh are located in Zone 11 along portions of Encinitas Creek and in Zone 15 in the vicinity of natural springs and seeps.

Appendix

B

City Projects Covered By Proposed City-Land Mitigation Bank

This section contains a list of City projects in addition to the Municipal Golf Course which would be eligible to use a City mitigation bank at Lake Calavera.

CITY PROJECTS COVERED BY PROPOSED CITY-LANDS MITIGATION BANK

PROJECT	ESTIMATED IMPACTS (ACRES) ¹
DRAINAGE PROJECTS Future projects needed to complete the Master Drainage and Storm Water Quality Management Plan inclusive of, but not limited to, the following projects:	11-33
Agua Hedionda Creek Channel Enhancement	
Cannon Road Drainage Channel and Basin - El Camino Real to College Boulevard	
South Carlsbad Village Storm Drain	
PARK FACILITIES Future projects needed to complete the Parks and Recreation Element of the General Plan inclusive of, but not limited to, the following projects:	
Business Park Recreational Facility	
Cannon Lake Park	1-3
Hosp Grove/Buena Vista Lagoon II	1-10
Lake Calavera Recreational Uses	0-100
Larwin Park	1-7
Leo Carrillo Park	2-10
Municipal Golf Course	40-200
NE Quadrant 15 acre Park Site Development	
NW Quadrant 7-Acre Site	0
NW Quadrant Community Center	0
Veterans Memorial Park	8-25
Zone 19 Park	3-9
OTHER FACILITIES	
Future City Hall	
Fire Station #3 Relocation	
Village Transit Station Specialty Retail	
SEWER PROJECTS Future projects needed to complete the Sewer Master Plan inclusive of, but not limited to, the following projects:	
Agua Hedionda Lift Station	0-1
Buena Vista Creek Trunk Sewers	
Buena Vista Forcemain Parallel	
Buena Vista Lift Station	0
Carrillo Ranch Village "R" Sewer	
Chinquapin Lift Station Relocation	
Encina Acquisition	
Forest Gravity Line	0-2
Forest Sewer Pipeline	

1. Where a blank space exists, the estimated impact acreage is unknown at this time

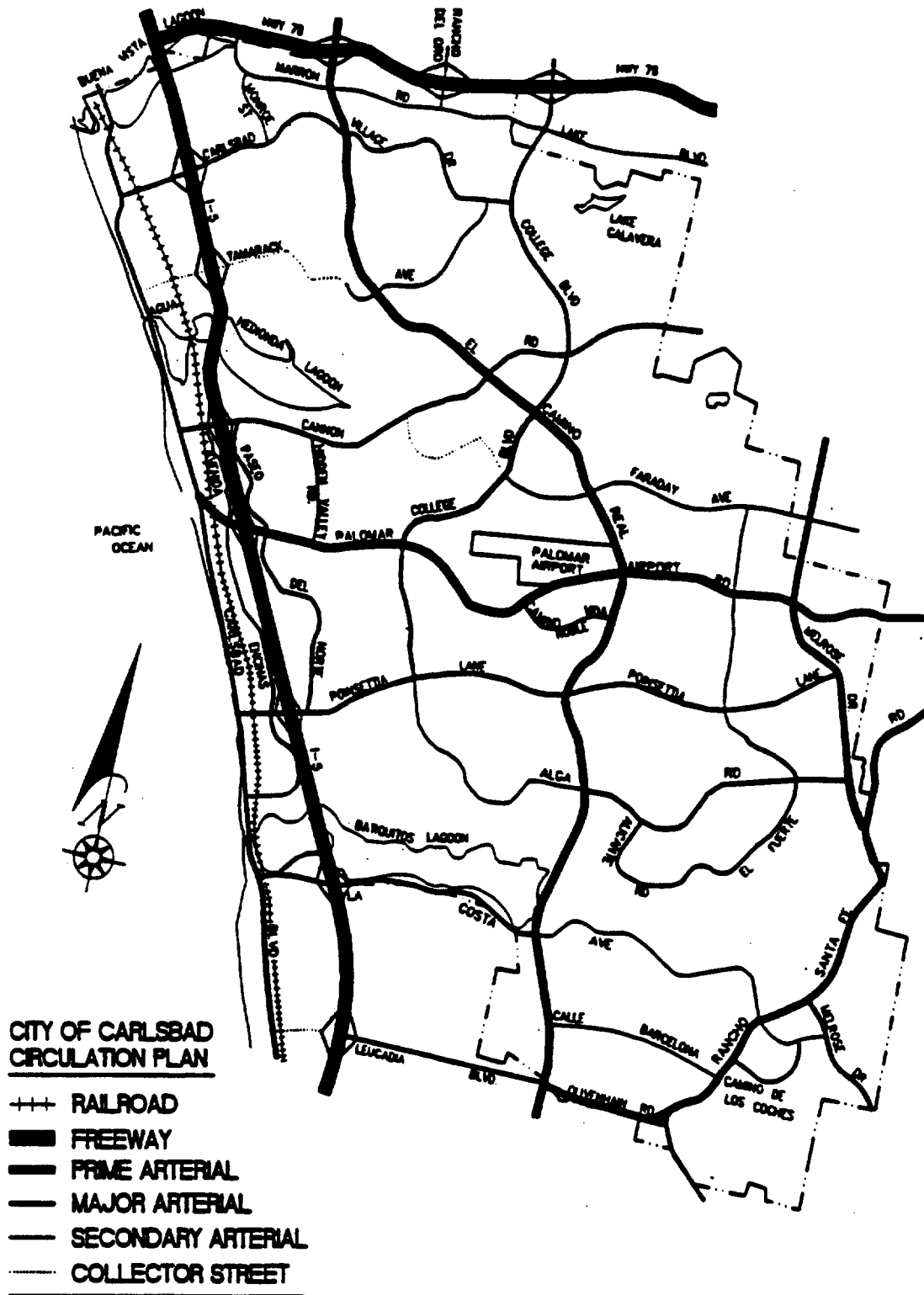
SEWER PROJECTS, continued	
La Golondrina Sewer	
Roesch Property Sewer	
Sewer Line Replacement	0
South Agua Hedionda Interceptor Sewer	
Vancouver Lift Station	0-2
Vista/Carlsbad Interceptor Sewer	
Vista/Carlsbad Trunk Line	0
SEWER OPERATIONS AND MAINTENANCE	
Batiquitos Forcemain	
North Agua Hedionda Interceptor Sewer	
North Batiquitos Interceptor Sewer	
Sewer Pipeline Along San Diego Northern Railroad Right-of-Way	
Vista-Carlsbad Interceptor Sewer Along Highway 78	
STREET PROJECTS	
Future projects needed to complete the Circulation Element of the General Plan inclusive, but not limited to, the following projects:	
Adams Street - Harrison to Park Drive	
Avenida Encinas Widening - Palomar Airport Road to Volvo Dealership	
Aviara Parkway - Cobblestone to Plum Tree Road	
Cannon Road, Reach 1	11
Cannon Road, Reaches 2-4	17
Carlsbad Boulevard Bridge Replacement over San Diego Northern Railway Line	
Carlsbad Boulevard Realignment - Manzano to Batiquitos Bridge	4-9
Carlsbad Boulevard Widening from State Street to Oceanside City Limits	
Carlsbad Village Drive - Tamarack to College	
Carlsbad Village Drive -Pontiac to Victoria	3-5
Coastal Rail Trail	
College Boulevard - Lake Boulevard to El Camino Real	
El Camino Real at Camino Vida Roble	0
El Camino Real at Cannon Road	1-3
El Camino Real at Carlsbad Village Drive	0
El Camino Real Widening to 6 Lane Arterial - Standards at Various Locations from North City Limits to South City Limits	
El Camino Real Widening-S. Chestnut and S. Alga	1-3
El Fuerte Street - Poinsettia Lane to Faraday Avenue	
Faraday Avenue - Orion Street to Melrose Drive	
Faraday to Koll Property	5-30
La Costa Avenue - Camino de los Coches to Melrose Drive	
La Costa Avenue/I-5 to El Camino Real	1
Marron Road - Avenida de Anita to College Boulevard	
Melrose Drive - Palomar Airport Road to Vista City Limits	
Melrose Drive - Rancho Santa Fe to Encinitas City Limits	
Palomar Airport Road at College Boulevard	0
Palomar Airport Road @ El Camino Real grade separation	

STREET PROJECTS, continued	
Palomar Airport Road - Widen RR Bridge, Carlsbad Boulevard Intersection	3-10
Palomar Airport Road widening - El Camino Real to Faraday	
Palomar Airport Road widening - Yarrow to El Camino Real	
Poinsettia Lane - Aviara Parkway to El Fuerte Street	
Rancho Del Oro - Highway 78 to Marron Road	
Rancho Santa Fe - Melrose to La Costa Avenue	
Rancho Santa Fe - Olivenhain Road to Encinitas City Limits	
Sidewalk installation along all roads with missing sidewalks	
WATER PROJECTS	
Future projects needed to complete the Water and Reclaimed Water Master Plans inclusive of, but not limited to, the following projects:	
Alga-Poinsettia to Palomar Airport Road	4-6
College Extension at El Camino Real	
College-Cannon to TAP	2-4
College-Maerkle Reservoir	4-6
"D" Reservoir II	
"D" Reservoir Phase No. 2	
"D" Reservoir to Palomar Oaks	
El Camino Real-Palomar Airport Road South	1-2
El Fuerte-Alga to Poinsettia	2-4
El Fuerte-Faraday to Maerkle	4-8
El Fuerte-North of Loker	2-3
El Fuerte-Poinsettia to Palomar Airport Road	2-3
Future Water Master Plan Facilities	10-15
I-5 at Navigator Circle	
Industrial Park System	
Jefferson-Pio Pico to Robinsons-May	
Lake Calavera Water Uses	5-7
Land Purchase-Reclaimed Water Site	1
Maerkle Reservoir No. 2	
Marron Road-PR Station to Oceanside	
Palomar Airport North of Owens	
Poinsettia-D to 2800 Ft. East	2-3
Poinsettia-El Camino Real to D	1-2
Poinsettia-El Fuerte to El Camino Real	2-3
PR Station Relocation	
PR Station-College at Cannon	
Pumping Stations	
Seawater Desalination Plant	
TAP Reservoir No. 2	
Water Pump Station	
Water System Inter-tie	
Water Transmission Pipelines	
Water Zone to Poinsettia	5-16
Zone Secondary Supply	2-4

WATER PROJECTS, continued	
Zone Supply	2-4
RECLAIMED WATER PROJECTS	
Encina Advanced Wastewater Treatment Plant	
Green Valley Reclaimed Water Pipeline	
Lake Calavera Reclaimed Water Transmission Main	
Lake Calavera Reclaimed Water Treatment (Artificial Wetlands) and Storage	
MAHR Reservoir Liner and Cover	
Zone 550 Reclaimed Water Pumping Station	
Zone 550 Reclaimed Water Storage Tank	
WATER OPERATIONS AND MAINTENANCE	
Reservoir Site Maintenance	
"C" Reservoir	
La Costa High Reservoir	
Lake Calavera	
Maerkle Dam	
Maerkle Reservoir	
Santa Fe II	
TAP Reservoir	
Pipeline Maintenance	
"E" Reservoir Transmission Main	
Maerkle Reservoir Transmission Main	
TAP Transmission Main	

FIGURE 32

CIRCULATION PLAN



Appendix

C

HMP Species: Habitat and Distribution, Conservation Goals, Expected Impacts, and Basis of Take Authorization

1. <i>Acanthomintha ilicifolia</i> , San Diego Thorn-mint.....	C-3
2. <i>Ambrosia pumila</i> , San Diego Ambrosia.....	C-4
3. <i>Arctostaphylos glandulosa</i> ssp. <i>crassifolia</i> , Del Mar Manzanita.....	C-5
4. <i>Baccharis vanessae</i> , Encinitas Baccharis.....	C-6
5. <i>Brodiaea filifolia</i> , Thread-leaved Brodiaea.....	C-7
6. <i>Brodiaea orcuttii</i> , Orcutt's Brodiaea.....	C-8
7. <i>Ceanothus verrucosus</i> , Wart-stemmed Ceanothus.....	C-9
8. <i>Chorizanthe orcuttiana</i> , Orcutt's Spineflower.....	C-10
9. <i>Comarostaphylis diversifolia diversifolia</i> , Summer Holly.....	C-11
10. <i>Corethrogyne filaginifolia</i> var. <i>linifolia</i> , Del Mar Mesa Sand Aster.....	C-12
11. <i>Dudleya blochmaniae blochmaniae</i> , Blochman's Dudleya.....	C-13
12. <i>Dudleya viscida</i> , Sticky Dudleya.....	C-14
13. <i>Eryngium aristulatum</i> var. <i>parishii</i> , San Diego Button-celery.....	C-15
14. <i>Euphorbia misera</i> , Cliff Spurge.....	C-16
15. <i>Ferocactus viridescens</i> , San Diego Barrel Cactus.....	C-17
16. <i>Hazardia orcuttii</i> , Orcutt's Hazardia.....	C-18
17. <i>Iva hayesiana</i> , San Diego Marsh-elder.....	C-19
18. <i>Muilla clevelandii</i> , San Diego Goldenstar.....	C-20
19. <i>Myosurus minimus</i> ssp. <i>apus</i> , Little Mouseltail.....	C-21
20. <i>Navarretia fossalis</i> , Prostrate Navarretia.....	C-23
21. <i>Orcuttia californica</i> , California Orcutt Grass.....	C-24
22. <i>Pinus torreyana</i> ssp. <i>torreyana</i> , Torrey Pine.....	C-25
23. <i>Quercus dumosa</i> , Nuttall's Scrub Oak.....	C-26
24. <i>Quercus engelmannii</i> , Engelmann Oak.....	C-27
25. <i>Euphyes vestris harbisoni</i> , Harbison's Dun Skipper.....	C-28
26. <i>Lycaena hermes</i> , Hermes Copper.....	C-29
27. <i>Streptocephalus woottoni</i> , Riverside Fairy Shrimp.....	C-30
28. <i>Panoquina errans</i> , Salt Marsh Skipper.....	C-31
29. <i>Branchinecta sandiegoensis</i> , San Diego Fairy Shrimp.....	C-32
30. <i>Cnemidophorus hyperythrus beldingi</i> , Orange-throated Whiptail.....	C-33
31. <i>Falco peregrinus anatum</i> , American Peregrine Falcon.....	C-35

CARLSBAD HMP

32. <i>Passerculus sandwichensis beldingi</i> , Belding's Savannah Sparrow.....	C-35
33. <i>Speotyto cunicularia hypugaea</i> , Burrowing Owl.....	C-37
34. <i>Pelecanus occidentalis californicus</i> , California Brown Pelican	C-38
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1. ***Acanthomintha ilicifolia*, San Diego Thorn-mint**
(Narrow Endemic species)

a. Habitat/Distribution

San Diego thorn-mint is restricted to distribution to San Diego County and northern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1995). In San Diego County, the species is known from Carlsbad and San Marcos south to Sweetwater and Otay Mesa, and east to Alpine (Beauchamp 1986; USFWS 1995). Large populations occur in Carlsbad, Encinitas, San Marcos, Sycamore Canyon, Poway, the Lake Hodges area, El Capitan, and Jamul.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland (37%) habitat and vernal pools will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9. Within grassland habitat however, this species is restricted to specific micro-habitats and is not widespread. Because of the specialized micro-habitat requirements of this species, the analysis was not habitat-based.

Conserved Populations/Locations: It appears that within Carlsbad, there is a total of 13 point localities for this species; 7 are in existing open space, one is in proposed hard line open space and one is in a standards area. Four localities are outside of any proposed open space or standards areas. There are five identified major populations in Carlsbad: near the junction of El Camino Real and College Boulevard (in an existing hardline conservation area), south of Palomar Airport Road, i.e., BCS property; north of Alga Road, i.e., VLC property (in existing hardline conservation area); just west of San Marcos, i.e., Carrillo Ranch property (in proposed hardline conservation area); and north of Olivenhain (approximately 80% in hardline conservation area).

Because this species is a Narrow Endemic, it will be conserved at 100% level within the preserve, and will be avoided in the biological core and linkage areas, per the City's measures contained in Table 9.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of vernal pool and grassland habitats will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is an annual plant that may experience dramatic yearly fluctuations in population size and detectability. The species requires a clay soil substrate, and appears to require particularly a micro-habitat within that general category. It is susceptible to local extirpation by catastrophic fire and surface disturbance. Its breeding biology is that of an outcrosser. It is insect-pollinated and may rely on animal vectors for seed dispersal.

c. Expected Impacts

Although seven known sites will be conserved by the plan, there are at least four known localities where this species is outside the preserve. In addition, one major population will not be conserved within existing or proposed hardline conservation areas. An estimated 1140 acres (63%) of grassland habitat also may be subject to impacts outside preserve areas; however, this species is restricted to particular sites within grasslands. Potential impacts to

conserved populations may include direct or indirect impacts associated with edge effects, loss or alteration of watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to: conservation of four of five known major populations; conservation of one of two additionally mapped smaller populations (50%); conservation of 37% of grassland habitat in preserved areas; application of measures contained in Table 9.

2. *Ambrosia pumila*, San Diego Ambrosia
(Narrow Endemic species)

a. Habitat/Distribution

Habitat/Distribution: San Diego ambrosia is restricted to western Riverside County, western San Diego County and northern Baja California, Mexico (Skinner and Pavlik; Wiggins 1980). In San Diego County, the species has been reported from scattered locations including Oceanside, Bonsall, Old Mission Dam Gorge area, Santee, Gillespie Field, and Sweetwater River. Within the MHCP, it has been reported from Oceanside and Bonsall. The species typically is associated with open coastal sage scrub, grassland, or disturbed habitats.

b. Conservation Goals

Conserved Habitat: An estimated 2164 acres (64 %) of coastal sage scrub and 667 acres (37%) of grassland will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal sage scrub and grassland will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Species Considerations: This species is a wind-pollinated herbaceous perennial that reproduces asexually by rhizomes; presumably relies on animal vectors, in part, for seed dispersal; possibly tolerant of some surface disturbance; transplantation/reintroduction of rhizomes may be an effective way of enhancing populations (M. Sweesy, Dudek, pers. comm. 1998).

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not anticipated to occur. However, approximately 36% of the coastal sage scrub and 63% of grassland, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to conservation of large percentages of coastal sage scrub and grassland, (i.e., 54% of total habitat in the City) the preferred habitat of the species; the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

3. *Arctostaphylos glandulosa* ssp. *crassifolia*, Del Mar Manzanita

a. Habitat/Distribution

This species occurs on sandstone terraces and bluffs and is associated with southern maritime chaparral. Del Mar Manzanita is restricted to San Diego County and northwestern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1996a). In San Diego County, the species is found on coastal bluffs from Oceanside (south of San Luis Rey River, not mapped) south to La Jolla (Wells 1986), and inland to San Marcos, Lake Hodges, Los Peñasquitos Canyon, and possibly Miramar Reservoir. Within northern San Diego County, the plant is known to occur in Carlsbad, Encinitas, and San Marcos.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Two major populations of this species have been identified in Carlsbad, in the vicinity of Agua Hedionda Lagoon and Green Valley/Olivenhain. Both of these populations are considered critical locations. Approximately 83% of these major populations are proposed for conservation. This includes an estimated 80% of the Agua Hedionda population and 92% of the Green Valley/Olivenhain population. All of the conserved "points" in the preserve fall within one of these two major populations. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. Lands where this species is conserved are typically >50 acres in size and are contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators and seed dispersal agents will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This burl-forming, fire-adapted shrub occurs on sandstone terraces and bluffs in southern maritime chaparral. Individuals are typically long-lived. Flowers are insect- and bird-pollinated; the species may rely on animals, in part, for seed dispersal.

c. Expected Impacts

An estimated 15% of the major populations of this species in Carlsbad may be subject to impacts outside preserve areas. In addition, approximately 48 acres (12%) of southern

maritime chaparral, the preferred habitat of this species, may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to substantial conservation of major populations and habitat; the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

**4. *Baccharis vanessae*, Encinitas *Baccharis*
(Narrow Endemic species)**

a. Habitat/Distribution

This species occurs in southern maritime chaparral and dense southern mixed chaparral. Encinitas *Baccharis* is a San Diego County endemic that is now limited to approximately 14 highly restricted populations throughout its range, including Encinitas, Carmel Mountain, Mt. Israel-Del Dios, 4S Ranch, Mt. Woodson-Iron Mountain, Poway (Van Dam Peak), and Mira Mesa (Beauchamp 1986; USFWS 1996a). The latter two locations consisted of one plant each as of 1987 and are too small to constitute viable populations. A small population was also recently detected in the southern Santa Ana Mountains in northern San Diego County (Boyd et al. 1993). Within northern San Diego County, this species is known only from Carlsbad and Encinitas.

b. Conservation Goals

Conserved Habitat: An estimated 1,054 acres of potential habitats for this species will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, on the slopes above Green Valley. This is considered a critical location for this species. This entire population (100%) is proposed for conservation. An additional occurrence of this species in Carlsbad, which is not considered a major population, is also proposed for conservation. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. Lands where this species is conserved are typically >50 acres in size and contiguous or intermixed with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This broom-like shrub is presumably fire-adapted, although the exact fire response mechanism is not known. Flowers are presumably insect-pollinated and seeds are presumably wind-dispersed.

c. Expected Impacts

All known occurrences of this species in Carlsbad will be conserved by the plan. An estimated 317 acres of preferred habitats for this species (48 acres of southern maritime chaparral and 269 acres of other chaparral types) may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

This species meets the take authorization standards due to complete (100%) conservation of the major population and its habitat; the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to the conserved, major population; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to the conserved population.

5. *Brodiaea filifolia*, Thread-leaved Brodiaea
(Narrow Endemic species)

a. Habitat/Distribution

This species generally occurs in heavy clay soils in grasslands or vernal pools. Thread-leaved Brodiaea is known from Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties (Skinner and Pavlik 1994). In San Diego County, the species has been reported from Camp Pendleton, Oceanside, Carlsbad, Vista, San Marcos, and the 4S Ranch. Within the MHCP, the species currently occurs in Oceanside, Carlsbad, Vista, and San Marcos. The majority of remaining populations of this species are concentrated on the Santa Rosa Plateau in western Riverside County and in the MHCP area (USFWS 1994b). A total of ten populations are believed to occur in Carlsbad, including: Carlsbad Highlands; Newton Business Center; Fox property; Calavera Heights; La Costa Valley; Fieldstone Northwest; and Rancho Carrillo.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland habitat (667 acres, 37%) and vernal pools (100%) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Within grassland habitat, however, this species is restricted to mesic locations. Because of these specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: Four major populations of this species have been identified and mapped in Carlsbad: at Calavera Heights, Carlsbad Highlands, Rancho Carrillo, and along El Camino Real (Fox property). All of these populations are considered critical locations. At least one additional major population has been identified in Carlsbad, but is not mapped. It is in Special Resource Area 2, within which the measures contained in Table 9 require avoidance of Narrow Endemic plant populations. Of the four major, mapped populations, all are proposed for conservation in their entirety. Smaller populations at Newton Business Center and Fieldstone Northwest will also be conserved. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemics.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects adjacent to conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species); in some cases, this may require fencing. Management of edge effects will be particularly important for the Calavera Heights and the Carrillo Ranch populations. In addition, the watershed surrounding conserved populations will be conserved to maintain appropriate hydrological conditions for the species. To the extent feasible, populations will also be protected from fires and disturbances associated with fire suppression. Finally, small or declining populations will be enhanced by transplantation/introduction of corms, as necessary.

Special Considerations: This species generally occurs in heavy clay soils in grasslands or vernal pools. It is an herbaceous perennial from a corm, and reproduces asexually by producing corm offsets. Flowers are presumably insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

All of the identified major populations in Carlsbad will be conserved by the plan. An estimated 1,140 acres (63%) of grassland habitat may be subject to impacts outside preserve areas; however, this species is restricted to mesic areas within grasslands (or vernal pools). Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, loss or alteration of the watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of major populations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

6. *Brodiaea orcuttii*, Orcutt's Brodiaea
(Narrow Endemic species)

a. Habitat/Distribution

The species generally occurs in vernal pools or along intermittent streams, meadows and swales in coastal, foothill and mountain areas of San Diego County and in northwestern Baja California, Mexico (Skinner and Pavlik 1994). Representative locations in the county include Carlsbad, San Marcos, Elfin Forest/Harmony Grove, Ramona, Cuyamaca, El Cajon Mountain, Kearny Mesa, Miramar, and Proctor Valley. One other population of unknown size occurs north of the Carlsbad Safety Center on a slope above Agua Hedionda Creek, apparently on County land.

b. Conservation Goals

Conserved Habitat: Nearly 100% of the identified vernal pools containing Orcutt's Brodiaea in Carlsbad will be conserved as a result of the existing preserve design (a dedicated open space easement as a result of a Corps 404 permit and CDFG 2081 permit at the NCTD Poinsettia Lane Commuter Rail Station) and application of the City's measures contained in Table 9. One other minor population, just west of El Camino Real, is conserved in hardline open space. In addition, vernal pool habitat that may contain Orcutt's brodiaea will be included in hardline open

space (i.e., Zone 15 Manzanita Partners property, east of El Camino Real). All other vernal pool habitat will be afforded protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane (Zone 22). This population is considered critical, and is proposed for conservation in its entirety. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory process, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for vernal pool watersheds.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species is an herbaceous perennial that grows from a corm (i.e., bulb) by which it reproduces asexually by offsets. It presumably is insect-pollinated and seeds presumably are self-dispersed. Transplantation of corms may be an effective way to enhance populations. This species generally occurs in vernal pools.

c. Expected Impacts

The one major population in Carlsbad will be entirely conserved by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed. One small vernal pool on the Manzanita partners site (Zone 21) containing a minor population of Orcutt's brodiaea (estimated to contain 2 plants in 1998) will not be preserved.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city (i.e., Poinsettia Lane vernal pools); conservation of one minor population (west of El Camino Real) and existing, known vernal pool habitat (Manzanita Partner property); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

7. *Ceanothus verrucosus*, Wart-stemmed Ceanothus

a. Habitat/Distribution

This species is associated with southern maritime chaparral and southern mixed chaparral. It also forms nearly monotypic stands in some inland locations. Wart-stemmed ceanothus is limited to western San Diego County and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, it is found on the immediate coast, from Carlsbad south to the U.S.-Mexico border. It also occurs inland towards San Marcos and Lake Hodges. Large populations occur in Carlsbad, Encinitas, Torrey Pines State Reserve, Carmel Mountain-Carmel Valley, San Marcos,

Escondido, and Point Loma. Smaller populations are known from Kearny Mesa-Clairemont Mesa-Miramar, Soledad, and Spooner's Mesa. Within the MHCP, this species occurs in Carlsbad, Encinitas, San Marcos, and Escondido.

b. Conservation Goals

Conserved Habitat: An estimated 1,054 acres (77%) of the potential habitat for this species will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Three major populations of this species have been identified in Carlsbad: (1) vicinity of Agua Hedionda Lagoon, (2) slopes surrounding Green Valley, and (3) south of Palomar Airport Road. None of these populations are considered critical locations. Approximately 90% of the major populations is proposed for conservation. This includes an estimated 95% of the Agua Hedionda population, 95% of the Green Valley population, and 78% of the Palomar Airport Road population. Lands where this species is conserved typically are >50 acres in size and contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to stimulate regeneration of the population.

Special Considerations: This evergreen shrub is a highly fire-adapted species whose fire response mechanism is seed germination from a persistent seedbank after exposure to intense heat. Flowers presumably are insect-pollinated and seeds are self-dispersed.

c. Expected Impacts

An estimated 10% of individuals in the major populations in Carlsbad may be subject to impacts outside preserve areas. Additional acreage of potential habitat for this species may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities or population declines as a result of frequent fire events.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of substantial conservation of major populations (90%) and habitat (77%); the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

**8. *Chorizanthe orcuttiana*, Orcutt's Spineflower
(Narrow Endemic species)**

a. Habitat/Distribution

This species occurs on southern maritime chaparral in one location in the MHCP study area: Oak Crest Park in Encinitas.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad; there is only one known population in the north county area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of southern maritime chaparral will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This tiny annual is very difficult to detect in surveys and may experience yearly fluctuations in population size. Its response to fire is unknown. Plants are insect pollinated and seeds presumably are self-dispersed. It occurs on sandstone terraces and bluffs in southern maritime chaparral.

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not anticipated to occur. However, approximately 48 acres (12%) of southern maritime chaparral, which potentially is habitat of this species, may be subject to impacts outside the preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of large percentages of the preferred habitat of the species (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

9. *Comarostaphylis diversifolia* ssp. *diversifolia*, Summer Holly

a. Habitat/Distribution

This species is found in scattered locations in chaparral. Summer holly occurs in Orange, Riverside, and San Diego Counties, and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is found along the coast from Carlsbad to the U.S.-Mexico border, and in inland locations from the San Marcos Mountains south to Otay Mountain. Within the MHCP, the species occurs in Carlsbad, Encinitas, San Marcos, and Escondido.

b. Conservation Goals

Conserved Habitat: An estimated 701 acres (72%) of potential habitat for this species will be conserved as a result of existing preserve design and application of the City's measures

contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vicinity of Agua Hedionda Lagoon. This is not considered a critical location for this species. An estimated 76% of this population is proposed for conservation. Lands where this species is conserved are typically >50 acres in size and contiguous with other native habitats. This configuration increases the probability that species-specific pollinators and seed dispersal agents will persist in the preserve. This species is not a Narrow Endemic, and populations occur scattered throughout coastal San Diego County.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to stimulate regeneration of the population.

Special Considerations: This fire-adapted shrub typically stump-sprouts from the base of the stem or root-crown after fire or cutting. Individuals tend to be long-lived and populations typically experience slow rates of individual turnover. Flowers are presumably insect-pollinated and seeds are animal-dispersed.

c. Expected Impacts

An estimated 24% of the major population in Carlsbad may be subject to impacts outside preserve areas. In addition, approximately 269 acres (28%) of preferred habitat for this species may be subject to impacts outside preserve areas. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent fires.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to substantial conservation of the major population (76%) and habitat (72%); the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

10. *Corethrogyne filaginifolia* var. *linifolia*, Del Mar Mesa Sand Aster
(Narrow Endemic species)

a. Habitat/Distribution

Del Mar Mesa Sand Aster is a San Diego County endemic that occurs along bluffs or brushy slopes near the coast from Carlsbad southward to Point Loma. Within the MHCP, the species occurs in several locations in Carlsbad and Encinitas. This species occurs on sandstone substrates where it is generally associated with coastal sage scrub or chaparral, including southern maritime chaparral.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad: Zone 19, near Batiquitos Lagoon and Zone 23 in the vicinity of Green Valley. No critical locations have been identified.

Of the eight mapped occurrences in the city, two are in hardline conservation areas, and one is adjacent to a hardline conservation area.

Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This perennial sub-shrub occurs on sandstone terraces and bluffs in southern maritime chaparral and coastal sage scrub. Individuals typically are relatively short-lived. The species probably is an obligate seeder rather than a vigorous stump-sprouter, and may invade disturbed soils readily.

c. Expected Impacts

Although no major populations of this species in Carlsbad will be subject to impacts outside preserve areas, some smaller populations will (approximately five of eight mapped occurrences). In addition, approximately 48 acres (12%) of southern maritime chaparral, may be subject to impacts outside the preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species because the one major known population will be conserved in Green Valley within a hardline conservation area and habitat of this species is adequately conserved (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve that support or are adjacent to conserved populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

11. *Dudleya blochmaniae* ssp. *blochmaniae*, Blochman's Dudleya
(Narrow Endemic species)

a. Habitat Distribution

This species typically is found on coastal bluffs in association with coastal scrub habitat. It also has been reported on rocky or clay soils. Blochman's Dudleya is found in San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties, and in Baja California, Mexico. Despite its relatively widespread distribution, this species is known from fewer than 20 occurrences in California, and fewer than 5 occurrences in Baja California (Skinner and Pavlik 1994). In San Diego County, the species is found on Camp Pendleton, in Carlsbad,

(north of Palomar Airport), and in Oceanside, which are the only records for this species in the MHCP.

b. Conservation Goals

Conserved Habitat: A substantial amount of coastal scrub and grassland habitats will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Because of specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: No major populations of this species have been identified in Carlsbad. One small population has been identified north of Palomar Airport Road on the Hieatt property, and is considered critical because it represents the southern-most known location for this species. This population has been proposed for conservation in its entirety by the HMP's standards for Zone 5.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species); fencing may be required. To the extent feasible, populations also will be protected from fires and disturbances associated with fire suppression. Finally, populations that are declining in size may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species typically occurs on coastal bluffs in association with coastal scrub habitats. It has also been reported from rocky and clay soils.

c. Expected Impacts

The only documented occurrence of this species in Carlsbad will be conserved entirely by the plan. An estimated 1,270 acres (40%) of preferred habitats for this species (3 acres [8%] of maritime succulent scrub and 1,267 acres [40%] of Diegan coastal sage scrub) may be subject to impacts outside preserve areas. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of fires or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to conservation of the single-known Carlsbad population; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

12. *Dudleya viscida*, Sticky Dudleya

a. Habitat/Distribution

This species is found on dry, rocky slopes or cliffs and typically is associated with coastal sage scrub or chaparral. Sticky Dudleya occurs in Orange, Riverside, and San Diego Counties (Skinner and Pavlik 1994). In San Diego County, the species occurs on Camp Pendleton (San Mateo Creek, Stuart Mesa, bluffs at the mouth of the Santa Margarita River), Oceanside, Carlsbad, Escondido Creek, San Dieguito River Valley, and Santa Fe Valley. The Oceanside and Carlsbad locations fall within the MHCP.

b. Conservation Goals

Conserved Habitat: Because of specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: One major and critical population of this species occurs in Carlsbad, along San Marcos Creek. It lies entirely within the preserve area and is considered 100% conserved. Natural vegetation where this species is conserved is >50 acres in extent and contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping); this may require fencing. Population(s) also will be protected from fires.

Special Considerations: This herbaceous perennial occurs on dry, rocky slopes or cliffs and is typically associated with coastal sage scrub or chaparral. Flowers are insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

The entire major population of this species in Carlsbad is included in the existing preserve design, and no individuals in this population are considered subject to take. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete conservation of the one major population in the city; the size, shape, and habitat diversity of lands in the preserve that support and are adjacent to the conserved, major population; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to the conserved population.

13. *Eryngium aristulatum* var. *parishii*, San Diego Button-celery
(Narrow Endemic species)

a. Habitat/Distribution

This species is restricted to vernal pools. San Diego Button-celery is found in Riverside and San Diego Counties, and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is found on Camp Pendleton, Carlsbad, San Marcos, Marine Corps Air Station Miramar, Kearny Mesa, Clairemont Mesa, and Chollas area, Otay Mesa (Beauchamp 1986; USFWS 1993; Ogden and Dudek 1994). Within northern San Diego County, it is limited to Carlsbad and San Marcos.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools in Carlsbad will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat where this population is known to occur is protected in a conservation easement that resulted from the 404 and 2081 permits for the NCTD Poinsettia Lane Commuter Rail Station project. Because of specialized micro-habitat requirements, the

analysis for this species was not habitat-based.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. This population is considered critical, and is proposed for conservation in its entirety. No other occurrences are known. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so will receive additional protection outside the preserve per federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species is restricted to clay soils in vernal pools. Flowers are presumably insect-pollinated and seeds are self- and possibly animal-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to the conservation of the identified, major population and its habitat; additional protection afforded wetland habitat (including watersheds) by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

14. *Euphorbia misera*, Cliff Spurge

a. Habitat Distribution

Cliff Spurge is found in Orange, Riverside, and San Diego Counties, on San Clemente and Santa Catalina Islands in Los Angeles County, and on the mainland and Isla Guadalupe in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, this species is known from Carlsbad, Point Loma, San Diego, Sweetwater Valley, and Otay Mesa. It also occurs across the border in the Tijuana Hills (Beauchamp 1986). The only reported location for this species in the MHCP is in Carlsbad. The species is apparently more common north and south of the MHCP. This species is found on rocky slopes and coastal bluffs in coastal scrub (e.g., coastal bluff scrub, maritime succulent scrub, coastal sage scrub).

b. Conservation Goals

Conserved Habitat: An estimated 33 acres (94%) of coastal bluff scrub and maritime succulent scrub will be conserved as result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One population of this species has been identified as extant in Carlsbad; there are no major populations. The one recorded population is conserved within an existing hardline conservation area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal bluff scrub and maritime succulent scrub will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is a stem succulent shrub that presumably is not well-adapted to fire because of its succulence. It is insect-pollinated and seeds presumably are self-dispersed.

c. Expected Impacts

There is one reported small population of this species in Carlsbad located on the north shore of Agua Hedionda Lagoon in an existing hardline conservation area, and impacts consequently are not anticipated to occur. However, approximately 2 acres of coastal bluff scrub and maritime succulent scrub, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to: conservation of 94% of the preferred habitat of the species; conservation of the single known site of the species in Carlsbad; the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

15. *Ferocactus viridescens*, San Diego Barrel Cactus

a. Habitat/Distribution

San Diego Barrel Cactus is restricted to San Diego County and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species occurs along the coastal slope from Oceanside south to the U.S.-Mexican border. Although the species was formerly widespread within its San Diego range, it now persists in numerous, fragmented populations. Approximately eight major populations of this species were identified in the MSCP study area; only two major populations have been documented in the MHCP. Within the MHCP, the species reportedly occurs in Oceanside (this population is not mapped) and in Encinitas. This species is primarily associated with maritime succulent scrub and coastal sage scrub, although it has also been documented in chaparral and grassland habitats.

b. Conservation Goals

Conserved Habitat: An estimated 3,200 acres (67%) of coastal sage scrub, chaparral and southern maritime chaparral will be conserved as result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One population has been identified south of Palomar Airport Road, approximately 1 mile east of the Pacific Ocean. This population is within an existing hardline conservation area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal bluff scrub and maritime succulent scrub will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is a stem succulent shrub that presumably is not well-adapted to fire because of its succulence. It is insect-pollinated and seeds are animal-dispersed.

c. Expected Impacts

Given that the only known population within the City occurs within an existing hardline conservation area, no impacts to this species are expected to occur. However, approximately 33% of coastal sage scrub, chaparral and southern maritime chaparral, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to conservation of the one known population south of Palomar Airport Road within an existing hardline conservation area; conservation of large percentages of the preferred habitat of the species (i.e., 67% of coastal sage scrub, chaparral and southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

16. *Hazardia orcuttii*, Orcutt's Hazardia
(Narrow Endemic species)

a. Habitat/Distribution

This species occurs in southern maritime chaparral in one location in the United States: Lux Canyon in the City of Encinitas. Its primary distribution is northwestern Baja California, Mexico (Wiggins DATE).

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be

conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad; there is only one known population in the north county area (i.e., Lux Canyon in Encinitas).

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of southern maritime chaparral will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This shrub presumably is adapted to fires, is insect-pollinated and seeds presumably are animal-dispersed. It occurs on sandstone terraces and bluffs in southern maritime chaparral.

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not known to occur. However, approximately 48 acres (12%) of southern maritime chaparral, which potentially is habitat of this species, may be subject to impacts outside the preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of large percentages of the preferred habitat of the species (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potential populations.

17. *Iva hayseiana*, San Diego Marsh-elder

a. Habitat/Distribution

This species is found in moist or alkaline places in the coastal region, particularly along intermittent streams. San Diego marsh-elder is restricted to southwestern San Diego County and northern Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, this species occurs from San Marcos south to the U.S.-Mexico border, with reported localities including San Marcos Creek, Encinitas Creek, Escondido Creek, San Dieguito River Valley, San Elijo Lagoon, Rancho Santa Fe, Los Peñasquitos Canyon, Proctor Valley, Otay River Valley, Tijuana River Valley, and Otay Mesa, among others (Beauchamp 1986; Ogden and Dudek 1994). Within the MHCP, this species occurs in Carlsbad and San Marcos.

b. Conservation Goals

Conserved Habitat: Determination of conserved habitat is difficult for this species, because it has the potential to occur in limited areas of several habitat types. Nonetheless, it is

estimated that 14 acres (100%) of the most likely habitat for this species (cismontane alkali marsh) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. In addition, 293 acres (80%) of other potential habitat types (189 acres [88%] of freshwater marsh and 104 acres [68%] of disturbed wetland) will be similarly conserved by the plan.

Conserved Populations/Locations: Two major populations of this species have been identified in Carlsbad, along San Marcos Creek and Encinitas Creek. Both of these populations are considered critical locations. Approximately 70% of these populations are estimated to be conserved based on an analysis of point localities. However, it is likely that these populations will be 100% conserved based on site-specific avoidance and management guidelines. In addition, this species will receive additional protection outside the preserve per the federal and state wetland regulatory processes, as well as the City's no-net-loss of wetlands policy.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species). In addition, the watershed surrounding the conserved populations needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, enhancement of declining populations via introduction of appropriate plant materials may be conducted, as necessary. This may be particularly important for the San Marcos Creek population.

Special Considerations: This species is found in moist or alkaline places (e.g., along intermittent streams). It is grown successfully on a commercial basis. This species is not a Narrow Endemic, and populations occur scattered throughout coastal San Diego County.

c. Expected Impacts

An estimated 30% of the individuals in the major populations in Carlsbad may be subject to impacts outside preserve areas. Although habitat impacts are difficult to quantify, all of the cismontane alkali marsh (14 acres), the preferred habitat for this species, is conserved by the plan. An estimated 74 acres (20%) of other potential habitats for this species (25 acres [12%] of freshwater marsh and 49 acres [32%] of disturbed wetland) may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed. In addition, clearing of vegetation in stream channels for flood control may remove a yet unquantified amount of this species' populations or individuals.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of substantial conservation of major populations (70%); the most potential habitat (100%); and other potential habitat (80%), in conjunction with additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

18. *Muilla clevelandii*, San Diego Goldenstar
(Narrow Endemic species)

a. Habitat/Distribution

This species generally occurs in heavy clay soils in grasslands. San Diego Goldenstar is endemic to San Diego County (Skinner and Pavlik 1994) where it has been reported from Carlsbad, San Diego, Rancho Bernardo, Poway, and Otay. Within the MHCP, the species currently occurs only in Carlsbad. Carlsbad has been identified as a major and critical population. The majority of remaining populations of this species are concentrated on Kearny Mesa, Miramar, Santee, Morena, and Otay.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland habitat (37%) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Within grassland habitat, however, this species is restricted to localities within the Villages of La Costa.

Conserved Populations/Locations: One major population of this species has been identified and mapped in Carlsbad: west and east of Rancho Santa Fe Road in the Villages of La Costa. This population is considered a critical location. Of the 23 mapped points, it appears that 19 are within development areas and 4 are within hardline open space.

Although conservation of this species cannot be considered substantial, it was determined as part of the Fieldstone HCP and cannot be altered. It is the intention of the City to enforce avoidance of this species through its designation as a Narrow Endemic. Furthermore, the proposed preserved portion of the Villages of La Costa population will be managed with the goal of sustaining the population in perpetuity.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects adjacent to conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species); in some cases, this may require fencing. To the extent feasible, populations will also be protected from fires and disturbances associated with fire suppression. Finally, small or declining populations will be enhanced by translocation/introduction of corms, as necessary.

Special Considerations: This species generally occurs in heavy clay soils in grasslands. It is an herbaceous perennial from a corm, and reproduces asexually by producing corm offsets. Flowers are presumably insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

Approximately 85% of the one identified major population in Carlsbad will be impacted by development associated with implementation of the Fieldstone HCP. An estimated 1,140 acres (63%) of grassland habitat may be subject to impacts outside preserve areas; although this species may potentially occur in grasslands, it is not known to occur in the above mentioned 1,140 acres of grasslands. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, loss or alteration of the watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to conservation (17%) of the one known major population; conservation of 37% of grassland, the preferred habitat of the species; application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

19. *Myosurus minimum* ssp. *apus*, Little Mousetail
(Narrow Endemic species)

a. Habitat/Distribution

This species is found in vernal pools. Little Mousetail has a relatively widespread distribution, occurring in Butte, Colusa, Solano, Contra Costa, Alameda, Stanislaus, Kern, Riverside, San Bernardino, and San Diego Counties, as well as in Oregon and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is restricted to Camp Pendleton (Stuart Mesa, Wire Mountain), Carlsbad, Ramona, the mesas north of San Diego, and Otay Mesa. Only the Carlsbad location falls within the MHCP.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing this species in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the documented population occurs is protected in a conservation easement that resulted from the 404 and 2081 permits on the NCTD Poinsettia Lane Commuter Rail Station. In addition, other identified vernal pool habitat on the Manzanita Partners project site east of El Camino Real is proposed as hardline open space. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. This population is considered critical, and is proposed for conservation in its entirety. Little Mousetail also was reported to occur in the vernal pools east of El Camino Real on the Manzanita Partners project site, its occurrence has been verified recently. This area is within proposed hardline open space. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measure contained in Table 9. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This may require fencing; limiting pesticide, herbicide, and other chemical use in the immediate vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This small, tufted annual species is found in vernal pools. Flowers are presumably insect-pollinated and seeds are self- and possibly animal-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the identified, major population and its habitat; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

20. *Navarretia fossalis*, Prostrate Navarretia
(Narrow Endemic species)

a. Habitat/Distribution

The species generally occurs in vernal pools or roadside depressions. Prostrate Navarretia occurs in western Riverside and southwestern San Diego Counties, and in northwestern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1994b). Historically, Prostrate Navarretia occurred in relatively few of the San Diego County vernal pools. In San Diego County, this species is found below 450-meter elevation in Carlsbad, San Marcos, Ramona, and Otay Mesa.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing Prostrate Navarretia in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the population occurs is in an existing conservation easement that was established as a result of the 404 and 2081 permit processes for the NCTD Poinsettia Lane Commuter Rail Station project. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. There are no other known occurrences. This population is considered critical, and is proposed for conservation in its entirety. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and, if a new population is found, will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so will receive additional protection outside the preserve per the federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This annual species generally occurs in vernal pools or roadside depressions. It is presumably self-breeding and seeds are presumably self-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city; additional protection afforded wetland habitat by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

21. *Orcuttia californica*, California Orcutt Grass
(Narrow Endemic species)

a. Habitat/Distribution

This species is found in or near vernal pools. California Orcutt Grass is currently found in Ventura, Riverside, and San Diego Counties, and Baja California, Mexico. It is apparently extirpated from Los Angeles County and is currently reported from fewer than 20 locations throughout its range (Skinner and Pavlik 1994). In San Diego County, California Orcutt Grass is known from below 200-meter elevation on the coastal mesas, with reported localities including Carlsbad, Marine Corps Air Station Miramar and Otay Mesa (J. Brown, pers. comm.; Beauchamp 1986).

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing California Orcutt Grass in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the population occurs is in an existing conservation easement that is the result of the NCTD Commuter Rail Station 404 and 2081 permitting processes. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. There are no other known occurrences. This population is considered critical, and is proposed for conservation in its entirety. Because this species is a Narrow Endemic, it will be conserved at a 100% level

within the preserve, and if a new population is found, will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory process, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the immediate vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This annual grass species occurs in vernal pools. Flowers are wind-pollinated and the species may possess a mixed breeding system.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city; additional protection afforded wetland habitat by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

22. *Pinus torreyana* ssp. *torreyana*, Torrey Pine

a. Habitat/Distribution

This species typically occurs in Torrey Pine forest or as inclusions in southern maritime chaparral. It also is used extensively in landscaping, and some individual trees in outlying locations may have been planted. Torrey Pine may be the most restricted pine species in California; subspecies *torreyana* occurs only along the coast of San Diego County near Del Mar. The major population of this subspecies occurs in Torrey Pines State Reserve (including the extension), where it is protected and managed. Smaller stands and/or scattered individuals occur in Carlsbad, Encinitas, Del Mar, Carmel Mountain, and the San Dieguito River Valley. Within the MHCP, this species is restricted to Carlsbad and Encinitas.

b. Conservation Goals

Conserved Habitat: Torrey Pine woodland does not occur in Carlsbad.

Conserved Populations/Locations: No major populations or critical locations of this species occur in Carlsbad. This species is known from two locations in Carlsbad. One of

these consists of scattered individuals, while the other is apparently a tree farm or plantation. Both locations are in areas proposed for conservation. The major population center for this species lies south of Carlsbad, along the coast of San Diego County near Del Mar, where the majority of naturally-occurring Torrey Pine trees is protected and managed in Torrey Pines State Reserve.

Measures to Reduce Threats to Species' Survival: None.

Special Considerations: Torrey Pine is a wind-pollinated coniferous tree that may be self-fertile. It has been shown to possess extremely low genetic variability. Seeds are heavy and nearly wingless, so dispersal is limited. It is susceptible to insect infestations, particularly under prolonged drought conditions.

c. Expected Impacts

All of the individuals identified in Carlsbad will be conserved by the plan. Torrey Pine woodland, has not been mapped in Carlsbad; however, the species can occur scattered in southern maritime chaparral. An estimated 48 acres (12%) of southern maritime chaparral in Carlsbad may be subject to impacts outside preserve areas.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of the complete conservation of individuals, conservation of a substantial portion of potential habitat (88%); and application of the City's measures contained in Table 9.

23. *Quercus dumosa*, Nuttall's Scrub Oak

a. Habitat/Distribution

Nuttall's Scrub Oak has a disjunctive distribution that includes Santa Barbara, Orange, and San Diego Counties (Skinner and Pavlik 1994). The species also occurs southward to the Punta Banda region of Baja California, Mexico (F. Roberts pers. comm.). In San Diego County, Nuttall's Scrub Oak has been documented below 500-meters elevation in Carlsbad, Encinitas, Quesethaven, San Dieguito County Park, Del Mar, Carmel Valley and Miramar. The Carlsbad and Encinitas locations occur in the MHCP. It should be noted that this species was only recently described, and its full distributional range has yet to be defined. This species generally occurs in sandy soils near the coast, in association with southern maritime chaparral and coastal sage scrub.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Two major and critical populations of this species have been identified in Carlsbad and both are completely in proposed hardline conservation areas north of Palomar Airport Road, east of El Camino Real. These are considered critical locations. All of the major populations are proposed for conservation within hardline preserves. There are eight other locations mapped in the city: 2 are preserved in hardline open space and 3 are adjacent to hardline conservation areas.

All of the conserved "points" fall within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. The areas where this species is conserved typically are greater than 50 acres in size and are contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators and seed dispersal agents will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This fire-adapted shrub occurs on sandstone terraces and bluffs in southern maritime chaparral, southern mixed chaparral and coastal sage scrub. Individuals are typically long-lived. The species may rely on animals, in part, for seed dispersal.

c. Expected Impacts

Although no major populations of this species in Carlsbad will be subject to impacts outside preserve areas, some smaller populations (approximately three of eight mapped localities) will be impacted. In addition, approximately 48 acres (12%) of southern maritime chaparral may be subject to impacts outside the preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of the all of the major populations within proposed hardline conservation areas; conservation of approximately 63% of other small populations documented within the city; conservation of 88% of southern maritime chaparral, the preferred habitat of the species; the size, shape and habitat diversity of lands in the preserve that support or are adjacent to the conserved, major populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

24. *Quercus engelmannii*, Engelmann Oak

a. Habitat/Distribution

This species occurs in canyons and on open slopes in foothill and coastal regions, where it is associated with Engelmann Oak woodland, chaparral, and grassland. Engelmann Oak occurs in Los Angeles, Orange, Riverside, and San Diego Counties, on Santa Catalina Island (one tree), and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species occurs primarily east of the MHCP, from the Santa Margarita Mountains on the Riverside-San Diego County border southward towards Dulzura, and east to the desert slope. Large populations are found in Pala, Lake Wohlford, Twin Flats, Boden Canyon, Clevenger Canyon, Escondido, Valley Center, Ramona, and Featherstone Canyon. In fact, over 90% of the remaining stands of this species are estimated to occur in San Diego County (Pavlik et al. 1991). Within the MHCP, small stands and/or individual trees are found in Carlsbad (e.g., south and east of Canyon de las Encinas), and larger stands occur in Escondido (Oak Hills, Dixon Lake).

b. Conservation Goals

Conserved Habitat: A significant amount of oak woodland in Carlsbad will be conserved as a result of the existing preserve design and application of the City's no-net-loss of oak woodlands policy and measures contained in Table 9. However, this acreage includes little, if any, Engelmann Oak woodland.

Conserved Populations/Locations: No major populations or critical locations of this species have been identified in Carlsbad. Five occurrences, consisting of individual trees or small stands of trees, have been documented along El Camino Real and south of Palomar Airport Road. The majority of these occurrences are in areas proposed for conservation. Within the preserve, Engelmann Oak occurs as inclusions in scrub and chaparral habitats, and does not constitute Engelmann Oak woodland. The major distribution of this species lies east of Carlsbad.

Measures to Reduce Threats to Species' Survival: Management of Engelmann Oaks within the preserve will fall under the guidelines of the City's oak protection policy.

Special Considerations: This evergreen tree typically occurs in canyons and on open slopes. Seedlings are fire-tolerant, whereas mature trees are fire-sensitive. Flowers are wind-pollinated and seeds (acorns) are self- and animal-dispersed.

c. Expected Impacts

Of the five documented occurrences of this species in Carlsbad, one may be subject to impacts outside preserve areas. In addition, an estimated 2 acres (7%) of oak woodlands in Carlsbad may be subject to impacts outside preserve areas. However, this acreage includes little, if any, Engelmann Oak woodland.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of the substantial conservation of individuals (80%); application of the City's no-net-loss of oak woodlands policy and measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

25. *Euphyes vestris harbisoni*, Harbison's Dun Skipper

a. Habitat/Distribution

Harbison's Dun Skipper is a medium-small chocolate-brown butterfly restricted to riparian habitats where its larval host San Diego sedge (*Carex spissa*) grows in the company of poison oak (*Toxicodendron diversilobum*). Typical habitat is canyon bottoms, creeks, and seeps beneath the shade of oak trees. The butterfly occurs in a series of scattered and disjunct colonies throughout western San Diego County, extending as far north as the Santa Ana Mountains of Orange County (Brown and McGuire 1983). Locally, it seldom occurs within 10 miles of the immediate coast. The largest known populations are in the Ramona-Escondido area. There are no documented locations within the City of Carlsbad.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 603 acres of oak or riparian habitats that potentially, but are unlikely to support the Harbison's Dun Skipper. Of this total, the HMP will conserve approximately 525 acres (87%) within preserve areas. In addition, approximately 90% conservation of potential Harbison's Dun Skipper habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, the requirement for maximum avoidance of oak woodland (Table 9), and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Location: No major/critical populations of the Harbison's Dun Skipper have been identified within the planning area.

Conserved Linkages: No populations of the Harbison's Dun Skipper are likely to be present within the linkages.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade or fragment this species' potential habitat.

Special Consideration: This species is unlikely to be present within the City due to absence of documented locations.

c. Expected Impacts

Direct Impacts: Direct impacts to the Harbison's Dun Skipper are expected to be negligible due to the unlikely occurrence of the species within the planning area, the adequately conserved potential habitat within the HMP preserve system and the City's no-net-loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Harbison's Dun Skipper are expected to be negligible due to the unlikely occurrence of the species within the planning area.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to the absence of the species within the City; the 87% conservation of riparian forest, riparian woodland and oak woodland habitats, potential habitats of the species; additional protection afforded wetland habitat by federal and state regulations; and the City's no-net-loss of wetlands policy.

26. *Lycaena hermes*, Hermes Copper
(Narrow Endemic species)

a. Habitat/Distribution

Hermes Copper is a southern California endemic with an exceedingly restricted range (Emmel and Emmel 1973). Its known distribution includes western San Diego County and a small portion of adjacent northern Baja California, Mexico. Hermes Copper is always confined to the vicinity of its larval host plant redberry (*Rhamnus crocea*), and also requires the flowers of flat-topped buckwheat or species with similarly available nectar (Thorne 1963). There are no documented locations within the MHCP area; it is unlikely to be present within the planning area.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 4,347 acres of habitats that potentially support Hermes Copper. Of this total, the HMP will conserve approximately 2,847 acres (65%).

Conserved Populations/Location: No major/critical populations of the Hermes Copper have been identified in the planning area. Conserved habitat within Core Area 3, 5, and 7 could support individuals of this species, although it is unlikely due to the absence of documented observations of the species. Conservation of large blocks of CSS and chaparral likely would result in conservation of most potential locations of this uncommon species.

Conserved Linkages: The regional linkages to chaparral and coastal sage scrub habitat east and south of the City, as well as Link C, provide the best connections for the potential occurrence of this species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade or fragment this species' potential habitat.

Special Consideration: This species is unlikely to be present within the City.

c. Expected Impacts

Direct Impacts: Direct impacts to the Hermes Copper are unlikely to occur due the absence of known locations. Although unlikely, impacts could result from the loss of coastal sage scrub and chaparral habitat.

Indirect Impacts: Indirect impacts to the Hermes Copper could result from the increased fragmentation of this species' potential habitat.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to absence of the species from the planning area; adequate conservation of coastal sage scrub and chaparral habitats; and the configuration of these conserved habitats, including substantial conservation of core areas 3 and 7; and conservation through designation of the species as a Narrow Endemic.

27. *Streptocephalus woottoni*, Riverside Fairy Shrimp
(Narrow Endemic species)

a. Habitat/Distribution

Riverside Fairy Shrimp occupy pools in which the water persists into April or May and reaches a minimum depth of 30 centimeters (about 1 foot) at filling (Eng, Belk, and Erikson 1990). The species has also been observed in shallower pools on MCB Camp Pendleton (Ogden unpublished data). It is known from only five general localities in southern California: five pools in the vicinity of Temecula and Rancho California, Riverside County (Eng, Belk, and Erikson 1990), one pool on NAS Miramar (Simovich and Fugate 1992), one pool on Otay Mesa (Simovich and Fugate 1992), pools in Carlsbad, and numerous pools on Camp Pendleton (Ogden unpublished data). It also has been collected in Baja California, Mexico (Brown, Wier, and Belk 1994).

b. Conservation Goals

Conserved Habitat: The HMP proposes to conserve 100% of known Riverside Fairy Shrimp habitat. The City's no-net-loss of wetlands policy, in conjunction with City guidelines requiring avoidance of vernal pool resources, will ensure that any additional vernal pools containing Riverside Fairy Shrimp that are discovered outside of preserve areas will be conserved. Federal and state wetlands regulations provide additional protection to vernal pool resources.

Conserved Populations/Locations: The HMP provides 100% conservation for the only known major/critical population of Riverside Fairy Shrimp in the planning area (Poinsettia Lane pools). In addition, any newly discovered populations will be conserved through the City's measures contained in Table 9, and designation of the species as a Narrow Endemic.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; prohibiting the introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds; protecting vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat; managing the watersheds surrounding vernal pools to maintain water quality and vernal pool hydrology, in particular, the watershed of the Poinsettia Lane vernal pools..

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: Because 100% of known Riverside Fairy Shrimp habitat will be conserved by the HMP, and any newly discovered vernal pools containing Riverside Fairy Shrimp are protected by measures contained in Table 9, no direct impacts to this species are expected to occur.

Indirect Impacts: Indirect impacts to this species could result from adverse changes in hydrology and the level of contaminants entering vernal pool watersheds. Potential indirect threats to the Riverside Fairy Shrimp will be minimized by site-specific management measures.

d. Basis for Take Authorization

The City is seeking take authorization for indirect impacts and for accidental direct impacts to the species. The HMP meets take authorization standards for this species due to the conservation of all known Riverside Fairy Shrimp locations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9 which seek to conserve newly discovered populations within the City; and specific management measures intended to reduce identified threats to conserved populations.

28. *Panoquina errans*, Salt Marsh Skipper

a. Habitat/Distribution

The Salt Marsh Skipper is restricted to coastal salt marshes and coastal estuaries from Los Angeles County south to the southern tip of Baja California, Mexico (Brown 1991). Within the MHCP area, this species occurs in salt marsh and salt pan habitats within Encinitas,

Carlsbad, and Oceanside.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, approximately 140 acres (93%) are included within preserve areas. In addition, 100% conservation of salt marsh habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations

Conserved Populations/Locations: Salt Marsh habitat in each of the City's coastal lagoons contain major/critical populations of the Salt Marsh Skipper butterfly. The HMP will conserve 100% of salt marsh habitat.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances.

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: No direct impacts to the Salt marsh Skipper are expected because salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Salt Marsh Skipper butterfly could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to the Salt Marsh Skipper will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization:

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat and all known Salt Marsh Skipper butterfly locations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

29. *Branchinecta sandiegoensis*, San Diego Fairy Shrimp
(Narrow Endemic species)

a. Habitat/Distribution

San Diego Fairy Shrimp are usually found early in the season after winter and spring rains in vernal pools on mesas, in roadside ditches, and in shallow (< 30 centimeters) tire ruts (Simovich and Fugate (1992)). Hatched eggs incubate at temperatures ranging from 10 to 15 °C. This species occurs in vernal pools from coastal Orange County to northern Baja California, Mexico, from near the coast (Orange County, Camp Pendleton) inland to Ramona

(Simovich and Fugate 1992; Brown, Wier and Belk 1994; USFWS 1997).

b. Conservation Goals

Conserved Habitat: The HMP conserves 100% of known San Diego Fairy Shrimp locations in the City. The City's no-net-loss of wetlands policy, in conjunction with City guidelines requiring avoidance of vernal pool resources, will ensure that any additional occupied vernal pools that are discovered outside of preserve areas will be conserved. Federal and state wetlands regulations provide additional protection to vernal pool resources.

Conserved Populations/Locations: The HMP provides 100% conservation for the only known major/critical population of San Diego Fairy Shrimp in the planning area (Poinsettia Lane pools).

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; prohibiting the introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds; protecting vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat; managing the watersheds surrounding vernal pools to maintain water quality and vernal pool hydrology, in particular the watershed of the Poinsettia Lane vernal pools.

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: Because 100% of San Diego Fairy Shrimp population is conserved by the HMP, and any newly discovered vernal pools are protected by measures contained in Table 9, no direct impacts to this species are expected to occur.

Indirect Impacts: Indirect impacts to this species could result from adverse changes in hydrology and the level of contaminants entering vernal pool watersheds. Potential indirect threats to the San Diego Fairy Shrimp will be minimized by site-specific management measures.

d. Basis for Take Authorization

The City is seeking take authorization for indirect impacts and for accidental direct impacts to the species. The HMP meets take authorization standards for this species due to the conservation of all known San Diego Fairy Shrimp locations (100%); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9 which protects this species as a Narrow Endemic; and specific management measures intended to reduce identified threats to conserved populations.

30. *Cnemidophorus hyperythrus beldingi*, Orange-throated Whiptail

a. Habitat/Distribution

Orange-throated Whiptail are most often associated with open sage scrub habitats with a vegetative cover of about 50%, but are also found in ruderal areas, open chaparral, riparian rub, and oak woodlands. Orange-throated Whiptail is locally common within its range in the extreme southwest corner of California, which includes parts of Orange, Riverside, and San

Diego Counties, and northern Baja California at elevations below 2,800 feet. Documented Orange-throated Whiptail locations within the MHCP area include scattered sightings in east Oceanside, Carlsbad (e.g., Carlsbad Highlands, Aviara, and east La Costa), north and south Encinitas, and southwest and east Escondido (near Harmony Grove and San Pasqual Valley).

b. Conservation Goals

Conserved Habitat: Carlsbad supports approximately 5,546 acres of habitats that support or potentially support Orange-throated Whiptail lizards. Of this total, the HMP will conserve approximately 3,525 acres (64%) in preserve areas. Within biological core and linkage areas, approximately 3,244 acres (65%) of a total 4,974 acres will be conserved in preserve areas.

Because of its large size and links to core populations of Orange-throated Whiptails in areas to the southeast, Core Area 7 is expected to maintain a population of this species. Substantial conservation of this core area and its links to areas outside Carlsbad should contribute to the long-term, regional viability of the species. Pre-existing take authorizations in Core Area 7 conserve approximately 651 acres (55%) of the 1,190 acres of potential Orange-throated Whiptail habitat in this area. The HMP will also conserve a large amount of potential Orange-throated Whiptail habitat in Core Area 3. Approximately 647 acres (69%) of the 942 acres of potential habitat will be conserved in preserve areas. Because pre-existing conditions prevent the conservation of a functional linkage to Core Area 3 for the whiptail, the regional value of this area is diminished for this species. However, through active management and monitoring, Core Area 3 may provide some additional long-term habitat value for this species.

Conserved Populations/Locations: No major/critical populations of the Orange-throated Whiptail have been identified in the planning area. However, based on the ecological requirements of this species, it is likely that a major population exists in Core Area 7. Although Core Area 7 could sustain significant losses of habitat due to existing take authorizations, the remaining habitat should, with a minimum of active management, support enough breeding individuals to contribute reliably to the overall metapopulation stability of the species.

Conserved Linkages: At present, the best remaining linkage for this species is the regional linkage connecting Core Area 7 to core populations of Orange-throated Whiptails in areas southeast of the City. Habitat fragmentation and existing roadways have probably precluded or greatly constrained potential linkages for this species in other areas of the City.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade this species' habitat. Management measures may include a predator control program, as well as restrictions on livestock overgrazing and off-road vehicle use. A relocation program (possibly in Core Area 3 or 7) may be established to initiate new populations or enhance and maintain existing populations of this species.

Special Considerations: This species has been insufficiently surveyed in the subarea but is expected to be locally common in appropriate habitat, especially in large, unfragmented areas.

c. Expected Impacts

Direct Impacts: Direct impacts to the Orange-throated Whiptail could result from the loss of coastal sage scrub and chaparral habitats. In areas of the City not subject to pre-existing take

authorizations, approximately 30% of the total Orange-throated Whiptail habitat and 27% of the habitat within biological core and linkage areas may be subject to impacts outside of preserve areas.

Indirect Impacts: Indirect impacts to the Orange-throated Whiptail could result from the increased fragmentation of this species' habitat. Fragmentation of habitat can result in a less diverse landscape that provides fewer resources for the species, as well as greater demographic stochasticity and an increase in adverse edge effects, such as predation by domestic cats. Indirect impacts associated with habitat fragmentation will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of 64% of coastal sage scrub, chaparral, riparian and oak woodland habitats; the configuration of these conserved habitats, including substantial conservation of core areas 3 and 7; preservation within a regional linkage connecting core area to core populations in areas southeast of the City; and specific management measures intended to reduce identified threats to conserved populations.

31. *Falco peregrinus anatum*, American Peregrine Falcon

a. Habitat/Distribution

This species has been extirpated from much of its former breeding range in North America. Only one pair has bred in San Diego County since the 1950s. During winter, Peregrine Falcons occur along coastal areas and at reservoirs in the county. Some of the locations where this species has been detected include Tijuana River Valley, San Diego Bay, San Diego River Valley, Mission Bay Park, Batiquitos Lagoon, Lake Hodges, San Pasqual River Valley and San Vicente Reservoir. Within the Carlsbad area, there is no potential for nesting or breeding sites. During the winter the peregrine probably occurs infrequently at the lagoons to forage.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately two bodies of open water, Batiquitos Lagoon and Agua Hedionda Lagoon that potentially support the Peregrine Falcon as an occasional winter visitor. Of this potential foraging habitat the HMP will conserve approximately 100% of the open water habitat.

Conserved Populations/Location: No major/critical populations of the peregrine occur within the City of Carlsbad. Wintering visitors will be protected by conservation of areas of open water.

Measures to Reduce Threats to Species' Survival: Management measures will focus on stabilizing and maintaining the wintering foraging opportunities for the peregrine. Management will also focus on restricting activities within the preserve that degrade or disturb this species' foraging habitat.

Special Considerations: This species is unlikely to occur as a breeding population and likely only occurs within the City as an occasional winter visitor.

c. Expected Impacts

Direct Impacts: Direct impacts to the species are unlikely to occur due to the 100% preservation of the lagoons, the City's no-net-loss of wetlands policy, and additional protection afforded wetland habitat by federal and state regulations.

Indirect Impacts: Indirect impacts to the Peregrine Falcon are likely to be negligible and may occur due to disturbances and degradation of habitat adjacent to the lagoons.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of winter foraging habitat within Batiquitos and Agua Hedionda lagoons; additional protection afforded wetland habitat by federal and state regulations; and the City's no-net-loss of wetlands policy.

32. *Passerculus sandwichensis beldingi*, Belding's Savannah Sparrow

a. Habitat/Distribution

Belding's Savannah Sparrow is restricted to salt marsh, mud flat, and low coastal strand vegetated habitats. This salt marsh sparrow is distributed along the coastline from Santa Barbara County south to northern Baja California. A year-round resident in San Diego County, the Belding's Savannah Sparrow population in California increased from 1,610 pairs in 1977 to 2,274 pairs in 1986 (Zemba et al. 1987). The population is expected to continue to increase due in part to the Batiquitos Lagoon Enhancement project.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, an estimated 140 acres (93%) is located in preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded wetlands by state and federal regulations.

Conserved Populations/Locations: Salt marsh habitats within Agua Hedionda and Batiquitos lagoons contain major populations of Belding's Savannah Sparrow and are considered critical locations for this species in the planning area. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances. Management measures may also include a predator control program and the enhancement or restoration of salt marsh habitat.

Special Considerations: None

c. Expected Impacts

Direct Impacts: No direct impacts to Belding's Savannah Sparrow are expected because

salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take Belding's Savannah Sparrow habitat. These impacts would be mitigated through creation of expanded Belding's Savannah Sparrow habitat.

Indirect Impacts: Indirect impacts to Belding's Savannah Sparrow could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to Belding's Savannah Sparrow will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of all major populations at Agua Hedionda and Batiquitos Lagoons; 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

33. *Speotyto cunicularia hypugaea*, Burrowing Owl

a. Habitat/Distribution

The Burrowing Owl is a resident of open, dry grassland, pasture and agricultural fields, and open CSS with available perches such as rocks and fenceposts. This diurnal owl feeds primarily on insects, but also small mammals, reptiles, birds, and carrion. It utilizes California ground squirrel burrows and those of other burrowing mammals for nests and may dig its own burrow in soft soils. Although this species is described as occurring within agriculture fields, due to soil disturbance practices, the owl only occurs along the edges of agriculture fields. This species has declined because of loss of habitat, poisoning of ground squirrels, and collisions with automobiles. Burrowing Owl locations within San Diego County include San Marcos, Camp Pendleton, Mission Bay, Lower Otay Lake, North Island Naval Air Station, Otay Mesa, and the Tijuana River Valley. Within the Carlsbad area, Burrowing Owls have been recorded from the vicinity of Palomar Airport, the proposed municipal golf course, core areas 5 and 7, and along the north side of Batiquitos Lagoon.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 3,661 acres of habitats that support or potentially support the Burrowing Owl. Of this total, the HMP will conserve approximately 766 acres (21%).

Conserved Populations/Location: No major/critical populations of the Burrowing Owl occur within the planning area. The known locations within core areas 5 and 7 and along Batiquitos Lagoon are within hardline conservation areas. The location near Palomar Airport is provided an unknown level of protection at this time but likely would provide protection for one of the Burrowing Owl locations.

Measures to Reduce Threats to Species' Survival: Surveys shall be conducted within potential habitat to identify whether Burrowing Owls are present and may be impacted. If Burrowing Owls are determined to be present, the following measures shall apply. Development shall avoid direct impacts to the nest site to the maximum extent practical. If impacts are

unavoidable, any impacted individuals shall be relocated to a conserved area of suitable size and characteristics.

Special Consideration: The area has been insufficiently surveyed however, large population sizes are unlikely within the City.

c. Expected Impacts

Direct Impacts: Direct impacts to the Burrowing Owl may occur to the one known location. The other known locations appear to be located within proposed or existing hardline conservation areas. Due to the low conservation percentage of grasslands, impacts to undocumented locations also may occur. If impacts are expected to occur to the owl, the Burrowing Owl shall be relocated to avoid direct take.

Indirect Impacts: Indirect impacts to the Burrowing Owl could result from human disturbance, habitat degradation, and predation by domestic animals. A buffer of 300 feet shall be provided around preserved Burrowing Owl locations.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to the low numbers of the species present within the planning area and conservation of 667 acres (37%) of grassland habitat, potential habitat for the species. Surveys shall be conducted within potential habitat prior to any development. Impacts to documented nesting and foraging habitat shall be avoided and animals shall be relocated when impacts are unavoidable.

34. *Pelecanus occidentalis californicus*, California Brown Pelican

a. Habitat/Distribution

California Brown Pelican is restricted to open ocean, coastal shorelines, harbors, bays, and estuaries. California Brown Pelicans occur throughout the year as nonbreeders in San Diego County. Coronado Island is the closest breeding location of the local resident population associated with the Southern California Bight. Postbreeding and winter influx of pelicans from the Gulf of California into San Diego County considerably augments the resident population. Within the plan area, wintering pelicans can be expected along the coast and at lagoons.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitats that support or potentially support California Brown Pelicans. Of this total, approximately 917 acres (98%) are located in preserve areas. In addition, 100% conservation of pelican habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: The salt marsh and estuarine habitats in each of the City's coastal lagoons are considered critical locations for the California Brown Pelican. The HMP will conserve 100% of these habitats.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing the contamination of pelican roosting and foraging areas with pesticides, oil, and other pollutants; reducing disturbances at important foraging and roosting areas; and maintaining the hydrology and water quality of coastal lagoon systems.

c. Expected Impacts

Direct Impacts: No direct impacts to the California Brown Pelican are expected because estuarine and salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take California Brown Pelican habitat. These impacts would be mitigated through creation of expanded California Brown Pelican habitat.

Indirect Impacts: Indirect impacts to the California Brown Pelican could result from changes in the hydrology or water quality of Carlsbad's coastal lagoon systems, loss of roosting sites, or increases in human disturbances. Indirect impacts to this species will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of estuarine and salt marsh habitats; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

35. *Sterna antillarum browni*, California Least Tern

a. Habitat/Distribution

The California Least Tern requires coastal beaches and saltflats for colonial breeding and intertidal and estuarine waters for foraging. The colonially breeding species is distributed along the coast from San Francisco Bay to Baja California. San Diego County supports nearly half of the state's breeding Least Terns. In northern San Diego County, only Batiquitos Lagoon supports breeding Least Terns (Fancher 1992).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support the California Least Tern. Of this total, approximately 917 acres (98%) are located in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats within Buena Vista, Agua Hedionda, and Batiquitos lagoons support major populations and are considered critical locations for the California Least Tern. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing adverse edge effects; controlling nonnative plants; predator control; maintaining of salt marsh and estuarine habitats; and protecting these habitats from physical disturbances. Restrictions will be placed on human activities near roosting and breeding areas during the breeding season. Management measures may also include the enhancement of habitat at Buena Vista and/or Agua Hedionda Lagoons to induce the initiation of new breeding colonies. Vegetation will be managed at existing nesting areas to maintain optimal conditions for Least Tern breeding.

c. Expected Impacts

Direct Impacts: No direct impacts to the California Least Tern are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take California Least Tern habitat. These impacts would be mitigated through creation of expanded California Least Tern sparrow habitat.

Indirect Impacts: Indirect impacts to the Least Tern could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of salt marsh and estuarine habitats as well as increases in adverse edge effects and human related disturbances. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of major populations at Buena Vista, Agua Hedionda and Batiquitos Lagoons; 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

36. *Polioptila californica californica*, Coastal California Gnatcatcher

a. Habitat/Distribution

This species is closely associated with coastal sage scrub habitat, especially below 950-foot elevation, and on slopes less than 40 percent (ERCE 1990b; Ogden 1992b; 1993b). It is restricted to coastal plain counties of southern California. San Diego County supports over half of the U.S. population. Significant concentrations of this species within northern San Diego County occur in Carlsbad, southwestern San Marcos, Oceanside, and Escondido adjacent to San Pasqual Valley, and the unincorporated areas adjacent to these cities.

Within Carlsbad, the number of existing coastal California Gnatcatcher pairs fluctuates seasonally and from year to year, based on weather, fires and a number of other factors. Based on current information, estimates of the total coastal California Gnatcatcher population in Carlsbad range from 100 to 150 pairs. California Gnatcatchers are supported by approximately 3,377 acres of coastal sage scrub, maritime succulent scrub, and coastal sage/chaparral habitats located within the City (Figure 26). Gnatcatcher locations shown on Figure 26 are a compilation of survey data from many years. The figure does not necessarily represent the Gnatcatcher population within Carlsbad at any given time. In addition, some properties have not been surveyed for Gnatcatchers, and some very recent survey data has not been included. Finally, the point data probably are redundant for some sites such as Holly Springs and Calavera

Heights, and probably too old to be reliable in areas that have developed such as Aviara. Therefore, Figure 26 should be understood as only a generalized view of Gnatcatcher population within Carlsbad at this time. Populations of Gnatcatchers within Carlsbad are important to the overall viability of the regional California Gnatcatcher metapopulation, because they represent a critical link in the distribution of the species. Although in areas south and north of Carlsbad the species inhabits habitat up to 20 miles from the coast, various factors, including topographic and development patterns, concentrate Gnatcatcher populations to within about 3 to 4 miles of the coast in northern San Diego County (Spencer and Mock, in press).

From a regional perspective, the coastal cities of Carlsbad and Oceanside constitute a multi-generational linkage connecting populations of Gnatcatchers in Orange and Riverside counties with populations to the south and east of Carlsbad. The distribution of Gnatcatchers, coastal sage scrub habitats, and other vegetative communities within Carlsbad suggests that, at present, the City's Gnatcatcher population remains demographically and genetically viable as part of the regional metapopulation.

b. Conservation Goals

Conserved Habitat: Carlsbad contains a total of 3,377 acres of coastal sage scrub habitats (including maritime succulent scrub and mixed coastal sage scrub/chaparral) that support or potentially support California Gnatcatchers, or provide dispersal, or foraging habitat. Of this total, approximately 2,146 acres (64%) will be conserved within preserve areas. Of the 3,054 acres of coastal sage scrub located within biological core and linkage areas, 64% will be conserved within preserve areas.

Additional conservation for this species will be achieved by the enhancement and restoration of coastal sage scrub habitats within preserve areas. Priority will be placed on the creation of breeding opportunities for this species within constrained linkages.

Conserved Populations/Locations: Based on the total 214 point localities that are in the data base, a total 127 points (59%) will be conserved. Two major/critical Gnatcatcher populations are located in the planning area. In Core Area 3, which is the primary stepping stone/breeding area in the Carlsbad-Oceanside corridor, approximately 70% of the known Gnatcatcher locations will be conserved. In Core Area 7, which has the largest single population, approximately 45% of the known Gnatcatcher locations will be conserved in preserve areas. Gnatcatcher conservation in Core Area 7 is limited by pre-existing take authorizations. Within Core Area 4, approximately 43% of the known Gnatcatcher locations will be conserved in preserve areas. This area includes the proposed municipal golf course and environs, which had a population of approximately 15 pairs estimated in 1998. Outside of these major/critical Gnatcatcher population areas, additional known Gnatcatcher pairs are expected to be conserved in smaller patches of coastal sage scrub.

Conserved Linkages: Conservation planning for the California Gnatcatcher has focused primarily on the maintenance and enhancement of functional regional linkages that would ensure long-term connectivity between large Gnatcatcher populations that exist to the north and south of the City. Planning for the Gnatcatcher has focused conservation efforts on the maintenance and enhancement of Core Area 3 in northeastern Carlsbad and Linkage Areas A, C, D. To increase the effectiveness of this eastern linkage, coastal sage scrub habitat within linkage areas may be enhanced and restored to maximize breeding opportunities for Gnatcatchers. Maintaining stable populations of breeding Gnatcatchers in core areas 3 and 7 and providing breeding opportunities and functional corridors between these two core areas should ensure long-term regional demographic and genetic connectivity for this species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects associated with the fragmentation of coastal sage scrub habitats. Management measures will include a cowbird control program, a predator control program, and restrictions on livestock overgrazing and human disturbance. Management measures will also include a fire management program that is consistent with the Gnatcatcher's known ecological requirements and a habitat restoration/enhancement program targeted primarily on the enhancement and creation of additional breeding opportunities within constrained linkages.

c. Expected Impacts

Direct Impacts: Direct impacts to the Gnatcatcher could result from the loss of coastal sage scrub habitat used for nesting and foraging by Gnatcatchers. There are approximately 3,377 acres of coastal sage scrub habitats (including maritime succulent scrub and mixed coastal sage scrub/chaparral) within the City of Carlsbad. Of this total, approximately 36% may be subject to impacts outside of preserve areas. A larger proportion of the acreage subject to impacts is on properties subject to existing take authorizations in southeast Carlsbad.

Of the approximately 3,054 acres of coastal sage scrub habitats within biological core and linkage areas, approximately 41% may be subject to impacts outside of preserve areas. Approximately 50% of the coastal sage scrub subject to impacts in biological core and linkage areas are on properties subject to existing take authorization agreements. Hence, impacts to Gnatcatchers are expected to occur largely on properties over which the city no longer has planning control, particularly in biological core and linkage areas.

Indirect Impacts: Indirect impacts to the Gnatcatcher could result from the fragmentation of coastal sage scrub and other habitats used for dispersal and foraging. Fragmentation of Gnatcatcher habitat could result in a less diverse landscape that provides fewer breeding opportunities and other important resources for the species. Habitat fragmentation may result in more adverse edge-related effects and greater demographic stochasticity for Gnatcatcher populations. Indirect impacts associated with the fragmentation of coastal sage scrub habitats will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of coastal sage scrub habitats, known species' locations, and critical regional linkages; a configuration of conserved habitats that contributes to regional metapopulation stability; and specific management measures intended to reduce identified threats to conserved populations.

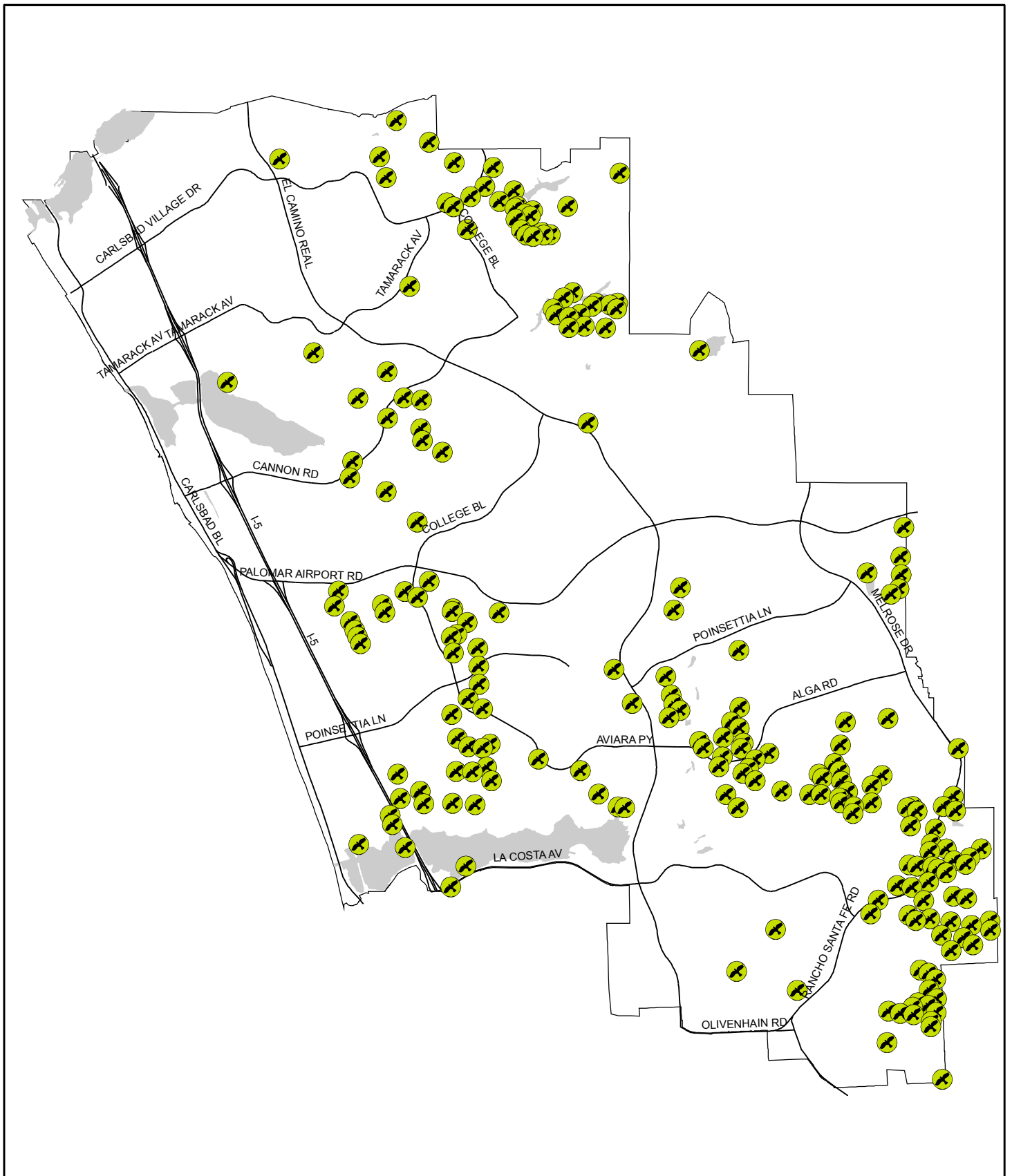


Figure 33
Gnatcatcher Locations



37. *Accipiter cooperii*, Cooper's Hawk

a. Habitat/Distribution

Dense stands of oak or riparian woodland are nesting habitats for Cooper's Hawks. Cooper's Hawk is distributed throughout much of the United States from southern Canada to northern Mexico. Potential breeding locations within the MHCP area include San Luis Rey River, Pilgrim Creek, and oak woodland habitats in San Marcos and Escondido.

b. Conservation Goals

Conserved Habitat: Of an estimated 603 acres of Cooper's Hawk breeding and primary foraging habitats within the City, approximately 525 acres (87%) will be located within preserve areas. Of an estimated 155 acres of these habitats located within biological core and linkage areas, approximately 143 acres (92%) will be conserved within preserve areas. In addition, 100% conservation of Cooper's Hawk breeding habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Of an estimated 6,154 acres of secondary foraging habitat for this species, approximately 3,514 acres (57%) will be conserved within preserve areas. In biological core and linkage areas, approximately 3,042 acres (58%) of a total 5,201 acres will be conserved within preserve areas.

Conserved Populations/Locations: No major or critical populations of Cooper's Hawks have been identified within the planning area.

Measures to Reduce Threats to Species' Survival: Management measure will focus on minimizing disturbances in this species breeding habitat and will include restrictions on livestock overgrazing, removal of oak trees and riparian vegetation, building of trails or roads adjacent to or through breeding areas, and introduction of pesticides or other contaminants into the preserve. During the breeding season, documented nesting sites will be protected from human disturbance. Management measures for this species may also include the enhancement of oak and riparian woodland habitats that support or potentially support breeding Cooper's Hawks.

c. Expected Impacts

Direct Impacts: No direct impacts to the Cooper's Hawk's primary breeding and foraging habitats are expected because riparian forest, riparian woodland, and oak woodland habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, direct impacts to the Cooper's Hawk could result from the loss of secondary upland foraging habitats, including coastal sage scrub, chaparral, and grassland habitats. Of the approximately 6,154 acres of these upland habitats in the City, an estimated 2,640 acres (43%) may be subject to impacts outside of preserve areas. Of the approximately 5,201 acres of these habitats in biological core and linkage areas, an estimated 2,159 acres (42%) may be subject to impacts outside of preserve areas. Much of this loss will occur in areas of southeast Carlsbad already subject to take authorization agreements.

Indirect Impacts: Indirect impacts to the Cooper's Hawk could result from the degradation of

it's breeding and foraging habitats. These impacts could include an increase in adverse edge effects; changes in the hydrology or water quality of riparian systems; and increases in human related disturbances. Potential indirect threats to the Cooper's Hawk will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and oak woodland habitats; substantial conservation (57%) of additional foraging habitats (e.g., coastal sage scrub and chaparral); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

38. *Sterna elegans*, Elegant Tern

a. Habitat/Distribution

Estuarine and intertidal zones of beaches are foraging habitat for Elegant Terns. Beaches and lagoon shoreline provide roosting habitat. This bird is an abundant summer resident in San Diego County. Elegant Terns first bred north of Baja California in 1959 on the dikes of the Western Salt Works in south San Diego Bay. This site is the only known colony in San Diego County, which has steadily grown in size since its discovery. No breeding colonies are known in the MHCP area. A colony has recently formed at the Bolsa Chica wetlands in Orange County.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support the Elegant Tern. Of this total, the HMP includes approximately 917 acres (98%) in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats within Buena Vista, Agua Hedionda, and Batiquitos lagoons are considered critical locations for the Elegant Tern. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects; controlling nonnative plants; maintaining the hydrology and water quality of salt marsh and estuarine habitats; and protecting these habitats from physical disturbances. Restrictions will be placed on human activities near roosting or potential breeding areas during the breeding season. Management measures may also include a predator control program and the enhancement of habitat to induce the initiation of new breeding colonies.

Special Considerations: Although no breeding colonies are known from the planning area, a breeding colony has recently formed at the Bolsa Chica wetlands in Orange County.

c. Expected Impacts

Direct Impacts: No direct impacts to the Elegant Tern are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Elegant Tern could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of salt marsh and estuarine habitats as well as increases in adverse edge effects and human related disturbances. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

39. *Passerculus sandwichensis rostratus*, Large-billed Savannah Sparrow

a. Habitat Requirements

Large-billed Savannah Sparrow is restricted to salt marsh, mud flat, and low coastal strand vegetation during the winter. This wintering subspecies of Savannah Sparrow typically inhabits coastal marshes and beaches and has remained scarce during the 1980s, although small numbers have appeared intermittently along the southern California coast and at the Salton Sea (Unitt 1984).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, an estimated 140 acres (93%) are located within the preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded wetlands by state and federal regulations.

Conserved Populations/Locations: Salt marsh habitats within Agua Hedionda and Batiquitos lagoons are considered critical locations for this species in the planning area. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances. Management measures may also include a predator control program and a habitat enhancement or restoration program designed to allow for the expansion of Large-billed Savannah Sparrow populations into new locations.

c. Expected Impacts

Direct Impacts: No direct impacts to Large-billed Savannah Sparrow are expected because

salt marsh habitats will be conserved by the HMP preserve system and the City's no-net loss of wetlands policy. In addition, specific adaptive management measures will address water quality and protect this species against detrimental edge effects from developing recreational impacts, and other direct and indirect impacts.

Indirect Impacts: Indirect impacts to the Large-billed Savannah Sparrow could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to the Large-billed Savannah Sparrow will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

40. *Vireo bellii pusillus*, Least Bell's Vireo

a. Habitat/Distribution

This migratory songbird breeds mostly in willow-mulefat-dominated riparian woodlands. It is restricted to riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Major vireo populations are currently on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey River/Pilgrim Creek, and Santa Margarita. Smaller populations occur on other drainages. Regional population has increased from 300 pairs in 1986 to 1,500 pairs in 1996, primarily due to the management of local cowbird populations (Kus 1997).

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support Least Bell's Vireo in Carlsbad. Of this total, approximately 498 acres (87%) are located within preserve areas. Of an estimated 619 acres of vireo habitat located in biological core and linkage areas, approximately 546 acres (88%) are expected to be conserved in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area. However, in 1998 a new population was discovered in the Agua Hedionda Creek west of El Camino Real. (Varnus, 1997). All known point locations for the Least Bell's Vireo will be conserved within preserve areas.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality in riparian habitats and restrict

human activities in vireo-occupied habitat during the breeding season (April 15 to September 15). Vireo habitat may be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Southwestern Willow Flycatcher).

c. Expected Impacts

Direct Impacts: No direct impacts to the Least Bell's Vireo are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Least Bell's Vireo could result from the degradation of riparian habitats, including increases in adverse edge effects (such as cowbird nest parasitism) and changes in the hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

41. *Rallus longirostris levipes*, Light-footed Clapper Rail

a. Habitat/Distribution

This subspecies is restricted to coastal salt marshes of southern California. Breeding pairs have been found at 22 marshes since 1980, but the number of marshes with breeding populations has declined; Clapper Rails were found in only 11 marshes in 1991. Within northern San Diego County area, Clapper Rails have been documented in the salt marshes of Buena Vista, Agua Hedionda and San Elijo Lagoons, and at Guajome Lake (Zemba 1992).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos support approximately 151 acres of southern coastal salt marsh habitat. The HMP includes approximately 140 acres (93%) of this habitat within preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Salt marsh habitat associated with Buena Vista, Agua Hedionda, and Batiquitos lagoons have been identified as critical locations for the this species. The HMP will conserve 100% of salt marsh habitat in these areas.

Measures to Reduce Threats to Species' Survival: Management measures will focus on controlling nonnative plants, maintaining the hydrology and water quality of salt marsh habitat, and protecting salt marsh habitat from physical disturbances. Human activity will be restricted near nesting habitat during the breeding season (April 1 through August 31). Management measures may also include a predator control program and the restoration and enhancement of salt marsh habitat. Where it is deemed appropriate, Light-footed Clapper Rails may be

introduced into suitable, unoccupied habitat, and nesting substrates (nesting platforms) may be provided.

Special Considerations: Freshwater marsh habitats upstream from salt marshes are commonly used by Clapper Rails during fall and winter. These are also conserved by the HMP.

c. Expected Impacts

Direct Impacts: No direct impacts to the Light-footed Clapper Rail are expected because salt marsh habitat will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Clapper Rail could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of coastal lagoon systems. Potential indirect threats to the rail will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization:

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

42. *Pandion haliaetus*, Osprey

a. Habitat/Distribution

Osprey habitat includes coastal estuaries and large lakes and reservoirs that support forage fish populations. Ospreys are a widely distributed species in North America, but are an uncommon wintering species and are relatively rare during the breeding season in San Diego County. Ospreys have been recorded at Agua Hedionda Lagoon and Lake Hodges.

b. Conservation Goals

Conserved Habitat: In the City of Carlsbad, approximately 850 acres of Osprey habitat are associated with the Buena Vista, Agua Hedionda, and Batiquitos lagoon systems. The HMP includes approximately 827 acres (97%) of this habitat within preserve areas. Of an estimated 837 acres of habitat located within biological core and linkage areas, approximately 826 acres (99%) are located within preserve areas. In addition, 100% conservation of this species' habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Buena Vista, Agua Hedionda, and Batiquitos lagoons have been identified as critical locations for this species. The HMP will conserve 100% of Osprey habitat in these areas.

Measures to Reduce Threats to Species' Survival: Management measure will focus on maintaining lagoon system hydrology and water quality and restricting activities within the preserve that could disturb Osprey nesting activities. Management techniques, such as the provision of nesting platforms adjacent to foraging areas, may also be used to enhance

Osprey populations.

c. Expected Impacts

Direct Impacts: No direct impacts to the Osprey are expected because estuarine and open freshwater habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Osprey could result from the degradation of estuarine and open freshwater habitats. These impacts could include adverse changes in the hydrology or water quality of coastal lagoon systems. Potential indirect threats to the Osprey will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of estuarine and open freshwater habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

43. *Aimophila ruficeps canescens*, Southern California Rufous-crowned Sparrow

a. Habitat/Distribution

The Rufous-crowned Sparrow occurs primarily in coastal sage scrub and has declined as a result of habitat loss. Rufous-crowned Sparrows occur particularly on steep, rocky slopes with sparse brush intermixed with grassland. This species forages on the ground in herbage and in litter beneath shrubs for seeds, insects, spiders, and grass and forb shoots. Although the Rufous-crowned Sparrow tends to be well associated with occurrences of the California Gnatcatcher, within Carlsbad population numbers are very low and the species is recorded only for the College Blvd./Alga Road corridor north and south of Palomar Airport Road and at Calavera Lake. It is likely that there are other occurrences of the Rufous-crowned Sparrow within coastal sage scrub in the planning area.

b. Conservation Goals

Conserved Habitat: The records and habitat usage for Rufous-crowned Sparrows tend to overlap well with California Gnatcatchers and conservation of the Gnatcatcher likely would serve sparrows as well. Carlsbad contains approximately 3,377 acres of coastal sage scrub habitat that support or potentially support Rufous-crowned Sparrows. Of this total, the HMP will conserve approximately 2,146 acres (64%).

Conserved Populations/Location: No major/critical populations of the Rufous-crowned Sparrow are present within the City of Carlsbad. Known locations are concentrated in the College Boulevard/proposed Alga Road area and receive protection within hardline or proposed hardline conservation areas. Due to the overlap of habitat use by the Rufous-crowned Sparrow and California Gnatcatcher, it is assumed that other Rufous-crowned Sparrows are located within coastal sage scrub habitat especially in Core Areas 3 and 7. These areas receive 70% and 30%, respectively, conservation of California Gnatcatcher locations by the preservation of substantial areas of coastal sage scrub habitat. This conservation of habitat likely preserves undocumented locations of Rufous-crowned Sparrows and conserves their potential habitat.

Conserved Linkages: Planning for preservation of the Gnatcatcher has focused conservation efforts on the maintenance and enhancement of Core Area 3 and Linkage areas A, C, and D.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects associated with the fragmentation of coastal sage scrub habitats. Management measures will include a cowbird control program, a predator control program, and restrictions on livestock overgrazing and human disturbance. Management measures will also include a fire management program that is consistent with the ecological requirements of the habitat.

Special Considerations: Although it may be that the areas has been insufficiently surveyed for this species, large population sizes are unlikely within the City. Additional locations are probably present within areas that also support the California Gnatcatcher.

c. Expected Impacts

Direct Impacts: Direct impacts to the Rufous-crowned Sparrow could result from the loss of coastal sage scrub habitat that may be used for nesting and foraging. There are approximately 3,377 acres of coastal sage scrub habitats within the City of Carlsbad. Of this total, approximately 36% may be subject to impacts outside of preserve areas.

Indirect Impacts: Indirect impacts to the Rufous-crowned Sparrow could result from the fragmentation of coastal sage scrub habitats. Habitat fragmentation may result in more adverse edge related effects and greater demographic stochasticity for the potential Rufous-crowned Sparrow populations which are likely to be present but have not been documented. Indirect impacts associated with the fragmentation of coastal sage scrub habitat will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of coastal sage scrub habitat, known species' locations, and regional linkages; a configuration of conserved habitats that contributes to regional potential metapopulation stability; and specific management measures intended to reduce identified threats to conserved populations.

44. *Empidonax traillii extimus*, Southwestern Willow Flycatcher

a. Habitat/Distribution

This species is restricted to willow-dominated riparian habitats in close proximity to surface water present during June (Sanders and Fleet 1989). Southwestern Willow Flycatchers have reappeared sporadically in disjunct riparian systems in southwestern California and the lower Colorado River. Current numbers remain significantly reduced from historical levels. Southern California's largest local population is on the south fork of the Kern River in Kern County, where numbers have slowly increased through the mid-1980s. Within northern San Diego County, small breeding concentrations of Willow Flycatchers persist along the San Luis Rey River and Pilgrim Creek in Oceanside (Unitt 1987).

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support the Southwestern Willow Flycatcher in Carlsbad. Of this total, approximately 498

acres (87%) are located within preserve areas. Of an estimated 619 acres of flycatcher habitat located in biological core and linkage areas, approximately 546 acres (88%) are located in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality of riparian habitats and restrict human activities in flycatcher-occupied habitat during the breeding season (May 1 to September 15). Willow Flycatcher habitat will be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Least Bell's Vireo).

Special Considerations: Nesting sites for this species are usually near slow-moving streams, standing water, or seeps. Habitat most often used is mature, closed canopy riparian forest..

c. Expected Impacts

Direct Impacts: No direct impacts to the Southwestern Willow Flycatcher are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts. Indirect impacts to the Southwestern Willow Flycatcher could result from the degradation of riparian habitats, including increases in adverse edge effects and changes in the hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management

45. *Charadrius alexandrinus nivosus*, Western Snowy Plover

a. Habitat/Distribution

The breeding and winter distribution of the Western Snowy Plover in California is along coastal sandy beaches, dunes, estuarine habitat, and at interior lakes and salt flats such as Mono Lake. It is a common migrant and winter visitor and localized breeding resident in San Diego County (Unitt 1984). Breeding localities within northern San Diego County include San Luis Rey River mouth and Agua Hedionda, Batiquitos, and San Elijo Lagoons. A major

breeding population exists at Batiquitos Lagoon on nesting "islands" created by the Lagoon Enhancement project.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support Western Snowy Plover. Of this total, the HMP includes approximately 917 acres (98%) in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats associated with Buena Vista, Agua Hedionda, and Batiquitos support major/critical populations of the Western Snowy Plover. The HMP will conserve 100% of these habitats. The HMP will conserve all known nesting locations within the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade this species' foraging and nesting habitats by controlling nonnative plants, maintaining the hydrology and water quality of salt marsh and estuarine habitats, and protecting these habitats from physical disturbances. Human activity will be restricted near nesting habitat during the breeding season (April 1 through August 31). Management measures may also include a predator control program and the restoration and enhancement of breeding areas.

c. Expected Impacts

Direct Impacts: No direct impacts to the Western Snowy Plover are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Snowy Plover could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in hydrology or water quality, and increases in adverse edge effects and human related disturbances. Potential indirect threats to the Snowy Plover will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to complete (100%) conservation of major and critical populations in existing hardline conservation areas; 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

46. *Plegadis chihi*, White-faced Ibis

a. Habitat/Distribution

This ibis nests and forages in brackish and freshwater marsh habitats. San Diego County represents the southern extreme of the west coast distribution. The White-faced Ibis occurs

regularly in small numbers in lower river valleys in San Diego County and is uncommon and localized in winter and a sporadic breeder on the coastal slope. Within the MHCP area, recent breeding colonies include Buena Vista Lagoon and Guajome Lake.

b. Conservation Goals

Conserved Habitat: Of the estimated 214 acres of freshwater marsh habitat in the City, approximately 189 acres (88%) will be located within preserve areas. Of the estimated 184 acres of habitat located in biological core and linkage areas, approximately 176 acres (96%) will be located within preserve areas. In addition, 100% conservation of freshwater marsh habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations

Conserved Populations/Locations: The HMP conserves major populations of White-faced Ibis at Buena Vista and Batiquitos lagoons, including a critical breeding population at Buena Vista Lagoon.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances, including restrictions on human activity at potential breeding colonies and associated foraging habitat during the early breeding period when courtship and nest building occur (March to June). Management measures may also include a predator control program and a habitat enhancement program designed to increase breeding and wintering populations of this species.

c. Expected Impacts

Direct Impacts: No direct impacts to the White-faced Ibis are expected because freshwater marsh habitat will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the White-faced Ibis could result from the degradation of freshwater marsh habitat. These impacts could include an increase in adverse edge effects or changes in marsh hydrology or water quality. Potential indirect threats to the White-faced Ibis will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to complete (100%) conservation of major populations at Batiquitos Lagoon and a critical breeding population at Buena Vista Lagoon; 100% conservation of freshwater marsh habitat; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

47. *Icteria virens*, Yellow-breasted Chat

a. Habitat/Distribution

This species occurs in riparian woodlands and is considered an indicator species for potential

Least Bell's Vireo habitat and is an uncommon summer resident of riparian woodland/scrub of coastal plain and foothills of California. Within the MHCP area, documented Yellow-breasted Chat locations include San Luis Rey River, central Oceanside, lower Escondido Creek in Encinitas, and Kit Carson Park in Escondido.

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support the Yellow-breasted Chat in Carlsbad. Of this total, approximately 498 acres (87%) is included within preserve areas. Of an estimated 619 acres of Chat habitat located in biological core and linkage areas, approximately 546 acres (88%) are included in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality of riparian habitats and restrict human activities in Chat-occupied habitat during the breeding season. Yellow-breasted Chat habitat may be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Least Bell's Vireo).

c. Expected Impacts

Direct Impacts: No direct impacts to the Yellow-breasted Chat are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Yellow-breasted Chat could result from the degradation of riparian habitats, including increases in adverse edge effects and changes in hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

Appendix

D

Land Use Regulatory/ Implementation Mechanisms

A. <i>Open Space and Conservation Element</i>	D-3
B. <i>Open Space</i>	D-4
C. <i>Conservation Standards</i>	D-5
D. <i>Growth Management Performance Standard</i>	D-6
E. <i>Open Space and Conservation Resource Management Plan Excerpt</i>	D-7
F. <i>City Council Policy No. 43</i>	D-9

Open Space and Conservation Element

Excerpt from Pages 27 - 29 (adopted by City Council September 6, 1994)

GOALS

A.7 A city which makes every possible effort to preserve sensitive flora and fauna.

A.8 A city which preserves a variety of unique conservation areas to accommodate the needs of humans, plants and animals.

A.9 A city which protects wildlife habitat through the preservation and enhancement of significant feeding, nesting, and breeding areas.

A.10 A city which preserves, to the maximum extent possible, the existing level of biodiversity.

OBJECTIVES

B.6 To develop, a multi-species habitat program that is consistent with the Goals, Objectives and Policies of this Element.

B.12 To protect rare, threatened or endangered plant and animal communities.

B.14 To coordinate city habitat management planning efforts with federal, state and local agencies, and other planning efforts of the City.

IMPLEMENTING POLICIES AND ACTION PROGRAMS

C.2 Amend ordinances as necessary to define sensitive and constrained lands consistent with the City's habitat management planning efforts, and prohibit development and density credit thereon.

C.22 Participate in the statewide and regional plans (the state of California's Natural Community Conservation Planning (NCCP), efforts with SANDAG and other north county cities in the preparation of a North County Wildlife Forum Multi-species Habitat Conservation Plan), to conserve sensitive environmental resources.

C.23 Coordinate planning and development of a citywide open space system with habitat planning efforts.

C.25 Coordinate the protection of wetlands, woodlands, riparian areas, and other sensitive habitat areas with appropriate state and federal protection agencies.

C.26 Encourage and participate in regional planning efforts to protect environmentally sensitive species from extinction.

NEW

C.34 Require the planning and development of all future projects to comply with the Carlsbad Habitat Management Plan incorporated herein by reference.

Open Space

Excerpt from Carlsbad Municipal Code

21.53.230 Residential density calculations, residential development restrictions on open space and environmentally sensitive lands.

(a) *For the purposes of Titles 20 and 21 of this code, residential density shall be determined based on the number of dwelling units per developable acre of property.*

(b) *The following lands are considered to be undevelopable and except for (8) and (10) shall be excluded from density calculations:*

- (1) *Beaches;*
- (2) *Permanent bodies of water;*
- (3) *Floodways;*
- (4) *Slopes with an inclination of greater than forty percent or more;*

- (5) *Significant wetlands;*
- (6) *Significant riparian or woodland habitats;*
- (7) *Land subject to major power transmission easements;*

(8) *Land upon which other significant environmental features as determined by the environmental review process for a project are located;*

(9) *Railroad track beds.*

(10) *Habitat Preserve Lands as identified in the Carlsbad Habitat Management Plan*

(c) *No residential development shall occur on any property listed in subsection (b). Subject to the provisions of Chapters 21.33 and 21.110, the city council may permit limited development of such property if, when considering the property as a whole, the prohibition against development would constitute an unconstitutional deprivation of property. The planning commission or city council, whichever the final discretionary body for a residential development may permit accessory facilities, view areas, and vehicular parking areas, to be located in floodplains (subject to Chapter 21.31) and on land subject to major power transmission easements.*

* *Note: New wording underlined, bold and in italics.*

Conservation Standards

Addition to Carlsbad Municipal Code

21.53.245 Conservation of lands located within standards areas of Habitat Management Plan

Lands located within the standards area of the Preserve System identified in the Carlsbad Habitat Management Plan shall comply with the specific conservation standards contained in the Plan.

GROWTH MANAGEMENT PERFORMANCE STANDARD

Excerpt from Appendix II CITYWIDE FACILITIES AND IMPROVEMENTS PLAN, September 16, 1996

PUBLIC FACILITY AND SERVICE PERFORMANCE STANDARDS

Open Space Fifteen percent of the total land area in the zone exclusive of environmentally constrained non-developable land must be set aside for permanent open space and must be available concurrent with development.

Open Space and Conservation Resource Management Plan Excerpt

V. LOCAL FACILITIES MANAGEMENT ZONE AND IMPLEMENTATION PLAN

Open Space and Conservation Resource Management Plan

Zone 17

Gross Area: 593 acres

Zone Open Space Status: There are no approved development plans in this zone and it is therefore considered not committed in terms of the delineation of future open space areas.

General Plan: The City's General Plan designates land uses throughout the zone. (Due to the scale of the General Plan Land Use Map and other mapping constraints, not all designated open space is necessarily shown on the map, and therefore, there may be apparent discrepancies between the open space figure below and the figures in Tables 1 and 3.) The following acreages are measured from the current General Plan Land Use Map:

<u>Land Use</u>	<u>Gross Acreage</u>
Open Space	175
Residential	255
Commercial	0
Industrial	0
Schools	0
Railroad	N/A
Other	163

Zoning: Zone 17 is designated Limited Control (L-C).

Growth Management
15 Percent Open Space: Development within this zone must meet the requirements of the growth management 15 percent open space performance standard.

Local Facilities
Management Plan: There is no Local Facilities Management Plan for this zone, but a plan is in the initial planning stages.

Major Developments: There are no proposed developments at this time. The Bressi Ranch is the major property ownership in this zone.

Development Status: N/A

Existing/Approved
Open Space: There are no existing open space areas in public ownership or secured through approved development plans in this zone.

Constrained Open Space
Per City Growth
Management Plan: Steep slopes (over 25 percent) are the primary constraint in this zone.

Trails System: Trail Segment No. 35 is proposed to run north from Carrillo Way connecting to Palomar Airport Road at the future intersection of Melrose (see Maps 11

and 14). The east-to-west Segment No. 34 will form a major connection from Carrillo Ranch to the future Alta Norte Park site (see Map 14).

**Primary Open Space
Action Priorities:**

Plant/Animal life/Habitat (1a.): Wildlife corridor functions should be addressed as an important component of a greenway defined for the southern part of this zone. The site planning and design for this greenway will need to examine the location of facilities for public access so as to not impact natural resource values. The greenway design should incorporate riparian enhancement where appropriate.

Canyons/Hillsides (1e.); Scenic/Cultural/Educational 4a.): There is a series of small canyons which extend perpendicular to the east side of El Camino Real. Where possible, these should be preserved in natural open space as an aesthetic amenity visible from the roadway.

Greenways (3c.); Trails (3d.): The east-to-west Trail Segment No. 34 should be located within an open space corridor which would reach from the City boundary with San Marcos, (there is also an open space corridor in this valley in San Marcos) west to the Alta Norte Park site, and ultimately onward to the Zone 19 Park site., Alta Mira Park, and via a northward spur, to Veteran's Memorial Park in Zone 8. This greenway corridor should be the primary focus for open space in this zone (Segment 35 on Maps 11 and 14). And additional greenway corridor should be planned to connect from Palomar Airport Road and Trail Segment No. 26 southward along the east side of the zone.

The greenways and trails can be adjusted as warranted, as better information becomes available through additional field work, further environmental analysis, more detailed planning, or similar future planning activities as may be approved by the Planning Department. The maintenance and liability of the Carlsbad Trail System will be the responsibility of the City of Carlsbad.

**Secondary Open Space
Action Priority:**

Land Use Buffers/Entries (4b.): Palomar Airport Road and El Camino Real are two of the most heavily traveled routes in Carlsbad. The expansion of open space within the viewsheds of these designated scenic roadways should be considered when land use plans are defined for this zone.

**High Priority Implemented
Through Other Programs:**

School Grounds (3a.): There may be potential in the future to establish/enhance joint use agreements at school sites in the zone. Assessing the need for and negotiation of any joint use agreements is the responsibility of the Parks and Recreation Department.

Public Parks/Recreation Areas (3b.): Planning, design and management of the public parks in the zone are guided by the Parks and Recreation Element of the General Plan and administered by the Parks and Recreation Department.

Council Policy Statement No. 43

CITY OF CARLSBAD

COUNCIL POLICY STATEMENT

Policy No. 43
Date Issued 4/22/97
Effective Date 4/22/97
Cancellation Date _____
Supersedes No. _____

General Subject: Proposition E "Excess" Dwelling
Unit Allocation

Specific Subject: Formal Procedure Establishing
Guidelines for Allocation of
Proposition E "Excess" Dwelling
Units

Copies to: City Council, City Manager, City Attorney, Department and Division Heads, Employee
Bulletin Boards, Press, File

PURPOSE

To establish guidelines for allocation of "excess" dwelling units when, following the adoption of all residential Local Facilities Management Plans within a quadrant, the Proposition E quadrant cap is greater than the number of dwelling units approved or issued after November 4, 1986, plus the allowable units per the Growth Management Control Points.

STATEMENT OF POLICY

Although it should not be mandatory that excess dwelling units be allocated if they become available and it would be desirable to not attain the ultimate residential dwelling unit caps established by the adoption of Proposition E, the following criteria is established to determine eligibility for consideration of "excess" dwelling unit allocation, subject to the required findings in Proposition E.

Projects eligible for consideration in order of priority include:

First Priority

1. Housing development for lower-income households where allowable housing expenses paid by the qualifying household does not exceed thirty percent (30%) of the gross monthly income, adjusted for household size, at eighty percent (80%) of the county median income.
2. Density transfers, clustering of development and dwelling unit locational adjustments which are proposed in order to preserve larger areas of sensitive habitat ***as identified in the Carlsbad Habitat Management Plan.***
3. Infill Single Family Subdivisions that meet all development standards and where proposed lot sizes will be equal to or greater than adjacent subdivided properties.

New text in bold italics

Appendix

E

HMP - Citations

City of Carlsbad. 1994. Public Review Draft: Habitat Management Plan for Natural Communities in the City of Carlsbad, California.

City of Carlsbad. 1994. General Plan Land Use Element and Open Space Element.

City of Carlsbad. 1986. Citywide Facilities and Improvements Plan.

City of Carlsbad. 1992. Open Space and Conservation Resource Management Plan.

Michael Brandman Associates and Dudek & Associates. 1992. Review Draft: Biological Resources and Habitat Analysis City of Carlsbad, California. Prepared for the City of Carlsbad.

Ogden Environmental and Energy Services Co., 1997. Review Draft: Biological Goals, Standards, and Guidelines for Multiple Habitat Preserve Design. Prepared for San Diego Association of Governments.

San Diego Association of Governments. 1998. Consultants Working Draft MHCP Plan.

San Diego Association of Governments. 1997. Biological Goals, Standards and Guidelines for Multiple Habitat Preserve Design.

Spencer, W. D. and P.J. Mock. In Press. Linkage Planning Under Severe Constraints: Gnatcatchers and the Oceanside Stepping Stone Hypothesis. Prepared for 2nd Interface Between Ecology and Land Development in California Proceedings. Occidental College, California.

Appendix

F

Plan Preparation Team

The following individuals participated in the preparation of this plan or associated documents:

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