

CHAPTER 5.0 DEVELOPMENT OF ALTERNATIVES

5.1 PLANNING PROCESS, SOUTHERN PLANNING GUIDELINES, AND WATERSHED PLANNING PRINCIPLES USED TO DEVELOP ALTERNATIVES

As planning has progressed for the SAMP Study Area and the Southern Subregion NCCP, a series of planning principles and tenets have been developed to guide the alternatives development process. Some of these principles and tenets are more focused on upland resources and broader conservation issues, while others are more focused on aquatic resources. It is these latter tenets that the USACE focused on in developing alternatives that provide for both economic and development activities and protection of aquatic resources. In particular, the USACE developed a set of SAMP general planning tenets. These SAMP Tenets are summarized as follows:

- 1) No net loss of acreage and functions of Waters of the U.S.;
- 2) Maintain/restore hydrologic, water quality, and habitat integrity of Waters of the U.S.;
- 3) Protect headwater areas;
- 4) Maintain/protect/restore diverse and contiguous riparian corridors;
- 5) Maintain and/or restore floodplain connection;
- 6) Maintain and/or restore sediment sources and transport equilibrium;
- 7) Maintain adequate buffer for the protected riparian corridors; and
- 8) Protect riparian areas and associated habitats supporting state/federally listed species and associated critical habitat.

A NCCP/MSAA/HCP and SAMP working group (“NCCP/SAMP Working Group”) was formed that included representatives from the USACE, EPA, CDFG, the USFWS, County of Orange, and landowners. In order to provide focus for the coordinated planning efforts, the NCCP/SAMP Working Group compiled the body of information assembled to date into a set of Southern Planning Guidelines, for use largely in the NCCP/MSAA/HCP process. Consultants conducted further studies that focused on the fundamental hydrologic and geomorphic processes that shape and alter the creek systems in the SAMP Study Area over time. The results of these studies and supplemental technical analyses have been summarized in a set of Watershed Planning Principles for the SAMP that are roughly analogous to the NCCP Science Advisors Reserve Design Principles and are called the Draft Watershed and Sub-basin Planning Principles (“Watershed Planning Principles”). These Southern Planning Guidelines and Watershed Planning Principles build upon the broader tenets and recommendations of the Scientific Review Panel, the Science Advisors Report, and the SAMP tenets. The USACE recognizes that these Watershed Planning Principles supplement the USACE’s functional assessment, planning level delineation, project-level delineation, and other available information to help form criteria that could be used to identify and evaluate alternatives. The Watershed Planning Principles are summarized as follows:

Geomorphology/Terrains

- Recognize and account for the hydrologic response of different terrains at the sub-basin and watershed scales.

Hydrology

- Emulate, to the extent feasible, the existing runoff and infiltration patterns in consideration of specific terrains, soil types, and ground cover.
- Address potential effects of future land use changes on hydrology.
- Minimize alterations of the timing of peak flows of each sub-basin relative to the mainstem creeks.
- Maintain and/or restore the inherent geomorphic structure of major tributaries and their floodplains.

Sediment Sources, Storage, and Transport

- Maintain coarse sediment yields, storage, and transport processes.

Groundwater Hydrology

- Utilize infiltration properties of sandy terrains for groundwater recharge and to offset potential increases in surface runoff and adverse effects to water quality.
- Protect existing groundwater recharge areas supporting slope wetlands and riparian zones and maximize alluvial groundwater recharge to the extent consistent with aquifer capacity and habitat management goals.

Water Quality

- Protect water quality using a variety of strategies, with particular emphasis on natural treatment systems, water quality wetlands, swales and infiltration areas

5.2 OFF-SITE ALTERNATIVES

The SAMP is a watershed (landscape-level) approach to Section 404 permitting within the San Juan Creek and Western San Mateo Creek Watersheds consistent with the requirements of federal law. Federal waters, including wetlands, have been identified in the watershed and, to the extent feasible, have been avoided. Unavoidable impacts would be minimized and fully mitigated under the proposed permitting procedures resulting from the SAMP process. While several on-site alternatives have been identified, there are no off-site alternatives to the SAMP Study Area that could accomplish the watershed-scale economic development and aquatic resource protection goals of the SAMP for the San Juan Creek and Western San Mateo Creek Watersheds in Orange County. The SAMP process is based on location-specific planning criteria and analysis, and its goals cannot be accomplished in another watershed(s).

5.3 **ON-SITE ALTERNATIVES**

As described in subchapter 1.1, the federal action being evaluated by this EIS is the adoption of three proposed permitting procedures that have resulted from the SAMP process. The alternatives described in this chapter are open space/development alternatives for the SAMP process that provide for Aquatic Resources Conservation Program (ARCP) considerations and that can be used to evaluate the proposed permitting procedures in Chapter 8.0. These alternatives were developed in accordance with the NEPA requirements for analysis of a reasonable range of project alternatives.

NEPA requirements for alternatives analysis (40 CFR 1502.14) direct federal agencies to consider a range of alternatives that could accomplish the applicant's purpose and need (in light of the basic purpose of the project) and present the alternatives in comparative form to define the issues and provide a clear basis for decision makers and the public to choose among options. In accordance with the USACE NEPA regulations, "Only reasonable alternatives need be considered in detail, as specified in 40 CFR 1502.14a." The USACE's NEPA regulations further state:

"Reasonable alternatives must be those that are feasible and such feasibility must focus on the accomplishment of the underlying purpose and need (of the applicant or public) that would be satisfied by the proposed Federal action (permit issuance). The alternatives analysis should be thorough enough to use for both the public interest review and the 404(b)(1) guidelines (40 CFR part 230) where applicable." (33 CFR 325)

The alternatives considered in the EIS are:

NEPA Required No Action Alternatives

- Alternative A-1: No Action
- Alternative A-2: No Project/Pre-2004 Zoning
- Alternative A-3: No Project/Housing and Employment
- Alternative A-4: No Project/Incremental Project Review
- Alternative A-5: No Impact to Waters Alternative

Development/Open Space Alternatives

- Alternative B-1: Maximize Open Space
- Alternative B-2: Avoid Development in Chiquita Sub-basin and San Mateo Watershed
- Alternative B-3: Limit New Development in the San Mateo Creek Watershed
- Alternative B-4: Rancho Mission Viejo Filed GPA/ZC Ranch Plan Application
- Alternative B-5: Avoid the San Mateo Creek Watershed and Locate All New Development in the San Juan Creek Watershed

- Alternative B-6: Avoid new development in the Chiquita Sub-basin East of Chiquita Ridge and the Verdugo Sub-basin; Limit new development in the San Mateo Creek Watershed and concentrate development in already disturbed portions of the San Juan Creek Watershed
- Alternative B-7: Provide for limited development in the Chiquita Sub-basin and within the San Mateo Creek Watershed; Limit new development to the disturbed areas of the Talega Sub-basin and lower portions of the Cristianitos/Lower Gabino Sub-basins while avoiding the Upper Gabino, Verdugo, and La Paz Sub-basins
- Alternative B-8: Allow new development in the western portion of the RMV Planning Area adjacent to Ortega Highway, in and around the existing silica mining area in Trampas Canyon, in and adjacent to the existing nursery, ranching, and sand/gravel mining operations in the Gobernadora area, and avoid new development within Chiquita Canyon and the San Mateo Creek Watershed
- Alternative B-9: Alternative B-9 was prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles and is specifically designed to address the sub-basin level Southern Planning Guidelines and Watershed Planning Principles in addition to the overall goals and objectives of the NCCP/MsAA/HCP and SAMP Programs. Alternative B-9 focuses on protecting resources associated with (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the treatment plant and west of Chiquita Creek; and (2) the San Mateo Creek Watershed, by concentrating development in and near areas with existing development. This alternative also concentrates development in San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas such as Verdugo Canyon.
- Alternative B-10 Modified: The County approved GPA/ZC project, the B-10 Modified Alternative, is designed specifically to address housing needs and other related project objectives while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles.
- Alternative B-11: Provide for regional housing needs as identified in OCP-2000 within the RMV Planning Area while being responsive to the sub-basin recommendations contained in the Southern Planning Guidelines and Watershed Planning Principles
- Alternative B-12: Alternative B-12 was prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles and is specifically designed to address the sub-basin-level Guidelines and Principles in addition to the overall goals and objectives of the NCCP/MsAA/HCP and SAMP Programs. This alternative is based on input from the USACE, CDFG, USFWS, environmental community, and the general public. Alternative B-12 focuses on protecting resources associated with (1) the Chiquita Sub-basin, by protecting Chiquita Canyon above the SMWD treatment plant and below Tesoro High School; and by protecting Chiquita Canyon west of Chiquita Creek; (2) Verdugo Canyon; (3) Sulphur Canyon and Gobernadora Creek; (4) wildlife movement along San Juan Creek; (5) habitat linkage connectivity between the San Juan Watershed and the San Mateo Watershed and; (6) the vast majority of the San Mateo Creek Watershed (by concentrating development in and near areas with existing development or areas previously disturbed). This alternative also concentrates development in the San Juan Creek Watershed in areas with lower resource values while continuing to protect high resource value areas.

Although the SAMP applies to the greater watershed areas of San Juan Creek and San Mateo Creek within Orange County, the alternatives focus on the activities within the RMV Planning Area. The remaining portion of the watersheds is either predominately developed (e.g., City of Mission Viejo) or set aside as permanent open space (e.g., U.S. Forest Service). Landowners of the few undeveloped parcels and the Foothill/Trabuco Specific Plan Area have not participated in the development of the SAMP. In addition, the alternatives do not explicitly consider, except where noted, the SOCTIIP road alignment, because that process is addressed through a separate EIS. Regardless of the alternative, the areas outside of the RMV Planning Area may be eligible for future Letters of Permission (LOPs), if they qualify. As a result, the alternatives analysis focuses on the differences in activities that would occur within the RMV Planning Area.

Regarding the SMWD Proposed Project, no alternatives to the maintenance of existing facilities are proposed because none are considered feasible. With respect to the existing facilities, ongoing maintenance must occur in their current location. The future storage facilities/reservoirs are alternatives. There is a need for two domestic reservoirs and one non-domestic storage reservoir; four sites are proposed. Because three of the four sites are located within the impact assessment area for the RMV Planning Area (B-10 Modified and B-12 Alternatives), and therefore would not cause additional impacts beyond those analyzed for these alternatives, only the site in Upper Chiquita is assessed in this EIS as a part of the SMWD Proposed Project. The Upper Chiquita reservoir site is reviewed in Chapter 8.0.

This chapter summarizes and reviews the above-stated alternatives with the goal of identifying those alternatives with the potential of attaining the SAMP Purpose reviewed in Chapter 3.0. Alternatives selected for further consideration are addressed in Chapters 6.0 and 8.0.

5.3.1 NEPA REQUIRED NO ACTION ALTERNATIVES

Table 5-1 provides a comparison of the acres of development and open space, and level of development (dwelling units and employment) associated with the No Action Alternatives.

**TABLE 5-1
NO ACTION ALTERNATIVES COMPARISON**

	A-1	A-2	A-3	A-4	A-5
Acres of Development	No new development	19,822 ^a	Undetermined	7,682	8,000
Acres of Open Space	No new dedications	No new dedications	Undetermined	15,132	14,815
Dwelling Units	0	3,265	20,468	14,000	3,000
Million Square Feet of Employment	0	0 ^b	Undetermined	5.2	Undetermined
a. This assumes subdividing the project site pursuant to pre-2004. Additionally, this alternative would allow an expansion of Sand and Gravel Extraction up to 1,620 acres in the ONIS leasehold. San Juan Creek was also zoned for <i>Sand and Gravel Extraction</i> ; however, there is no active use permit allowing mining. b. Existing nursery and industrial operations could continue. However, this alternative assumes the site would eventually be developed consistent with the one unit per four acres allowed under the pre-2004 zoning.					
Source: The Ranch Plan EIR 589.					

5.3.1.1 Alternative A-1

Without a NCCP/MSAA/HCP or SAMP, a “No Action” alternative would assume existing conditions within the RMV Planning Area and continued use of Rancho Mission Viejo property

for existing agricultural, livestock, resource extraction, and lease activities. No residential or other urban uses would be permitted under this alternative.

Existing grazing, dry farming, orchard, and other agricultural activities would continue on the RMV Planning Area. However, the extent (acreage) and intensity of these agricultural activities would be subject to market conditions and Rancho Mission Viejo responses to these market conditions. It is not possible to quantify the extent/intensity of future agricultural at this time. Resource extraction activities would continue. The extent and intensity of extraction activities would be limited to existing activities. Existing leases within the RMV Planning Area (e.g., Northrop Grumman Space Technology TRW Capistrano Test Site) would continue. Future open space would be limited to the regional parks, non-profit lands, and conservation easement open space already set aside in the subregion.

5.3.1.2 Alternative A-2

This alternative was developed by the NCCP/SAMP Working Group prior to the County's action to approve a General Plan amendment and zone change for the RMV Planning Area. Pre-2004 zoning was General Agricultural, which would have allowed for the development of large-lot residential development (one dwelling unit per four acres), as well as agricultural uses. Additionally, two areas were zoned for Sand and Gravel Extraction—ONIS site and San Juan Creek. Resource extraction and related uses would be allowed to continue and potentially expand within 1,620 acres of designated areas consistent with pre-2004 zoning. It was assumed that permits for mining in San Juan Creek would be pursued. Taking the total number of acres within the RMV Planning Area, less the areas designated for Sand and Gravel Extraction, the pre-2004 zoning would have allowed over 5,000 units.

In the development of this alternative, consideration was given to access and feasible building sites. Approximately 3,265 single-family dwelling units were assumed to be capable of being sited throughout the RMV Planning Area using existing ranch roads. This alternative would result in the subdivision of approximately 19,822 acres of the RMV Planning Area. Approximately 75 percent of the RMV Planning Area would be in open space. However, the land would not be publicly dedicated, but would occur within small estate lot parcels owned by individual homeowners and along the ridges and slopes deemed unsuitable for development.

5.3.1.3 Alternative A-3

Without a NCCP/MSAA/HCP and SAMP, this alternative addresses the need for new housing within the RMV Planning Area based on the County's OCP 2000 housing projections by providing for 20,468 new dwellings and 9,800 new jobs within the RMV Planning Area portion of the subregion. The OCP-2000 projections represented the growth projections adopted by the County, local jurisdictions, and regional planning agencies at the time the alternatives were being developed.

The focus of this alternative is on the provision of new housing consistent with long-term development/housing need projections provided by SCAG and the County of Orange. The distribution of these units was based on an allocation by the Center for Demographic Research in association with the County. This level of development generally represented a jobs/housing balance within the RMV Planning Area. The location, acreage, density, and community design of new residential units and associated uses was not determined. An undetermined amount of open space within the RMV Planning Area would be provided depending upon the acreage needed to construct a range of housing types totaling 20,468 units. Dedicated open space in the subregion would include the regional parks, non-profit lands, and conservation easement open

space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area. The ability to provide for a habitat reserve and management program is unknown and would require further planning.

5.3.1.4 Alternative A-4

Under this alternative, a NCCP/MSAA/HCP or SAMP would not be prepared and permitting would proceed with incremental project-by-project review of new development proposals within the RMV Planning Area. This alternative is required to be addressed as a “No Project” alternative under NEPA to reflect Rancho Mission Viejo’s ability to proceed with development under existing regulatory requirements (e.g., Section 10 and 7 of the Federal Endangered Species Act, individual USACE Section 404 permits, CDFG Section 2081 and Section 1600 permits) on a project-by-project basis without an NCCP/MSAA/HCP or SAMP. For purposes of analysis, the land area and amount of development assumed for Alternative A-4 would be the same as for Alternative B-10 Modified. For the RMV Planning Area, Rancho Mission Viejo and the Santa Margarita Water District would likely precede with a series of large-area Section 404 permits (e.g., one for each of the proposed development planning areas and associated infrastructure, phased over 15 to 25 years) whose exact configuration and timing would be influenced by the extension of infrastructure facilities and market demand. For illustrative purposes, Rancho Mission Viejo and Santa Margarita Water District could request USACE Section 404 permitting for each of the proposed development areas and associated infrastructure (approved by the County of Orange as part of the GPA/ZC project in November 2004). However, such a request would not be assured because, as stated above, development would be driven by the availability of infrastructure and market demand. If development did proceed on a planning area by planning area basis within the RMV Planning Area, the USACE Section 404 permitting could proceed in a manner comparable to the USACE Section 404 permitting for other large development projects, such as the 4,000 acre Ladera project. Development in the Foothill/Trabuco Specific Plan Area and other potentially developable areas would proceed in the same manner as with past development (on a project-by-project, permit-by-permit basis).

Open space provided within the RMV Planning Area would be designated incrementally over 15 to 30 years as part of agency actions on each separate project. It would likely be difficult to assure provision for open space in a configuration that could be managed as effectively as the larger open space system proposed by other alternatives. Additionally, funding for management of open space would be dependent on the sequential and incremental permitting process. The dedicated open space in the subregion would include the regional parks, non-profit lands, and conservation easement open space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area.

5.3.1.5 Alternative A-5

The purpose of this alternative is to obviate the need for a SAMP by avoiding federally regulated Waters of the U.S, including wetlands. This alternative is required under USACE Section 404 regulations and NEPA. Due to the coordinated planning process, this alternative has also been formulated to address no take of state and federal threatened and endangered species and state-regulated wetlands and streams as required by the FESA, the 4(d) Special Rule for the coastal California gnatcatcher, Fish and Game Code Section 1600, CEQA, and NEPA. Therefore, this alternative assesses the feasibility of project alternatives that would not result in Take of listed species or impacts to state and federal jurisdictional waters and aquatic resources.

As depicted on Figure 5-1, under Alternative A-5, low density residential development would occur within approximately 8,000 acres (35 percent) of the 22,815-acre RMV Planning Area. Alternative A-5 assumes a maximum of 3,000 estate lots (assuming that a portion of the undevelopable portion of the lot would extend into open space areas and that other avoidance areas such as in Planning Area 3 would be included within the development envelope as community open space amenity areas. Approximately 14,824 acres (65 percent) of the RMV Planning Area would be in some form of open space. The ability to manage the open space effectively under an Aquatic Resources Conservation Program has not been determined. To ensure total avoidance of state and federal threatened/endangered species (new development would be limited to those portions of RMV Planning Area that are not occupied by state or federally listed species) and regulated waters, access would be dependent on existing arterial highways and the ranch road network (i.e., the existing dirt/gravel roads) with surfacing limited to existing road widths.

New development would avoid impacts to wetlands regulated under state and federal laws/regulations. Non-wetland Waters of the U.S. regulated by the USACE under Section 404 and non-wetland jurisdictional areas regulated by the state under Sections 1600 et seq. would be avoided. The ability to avoid temporary impacts to wetlands and impacts to all ephemeral drainages and non-wetland waters regulated by state/federal agencies would need to be confirmed on a site-specific basis as development occurs within the RMV Planning Area.

Dedicated open space in the subregion would include the regional parks, non-profit lands and conservation easement open space already set aside and future open space dedicated to offset impacts from projects outside of the RMV Planning Area. Given the level of development that would be feasible under this concept and the manner in which this type of development would be processed (i.e., incremental processing versus comprehensive planned community), there would be limited amounts of future open space dedicated within the RMV Planning Area.

5.3.2 DEVELOPMENT/OPEN SPACE ALTERNATIVES

Table 5-2 provides a comparison of the acres of development and acres of open space, and level of development (dwelling units and employment), for the Development/Open Space Alternatives.

**TABLE 5-2
DEVELOPMENT/OPEN SPACE ALTERNATIVES COMPARISON**

	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10 Modified	B-11	B-12
Acres of Development	900	3,900	6,400	7,694	7,170	6,740	7,170	3,680	6,582	7,683	8,621	5,873
Acres of Open Space	21,915	18,915	16,415	15,121	15,645	16,075	15,645	19,135	16,233	15,132	14,194	16,942
Dwelling Units	Unknown	Similar to B-8	Similar to B-4	14,000	14,000	14,000	14,000	8,400	13,600	14,000	19,200	14,000
Million Sq. Ft. Employment	Unknown	Similar to B-8	Similar to B-4	5.2	5.58	5.58	5.58	2.48	5.2	5.2	3.64	≤ 5.2
Sources: The Ranch Plan Final EIR 589, 2004 and EDAW, 2005.												

5.3.2.1 Alternative B-1

The purpose of this alternative is to maximize open space protection within the RMV Planning Area and restore areas degraded by past use. As depicted in Figure 5-2, Alternative B-1 would maintain and manage more than 21,915 acres (96 percent) of the RMV Planning Area as permanent open space. The 21,915 acres of RMV Planning Area open space would result in 51,780 acres of open space within the SAMP Study Area (64 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, potential development would occur on approximately 900 acres (4 percent) of the RMV Planning Area along both sides of Ortega Highway and along the western edge of the RMV Planning Area adjacent to the City of San Juan Capistrano. No future development would be permitted within the Gobernadora, Central San Juan, and Verdugo Sub-basins within the San Juan Creek Watershed. In addition, no future development would be permitted within the San Mateo Creek Watershed.

This alternative would maximize contiguous open space in both the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed by limiting new development to the extreme western edge of the RMV Planning Area. This alternative would restore disturbed/degraded areas in the Talega Sub-basin (Northrop Grumman Space Technology TRW Capistrano Test Site lease), Trampas Sub-basin (silica mining area), Gobernadora Sub-basin (nursery area), and two other sites adjacent to Ortega Highway through public and non-profit funding. Existing roads, power lines, and light sources within the open space area would be removed as feasible. A voluntary sale by Rancho Mission Viejo for purposes of open space acquisition would be required under this alternative.

5.3.2.2 Alternative B-2

The purpose of this alternative is to allow new development to occur in disturbed and other areas in the San Juan Creek Watershed and to avoid new development within Chiquita Canyon east of Chiquita Ridge and the San Mateo Creek Watershed.

As depicted in Figure 5-3, under the Alternative B-2 scenario, approximately 18,915 acres (83 percent) of the RMV Planning Area would be maintained and managed as permanent open space. Existing leases and ranching/farming would continue in open space. The 18,915 acres of the RMV Planning Area open space would result in 48,780 acres of open space within the SAMP Study Area (61 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary.

Under this alternative, all potential development would be located on about 3,900 acres (17 percent) of the RMV Planning Area within areas already disturbed and away from intact native communities. Potential development would occur in the following areas:

- 900 acres of potential development located on both sides of Ortega Highway adjacent to the City of San Juan Capistrano; and
- 3,000 additional acres located adjacent to the City of San Juan Capistrano, the existing silica mining site (Trampas Canyon), existing nursery and ranching facilities immediately north of San Juan Creek, and an extension of the Coto de Caza area.

This alternative would avoid creating physical barriers to species movements, particularly in the San Mateo Creek Watershed and maintain the potential for species re-introduction, habitat enhancement, and restoration. A voluntary sale by Rancho Mission Viejo for purpose of open space acquisition would be required under this alternative.

5.3.2.3 Alternative B-3

The purpose of this alternative is to provide significant economic development (i.e., new housing, commercial, and employment uses) while limiting new development within the San Mateo Watershed to the Cristianitos Canyon Sub-basin and avoiding new development north of the County MPAH proposed extension of Crown Valley Parkway in the Chiquita Canyon sub-basin. Under this alternative, approximately 16,415 acres (71 percent) of the RMV Planning Area would be maintained as permanent, managed open space. The 16,415 acres of RMV Planning Area open space would result in 46,245 acres of open space within the SAMP Study Area (57 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. As depicted on Figure 5-4, approximately 6,400 acres (28 percent) of new development would be permitted within the RMV Planning Area in the San Juan Creek Watershed and the western portion of the San Mateo Watershed in the following areas:

- areas on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano;
- portions of the Chiquita Canyon south of the proposed extension of Crown Valley Parkway;
- Gobernadora Sub-basin, north of San Juan Creek;
- Trampas Canyon and Central San Juan Sub-basin; and,
- in the Cristianitos Sub-basin, inland of the City of San Clemente.

Future development would not be allowed in that portion of the Chiquita Canyon north of the proposed Crown Valley Parkway extension; and in the Verdugo, Upper and Middle Gabino, La Paz, and Talega Sub-basins.

This alternative would provide for a wide east-west habitat movement corridor within the Chiquita Canyon Sub-basin linking natural areas in Trabuco, Chiquita, and Gobernadora Canyons. This alternative would retain connections between existing large blocks of open space in the Cleveland National Forest and Caspers Wilderness Park and the San Mateo Creek Watershed by limiting new development to the Cristianitos Canyon area. An open space buffer would be maintained between the City of San Juan Capistrano and proposed RMV Planning Area south of Ortega Highway. The connectivity between the RMV Planning Area portion of San Mateo Creek Watershed and MCB Camp Pendleton would be maximized under this alternative.

5.3.2.4 Alternative B-4

This alternative was filed by Rancho Mission Viejo with the County of Orange in 2001 as an application for a General Plan Amendment and Zone Change. Subsequent to the application filing, this alternative was modified by Rancho Mission Viejo to address the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, approximately

15,121 acres (66 percent) of the RMV Planning Area would be maintained as permanent open space. The 15,121 acres of RMV Planning Area open space would result in 44,951 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. As proposed by Rancho Mission Viejo, this alternative included a regional park along San Juan Creek that would extend across the entire width of the RMV Planning Area portion of the SAMP Study Area. Figure 5-5 depicts the distribution of land uses associated with Alternative B-4.

Under this alternative, 7,694 acres of new development (34 percent of the RMV Planning Area) would be permitted, including 14,000 dwelling units (including 6,000 senior housing units), 251 acres (3,480 square feet) of urban activity center uses, 50 acres (500,000 square feet) of neighborhood center uses, 80 acres (1,220,000 square feet) of business park uses, and 20 acres of golf resort uses. These uses would be located in the following areas:

- areas on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano;
- Chiquita Canyon;
- Gobernadora area north of San Juan Creek;
- Trampas Canyon;
- Upper Gabino Canyon area (O'Neill Ranch);
- Cristianitos Canyon area; and
- Talega and Lower Gabino (Northrop Grumman Space Technology TRW Capistrano Test Site lease area).

Also within the 7,694-acre development area, additional open space would be designated for passive and active recreation uses. Fuel modification zones would be included within future development areas. The 15,121 acres of open space would be permanently set aside at no cost to the public as part of a phased dedication program keyed to implementation of the B-4 Alternative.

5.3.2.5 Alternative B-5

The purpose of Alternative B-5 is to avoid new development within the western portion of the San Mateo Creek Watershed and locate all new development within the San Juan Creek Watershed. As depicted on Figure 5-6, approximately 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. The 15,645 acres of RMV Planning Area open space would result in 45,475 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, 7,170 acres of new development (31 percent of the RMV Planning Area) would be permitted within the San Juan Creek Watershed, including 14,000 dwelling units (including 6,000 senior units), 101 acres (1.1 million square feet) of urban activity center uses, 265 acres (over 4 million square feet) of business park uses, and 40 acres of neighborhood center. This alternative would achieve a jobs/housing balance on the site. Most of the future

development would occur primarily in the Chiquita, Gobernadora, Central San Juan, Verdugo, and Trampas Sub-basins. Additional development would be permitted on both sides of Ortega Highway in the western portion of the RMV Planning Area and along the south side of the highway in the eastern portions of the RMV Planning Area. This alternative would not provide for any new or expanded/improvements to existing regional parks. As required by the Quimby Act, new development would be required to either dedicate land or pay fees for local parks.

No development would be permitted within the San Mateo Creek Watershed, thereby avoiding fragmentation and retaining all existing wildlife habitat blocks linkages and movement corridors in this watershed.

5.3.2.6 Alternative B-6

This alternative would avoid future development in the Chiquita Sub-basin east of Chiquita Ridge and Verdugo Canyon Sub-basin. Development would be concentrated in areas in the San Juan Creek Watershed. New development in the San Mateo Creek Watershed would be restricted to areas already disturbed by past uses.

As depicted in Figure 5-7, approximately 16,075 acres (70 percent) of the RMV Planning Area would be set aside as permanent open space. The 16,075 acres of RMV Planning Area open space would result in 45,905 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. A large block of unfragmented habitat would be retained in the southeastern portion of the RMV Planning Area. Approximately 6,740 acres (29 percent of the RMV Planning Area) of new development would be permitted under Alternative B-6. The alternative would provide 14,000 dwelling units (including 6,000 senior units) on approximately 6,334 acres, 91 acres (slightly over 1 million square feet) of urban activity center, 265 acres (over 4 million square feet) of business park uses, and 50 acres of neighborhood center uses would be provided. This alternative would achieve a jobs/housing balance on the site. This alternative would not provide for any new or expanded/improvements to existing regional parks. As required by the Quimby Act, new development would be required to either dedicate land or pay fees for local parks. It is assumed that parkland would be provided for within the development areas.

Alternative B-6 would allow for development in both the San Juan Creek Watershed and the western portion of the San Mateo Creek Watershed in the RMV Planning Area in the following areas:

- both sides of Ortega Highway adjacent to the City of San Juan Capistrano;
- Gobernadora Sub-basin;
- Trampas and Central San Juan Sub-basins;
- along the south side of San Juan Creek, east of Trampas Creek;
- in and adjacent to the disturbed areas of Upper Gabino Sub-basin;
- in and adjacent to the disturbed areas in Cristianitos and Lower Gabino Sub-basins; and
- In and adjacent to the disturbed areas in Talega Sub-basin (Northrop Grumman Space Technology TRW Capistrano Test Site lease area).

Within the San Juan Creek Watershed, no new development would be permitted in Chiquita Sub-basin east of Chiquita Ridge, in the Verdugo Sub-basin, or around Radio Tower Road. Except for future potential arterial roads, impacts to the major gnatcatcher population in/adjacent to Chiquita Canyon would be avoided under this alternative. East-west habitat movement corridors within the Chiquita Sub-basin would be protected to link Trabuco, Chiquita, and Gobernadora Canyons.

5.3.2.7 Alternative B-7

The purpose of this alternative is to limit development in Chiquita Canyon and the San Mateo Creek Watershed, and limit development to the disturbed areas of the Talega Sub-basin and Cristianitos/Lower Gabino Sub-basins while avoiding the Upper Gabino, Upper Verdugo, and La Paz Sub-basins.

As depicted on Figure 5-8, about 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. The 15,645 acres of RMV Planning Area open space would result in 45,638 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, future development would be located on about 7,170 acres of the RMV Planning Area (31 percent) as follows:

- future development within Chiquita Sub-basin and adjacent ridgelines would be focused on the ridgelines south of the “narrows” and north of San Juan Creek, away from the riparian and slope wetlands, and minimizing impacts to alluvial side canyons and gnatcatcher sites;
- North of San Juan Creek, new development would be directed to Planning Area 1 of the RMV Proposed Project (Ortega Gateway area), Gobernadora Sub-basin, and Trampas and Central San Juan Sub-basins; and
- Within the San Mateo Creek Watershed, future development would be permitted only on/or adjacent to the already-disturbed portions of the Cristianitos and Talega/Lower Gabino Sub-basins.

No development would be permitted in the Upper and Middle Gabino or Verdugo and La Paz Sub-basins to protect headwater areas and maintain connectivity between MCB Camp Pendleton, Caspers Wilderness Park, and the Cleveland National Forest.

5.3.2.8 Alternative B-8

As depicted in Figure 5-9, Alternative B-8 would allow new development in the western portion of the RMV Planning Area adjacent to Ortega Highway; in/around the existing silica mining area in Trampas Canyon; in/adjacent to the existing nursery, ranching, and sand and gravel mining operations in the Gobernadora area; and would avoid new development within Chiquita Canyon and the San Mateo Creek Watershed.

Under this alternative approximately 19,135 acres (84 percent) of the RMV Planning Area would be maintained and managed about as permanent open space. The 19,135 acres of RMV Planning Area open space would result in 48,965 acres of open space within the SAMP Study

Area (61 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space.

Under this alternative, potential development would be located on about 3,680 acres (16 percent) of the RMV Planning Area. This alternative would provide for 8,400 dwelling units (none of the units would be age restricted), 82 acres (915,000 square feet) of urban activity center, 90 acres (1,373,000 square feet) of business park uses, and 20 acres (20,000 square feet) of neighborhood center uses would be provided. This alternative would provide a jobs/housing balance on the site.

New development would be directed to areas already disturbed and away from intact native communities as follows:

- Approximately 550 acres of potential development located on both sides of Ortega Highway adjacent to the City of San Juan Capistrano;
- 1,200 acres located on and adjacent to the existing silica mining site (Trampas Sub-basin), and
- Approximately 1,950 acres in and around the existing nursery and ranching facilities in the Gobernadora Sub-basin north of San Juan Creek

This alternative would avoid the creation of physical barriers to species movements and would maintain the potential for species re-introduction, habitat enhancement, and restoration. A voluntary sale by Rancho Mission Viejo for purposes of open space acquisition would be required under this alternative.

5.3.3 ALTERNATIVES DESIGNED TO ADDRESS THE RECOMMENDATIONS OF THE WATERSHED PLANNING PRINCIPLES AND SOUTHERN PLANNING GUIDELINES

The eight alternatives previously described in subchapter 5.3.2 were formulated prior to completion of the Southern Planning Guidelines and Watershed Planning Principles and addressed the broader NCCP/HCP SAMP/MSAA goals and objectives. Alternative B-4 was modified by Rancho Mission Viejo following completion of the Watershed Planning Principles and Southern Planning Guidelines to address many of the recommendations. Also, following completion of the Principles and Guidelines, the participating wildlife agencies and landowners decided to formulate a ninth reserve alternative (Alternative B-9) intended to address the findings and recommendations contained in the Watershed Planning Principles and Southern Planning Guidelines. In addition to the B-9 Alternative, the County of Orange also formulated two alternatives (Alternative B-10 and B-11) designed to specifically address the findings and recommendations contained in the Watershed Planning Principles and Southern Planning Guidelines. Through the GPA/ZC process, the County modified various aspects of the B-10 Alternative and subsequently approved the B-10 Modified Alternative as the Ranch Plan GPA/ZC project. Alternatives B-9, B-10 Modified, and B-11 are described below.

5.3.3.1 Alternative B-9

The purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. Under this alternative, about 16,233 acres (71 percent) of the RMV Planning Area as would be maintained and

managed as permanent open space. The 16,233 acres of RMV Planning Area open space would result in 46,063 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest. Existing leases and ranching/farming would continue in the open space. Development would be intensified in the areas where development is permitted to enable the 13,600 dwelling units to be constructed.

Under this alternative, potential development would be located on about 6,582 acres (29 percent) of the RMV Planning Area. As depicted in Figure 5-10, this alternative assumes the development of 13,600 dwelling units (including 6,000 senior units), 91 gross acres (slightly over 1 million square feet) of urban activity center, 240 acres (over 3.6 million square feet) of business park uses, and 50 acres (500,000 square feet) of neighborhood center uses. A golf course with a 25-acre golf course resort component is also assumed for Planning Area 5. This alternative would achieve a jobs/housing balance on the site. This alternative would not provide for any new or expanded of/improvements to existing regional parks. As required by the Quimby Act, the subdivision of land for residential purposes requires either the dedication of land or the payment of fees for local parks. It is assumed that parkland would be provided for within the development areas.

New development would be focused in the following areas within the San Juan Creek Watershed:

- lands located in the southwest corner of the Rancho Mission Viejo property adjacent to the intersection of Antonio Parkway and Ortega Highway (on about 540 acres);
- the portion of the lower Chiquita Sub-basin (on about 615 acres);
- a portion of the Gobernadora Sub-basin (on about 2,171 acres, including 129 acres of non-reserve open space);
- Trampas Canyon portion of the Central San Juan Creek Sub-basin (on about 1,191 acres); and
- East Ortega portions of the Central San Juan Creek and Verdugo Sub-basins (on about 1,300 acres, including 49 acres of non-reserve open space).

Under this alternative, new development would be limited in the San Mateo Creek Watershed to the southernmost RMV Planning Area portion of the watershed, in and around the Northrop Grumman Space Technology TRW Capistrano Test Site. This alternative would maintain the functions of the underlying natural processes in the subregion (particularly fire, hydrologic and geomorphic processes) and would protect the identified primary habitat linkages and wildlife movement corridors within the RMV Planning Area.

5.3.3.2 Alternative B-10 Modified

The purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the County GPA/ZC, NCCP/MSAA/HCP, and SAMP Programs without the necessity for public acquisition of open space lands. Under the B-10 Modified Alternative scenario, about 15,132 acres (66 percent) of the RMV Planning Area would be maintained and managed as permanent open space. The 15,132 acres of RMV Planning Area open space would result in 44,962 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Existing leases and ranching/farming would continue in the open space. Under this alternative,

the permanent open space would be assembled through dedications; no public acquisition funding would be necessary under this alternative.

The B-10 Modified Alternative would locate potential future development on 7,683 acres (34 percent) of the RMV Planning Area. This alternative is depicted on Figure 5-11.

The B-10 Modified Alternative would allow for 14,000 dwelling units (including 6,000 senior housing units), 251 acres of Urban Activity Center uses, 80 acres of Business Park uses, 50 acres of neighborhood center uses, and a 25-acre golf resort. The alternative proposes the development of up to ten two-acre estate lots in the upper Gabino Sub-basin. As required by the Quimby Act, subdivided property for the purpose of residential uses are required to either dedicate land or pay fees for local parks. It is assumed that parkland would be provided for within the development areas.

Development is proposed in the following areas:

- the area on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano
- Chiquita Canyon
- in the Gobernadora area north of San Juan Creek
- in Trampas Canyon,
- in the Upper Gabino Canyon area (O'Neill Ranch)
- in the Cristianitos Canyon area, and
- in Talega and Lower Gabino (Northrop Grumman lease area)

In addition, this alternative would provide for a Planning Reserve designation in three areas where conditions of approval and mitigation requirements would be applied only when applications for subsequent development entitlements are received as follows:

- Middle Chiquita (Planning Reserve A): (i) 5 years following approval of The Ranch Plan GPA/ZC, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first
- Cristianitos Canyon (Planning Reserve B): (i) 5 years following approval of The Ranch Plan GPA/ZC, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first
- Northrop/Grumman (Planning Reserve C): (i) upon termination of the Northrop Grumman lease, (ii) Notice to Proceed Phase 2 by the Transportation Corridor Agencies for SR-241 South based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first

5.3.3.3 Alternative B-11

The purpose of this alternative is to provide for a similar amount of housing as assumed in the County OCP-2000M (19,200 dwellings), including 6,000 senior units while maintaining an open space system protecting the mainstem creeks in both the San Juan and San Mateo Watersheds that is responsive to the Watershed Planning Principles and Southern Planning Guidelines. This alternative would provide for designation of approximately 14,194 acres (62 percent) of the RMV Planning Area as permanent open space. This would result in 44,024 acres of open space within the SAMP Study Area (62 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Acquisition of the areas designated for open space would not be required with this alternative. Existing leases and continued ranching/farming activities would be permitted in the open space areas.

As depicted in Figure 5-12, this alternative assumes the development of 19,200 dwelling units, including 11,450 senior units, and 112 gross acres of urban activity center (slightly less than 1.3 million square feet), 115 acres (1.76 million square feet) of business park, and 60 acres of neighborhood center uses. Twenty-five acres are also designated for a golf resort, for a total of 8,621 acres of new development. In addition to the golf resort, a golf course is shown in Planning Area 7. This alternative would not achieve a jobs/housing balance on the site. This alternative would also have the Planning Reserve Overlay over the northern portion of Chiquita Canyon, Cristianitos, and Planning Area 8. This alternative would provide for expansion of existing regional parks. As required by the Quimby Act, the subdivision of property for residential land uses requires either the dedication of land or the payment fees for local parks. It is assumed that parkland would be provided for within the development areas.

With this alternative about 8,621 acres (38 percent) of the RMV Planning Area would be developed as follows:

- The area on both sides of Ortega Highway immediately east of the existing residential uses in the City of San Juan Capistrano,
- In Chiquita Canyon,
- In the Gobernadora area north of San Juan Creek,
- In Trampas Canyon,
- In the Cristianitos Canyon area, and
- In Talega and Lower Gabino (Northrop Grumman lease area)

Provide for a Planning Reserve designation in three areas where conditions of approval and mitigation requirements would be applied only when applications for subsequent development entitlements are received as follows:

- Middle Chiquita (Planning Reserve A): (i) 5 years following approval of Ranch Plan GPA/ZC, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.
- Cristianitos Canyon (Planning Reserve B): (i) 5 years following approval of Ranch Plan GPA/ZC, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.

- Northrop/Grumman (Planning Reserve C): (i) upon termination of the Northrop Grumman lease, (ii) NTP2 (Notice to proceed phase 2) by TCA for SR-241 (SOCTIIP) based on a Record of Decision, or (iii) until alternate access is available, whichever occurs first.

5.3.3.4 Alternative B-12: RMV Proposed Project

Alternative B-12 addresses the following: (1) the purpose of the SAMP as set forth in Chapter 3.0, (2) the project need as presented by the SAMP Participants and set forth in Chapter 3.0, (3) consistency with the SAMP Tenets, consistency with the Watershed Planning Principles, (4) aquatic species considerations set forth in the Southern Planning Guidelines and Watershed Planning Principles, (5) issues raised by the environmental community regarding development with the RMV Planning Area, and (6) consideration of another alternative that does not require public acquisition of open space lands within the RMV Planning Area.

Under the Alternative B-12 scenario, about 16,942 acres (74 percent) of the RMV Planning Area would be maintained and managed as permanent open space, including the preservation of certain aquatic resources described below. The 16,942 acres of RMV Planning Area open space would result in 46,543 acres of open space within the SAMP Study Area (58 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. Ranching and agricultural operations would continue within the preserved open space under this alternative. Under this alternative, the permanent open space would be assembled through dedications; no public acquisition funding would be necessary.

Alternative B-12 is one of four alternatives that were prepared after completion of the Southern Planning Guidelines and Watershed Planning Principles. This alternative focuses on preservation of aquatic resources in the Cristianitos, Gabino, La Paz, and Talega Sub-basins in the San Mateo Watershed. Limited impacts to mainstem creeks would be associated with infrastructure (e.g., roads crossings) and therefore the mainstem creeks in the San Juan Watershed (Chiquita, Gobernadora, San Juan, and Verdugo Creeks) would also largely be preserved. On an overall basis, the B-12 Alternative focuses on protecting resources associated with the Chiquita Sub-basin, Gobernadora Creek, Verdugo Canyon, and the San Mateo Creek Watershed.

Alternative B-12 would locate potential future development on 5,873 acres (26 percent) of the RMV Planning Area. The B-12 Alternative is depicted on Figure 5-13. The B-12 Alternative would allow for 14,000 dwelling units (including 6,000 senior housing units), as well as Urban Activity Center uses, Business Park uses, neighborhood center uses, and golf resort uses. Development is proposed in the following areas:

- the area on both sides of Ortega Highway immediately east of existing residential uses in the City of San Juan Capistrano (Planning Area 1),
- Chiquita Canyon immediately below Tesoro High School and adjacent to and below the SMWD Chiquita Water Treatment Plan (Planning Area 2),
- in the Gobernadora area north of San Juan Creek (Planning Area 3),
- Verdugo Canyon (Planning Area 4),
- Trampas Canyon (Planning Area 5),

- portions of Cristianitos Canyon (Planning Area 7), and
- Talega Canyon, generally in the area of the current Northrop Grumman lease area (Planning Area 8)

5.4 PRELIMINARY ALTERNATIVES ANALYSIS

This preliminary analysis of alternatives identifies alternatives selected for more detailed analysis in Chapter 6.0 of this EIS.

5.4.1 ALTERNATIVES REJECTED FROM FURTHER CONSIDERATION

Alternatives A-1, A-2, A-3, B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-9, and B-11 were considered in the selection of alternatives to provide a broad range of possible alternative development and preservation scenarios for the RMV Planning Area. However, these alternatives are rejected from further analysis in this EIS. The following discussion explains why these alternatives were not selected for further consideration. In general, with regard to the “B” alternatives that are rejected, one or more of the following reasons applies:

- The alternative did not address or was inconsistent with the SAMP overall purpose as defined in Chapter 3.0 (e.g., allowing reasonable economic activities and development by identifying areas and/or activities suitable for coverage under a comprehensive abbreviated permitting process and establishment of an aquatic resource conservation program consisting of preservation, restoration and management of aquatic resources); or
- The alternative was duplicative in many respects to one or more of the alternatives chosen for continuing evaluation; or
- The alternative was withdrawn at the request of the SAMP participant or Working Group that initially proposed this alternative.

5.4.1.1 Alternative A-1

This alternative is one of the “No Action” and/or “No Development/Existing Conditions” project alternatives formulated as required by NEPA. Existing grazing, dry farming, orchard, and other agricultural activities would continue on the RMV Planning Area. Continuation of existing conditions on the RMV Planning Area would not achieve the SAMP overall project purpose as defined in Chapter 3.0 and restated above. This alternative also does not meet the growth management and land use objectives of the County. Alternative A-1 would not provide for any new development; therefore, the County would not be able to achieve housing and employment levels assumed in the adopted growth projections. Additionally, the requirement for consideration of a No Project alternative is satisfied by the inclusion of Alternative A-4 in the continuing analysis of alternatives. Therefore this alternative is rejected from further consideration.

5.4.1.2 Alternative A-2

As described above, this alternative became moot after approval by the County of Orange of a GPA/ZC for the RMV Planning Area which changed the zoning from A-1 General Agriculture (1 dwelling unit per 4 acres) to Planned Community. Approval of the GPA/ZC project by the County in November 2004 would permit 14,000 units on 7,683 acres, as well as retail, office,

and recreational uses. Therefore, Alternative A-2 is rejected from further consideration. The reader should also note that the requirement to analyze a “No Project” alternative are met by the analysis of the A-4 Alternative which assumes no SAMP and, therefore, no need for any federal action.

5.4.1.3 Alternative A-3

As described above, the focus of this alternative is on the provision of new housing consistent with long-term development/housing need projections provided by SCAG and the County of Orange. At the time this alternative was developed, the location and acreage of new residential units and associated uses were not determined. However, subsequent to the identification of this alternative, the County developed an alternative based on OCP-2000, the B-11 Alternative. The intent of providing development consistent with the regional housing needs is generally accommodated with Alternative B-11. Consequently, Alternative A-3 was effectively replaced by Alternative B-11 and thus is eliminated from further consideration.

5.4.1.4 Alternative B-1

The B-1 Alternative would preserve about 96 percent (21,915 acres) of the RMV Planning Area. This alternative would permit future development on about 900 acres of the RMV Planning Area in the Ortega Gateway portion of the Chiquita Sub-basin, west of Chiquita Ridge. No development would be permitted within the Chiquita Sub-basin east of Chiquita Ridge or in the Gobernadora, Central San Juan/Trampas, and Verdugo Sub-basins within the San Juan Creek Watershed. In addition, no future development would be permitted within the San Mateo Creek Watershed.

This alternative was eliminated for the following reasons:

- It would address the basic resource protection purpose of the SAMP, but it would not address the other SAMP purpose regarding the provision for a reasonable level of economic activities and development that would address housing and employment needs of the people of the region;
- It is essentially a “No Project” alternative because it involves the purchase of virtually the entire RMV Planning Area and there would be no need/incentive for landowners and local governments to prepare a Aquatic Resources Conservation Program designed to address the SAMP purpose;

5.4.1.5 Alternative B-2

The B-2 Alternative would preserve about 83 percent (18,915 acres) of the RMV Planning Area. The 18,915 acres of RMV Planning Area open space would result in 48,780 acres of open space within the SAMP Study Area (61 percent), including regional parks, non-profit lands, and conservation easement open space already set aside, but not including the 40,000 acres of open space within the Cleveland National Forest boundary.

No development would be permitted within the Chiquita Sub-basin (east of Chiquita Ridge) and Verdugo Sub-basin portions of the San Juan Creek Watershed. No development would be permitted within the San Mateo Creek Watershed. This alternative would permit future development on about 3,900 acres in the Ortega Gateway (Chiquita Sub-basin west of Chiquita Ridge), Trampas Canyon (Central San Juan and Trampas Sub-basins), and Gobernadora Sub-basin portions of the RMV Planning Area. It also would permit future development along the

slopes adjacent to the City of San Juan Capistrano between the Ortega and Trampas portions of the RMV Planning Area.

This alternative was eliminated from future consideration under the SAMP programs for the following reasons:

- The alternative includes development in portions of the RMV Planning Area (i.e., the slopes adjacent to San Juan Capistrano) that present severe landslide and other geotechnical issues that bring into question the feasibility of developing the areas; and
- The alternative is in many respects duplicative of Alternative B-8. Alternative B-8 was selected for continuing evaluation by the NCCP/SAMP Working Group because it provided for a similar level of economic development (i.e., 3,900 acres versus 3,700 acres) while being more protective of sensitive biological, aquatic, and hydrologic resources and avoiding areas with questionable geotechnical conditions.

5.4.1.6 Alternative B-3

The B-3 Alternative is very similar to the B-4 and B-10 Modified Alternatives. The major differences in the alternatives are limited to the deletion of future development in the Northrop Grumman Space Technology TRW Capistrano Test Site lease (Talega Sub-basin) and O'Neill Ranch (Upper Gabino Sub-unit) areas and slight reduction in the size of the development bubble in the Chiquita Sub-basin portion of the RMV Planning Area. The B-3 Alternative would preserve about 72 percent (16,415 acres) of RMV Planning Area open space as part of 46,245 acres of SAMP Study Area open space.

This alternative was eliminated from future consideration under the SAMP program for the following reason:

- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.7 Alternative B-4

This alternative was filed with the County of Orange in 2001 as an application for a General Plan Amendment and Zone Change by Rancho Mission Viejo. Subsequent to the application filing, this alternative was modified by Rancho Mission Viejo to address the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, approximately 15,121 acres (66 percent) of the RMV Planning Area would be maintained as permanent open space. The 15,121 acres of RMV Planning Area open space would result in 44,951 acres of open space within the SAMP Study Area (56 percent), not including the 40,000 acres of open space within the Cleveland National Forest boundary. As proposed by Rancho Mission Viejo, this alternative included a regional park along San Juan Creek that would extend across the entire width of the RMV Planning Area portion of the SAMP Study Area. Proposed development, including residential, commercial, and active recreation uses, would be allowed on about 7,694 acres (34 percent) of the RMV Planning Area.

In reviewing this alternative in the GPA/ZC EIR 589, the County of Orange determined that certain modifications to this alternative would be necessary to address potential conflicts regarding habitat connectivity/fragmentation. The County rejected the B-4 Alternative and adopted a modified version of the B-10 Alternative (B-10 Modified Alternative), which it

determined was more responsive to the issues raised during the public review process for the GPA/ZC EIR (these issues are discussed extensively in Final EIR 589). The County, with Rancho Mission Viejo's concurrence, approved the B-10 Modified Alternative as the Ranch Plan project. Therefore, as a SAMP participant, Rancho Mission Viejo requested Alternative B-4 be withdrawn from consideration in favor of the B-10 Modified Alternative.

5.4.1.8 Alternative B-5

This alternative would avoid new development within the San Mateo Creek Watershed and locate all new development within the San Juan Creek Watershed. Approximately 15,645 acres (69 percent) of the RMV Planning Area would be designated as permanent open space. Existing leases and ranching/farming would continue in the open space. Under this alternative, 7,170 acres of new development (31 percent of the RMV Planning Area) would be permitted within the San Juan Creek Watershed.

This alternative was eliminated from future consideration under the SAMP program because of the likely impacts to sensitive biological, aquatic, and hydrologic resources in the San Juan Watershed when compared to the alternatives selected for continuing evaluation.

5.4.1.9 Alternative B-6

This alternative would avoid future development in the Chiquita Sub-basin east of Chiquita Ridge and Verdugo Canyon Sub-basin. Development would be concentrated in areas in the San Juan Creek Watershed. New development in the San Mateo Creek Watershed would be restricted to areas already disturbed by past uses. Approximately 16,075 acres (70 percent) of the RMV Planning Area would be set aside as permanent open space. Existing leases and ranching/farming would continue in the open space. A large block of unfragmented habitat would be retained in the southeastern portion of the RMV Planning Area. Approximately 6,740 acres (29 percent of the RMV Planning Area) of new development would be permitted under Alternative B-6.

This alternative was eliminated from future consideration under the SAMP program for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation, in particular the B-12 Alternative; and
- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.10 Alternative B-7

The B-7 Alternative would preserve about 69 percent (15,645 acres) of the RMV Planning Area as part of 45,638 acres of SAMP Study Area open space. Future development would be permitted in both the San Juan Creek Watershed and the San Mateo Creek Watershed. This alternative would permit development on about 7,170 acres in the Ortega Gateway, Chiquita, Gobernadora, Trampas Canyon, and Verdugo portions of the San Juan Creek Watershed. This alternative provides a variation on the B-4 Alternative in the middle portion of the Chiquita Sub-basin and along the south side of San Juan Creek in the Central San Juan Sub-basin. It also would permit future development in the Cristianitos and Lower Gabino, and Talega Sub-basins of the RMV Planning Area.

This alternative was eliminated from future consideration under the SAMP program for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation; and
- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.11 Alternative B-9

As described previously, the purpose of this alternative is to address the recommendations and findings set forth in the Watershed Planning Principles and Southern Planning Guidelines in addition to the overall goals and objectives of the NCCP/MSAA/HCP and SAMP Programs. Under this alternative, about 16,233 acres (71 percent) of the RMV Planning Area as would be maintained and managed as permanent open space, including the protection of aquatic resources such as Cristianitos Creek, Gabino Creek, La Paz Creek and Talega Creek. The 16,233 acres of RMV Planning Area open space would result in 46,063 acres of open space within the SAMP Study Area (57 percent), not including the 40,000 acres of open space within the Cleveland National Forest. Existing leases and continued ranching/farming activities would be permitted in the Verdugo Sub-basin (Planning Area 9) and San Mateo Creek Watersheds.

This alternative was eliminated by the USACE in coordination with the other members of the Working Group for the following reasons:

- The alternative is largely duplicative of other alternatives carried forward further evaluation, in particular the B-12 Alternative; and
- The alternative does not represent significantly different approaches to protecting sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.1.12 Alternative B-11

This alternative was developed by the County of Orange to provide for a similar amount of housing as assumed in the County OCP-2000M (19,200 dwellings), while maintaining an open space system protecting the mainstem creeks in both the San Juan and San Mateo Watersheds that is responsive to the Watershed Planning Principles and Southern Planning Guidelines. This alternative would provide for designation of approximately 14,194 acres (62 percent) of the RMV Planning Area as permanent open space. Existing leases and continued ranching/farming activities would be permitted in the open space areas. With this alternative about 8,621 acres (38 percent) of the RMV Planning Area would be developed.

In reviewing this alternative in the GPA/ZC EIR, the County of Orange determined that while this alternative would meet housing goals for the County it would not meet open space, habitat, and species preservation goals, particularly in light of the comments received on the GPA/ZC EIR. The County rejected this alternative in favor of the B-10 Modified Alternative. This alternative is also rejected from further consideration in the SAMP for similar reasons. Although the alternative may meet the reasonable economic development goals of the SAMP, it would not protect sensitive biological, aquatic, and hydrologic resources when compared to the alternatives selected for continuing evaluation.

5.4.2 ALTERNATIVES TO BE CONSIDERED FOR FURTHER ANALYSIS

The selection of alternatives to be carried forward for further review is based on legal mandates for the “A” Alternatives and, for the “B” Alternatives, on the extent to which each of the open space/development alternatives addresses the Purposes in Chapter 3.0 of this EIS and the SAMP Tenets and the Watershed Planning Principles. It also reflects a review of the cumulative databases and studies (including biologic, hydrologic, and geomorphic data and studies), relevant state and local laws, regulations and guidelines, public testimony, and the characteristics of the respective alternatives.

Alternatives A-4 and A-5 are carried forward in accordance with legal mandates. Alternative A-4 represents the No Action Alternative under NEPA because the SAMP process would not be completed within the SAMP Study Area, alternative permitting procedures would not be established under this alternative scenario and an Aquatic Resources Conservation Program would not be prepared. The existing Clean Water Act procedures would remain in place and the USACE would consider permit applications on a case-by-case basis. Alternative A-5 complies with the Clean Water Act requirement that applicants consider project alternatives that would not result in the fill of Waters of the U.S. including wetlands. A-5 is the No Impact to Waters alternative.

For the A-5 Alternative, upgrades in the form of paved surfaces to the existing ranch road network are assumed to be sufficient to support the level of development provided. Under the A-4 Alternative, the B-10 Modified Alternative circulation system is assumed to apply.

Development/Open Space Alternatives B-8, B-10 Modified, and B-12 are also identified for continuing evaluation in this EIS. These alternatives are considered sufficiently diverse to represent a reasonable range of alternatives in accordance with the SAMP Purposes set forth in Chapter 3.0.

To summarize, two programmatic alternatives (A-4 and A-5) and three open space/development alternatives (B-8, B-10 Modified, and B-12) will be carried forward for further analysis in this EIS. The USACE in cooperation with the NCCP/SAMP Working Group has determined that these alternatives represent a reasonable range of SAMP alternatives in accordance with federal laws, as reviewed below.

5.4.2.1 Alternative A-4

This alternative has been selected for continuing review but refined to become two separate “No Project” alternatives for purposes of the coordinated planning process. For NCCP/MSAA/HCP purposes, the decision to create two No Project Alternatives recognizes the ability of Rancho Mission Viejo to proceed with incremental, project-by-project review for HCPs under two options: (1) proceeding with the preparation of incremental project HCPs without preparing a SAMP, and (2) preparing individual project HCPs but also continuing to prepare a SAMP. However, for this EIS addressing the attainment of SAMP purposes, only the first refinement represents a “No Project” Alternative. Therefore, only this refinement will be evaluated.

5.4.2.2 Alternative A-5

This alternative has been selected for continuing review to comply with the Clean Water Act requirement that applicants consider project alternatives that would not result in the fill of wetlands. Similarly, federal ESAs require project applicants to consider alternatives that would

not involve Take of listed species. This alternative was developed to respond to these requirements and is therefore considered in this EIS.

5.4.2.3 Alternative B-8

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program focusing on protection of Chiquita Sub-basin east of Chiquita Ridge and of the mostly undeveloped San Mateo Creek Watershed. This alternative avoids fragmentation of existing habitat in the San Mateo Watershed and protects all existing wildlife movement corridors and habitat linkages. Under this alternative approximately 3,680 acres of future development would be permitted within the San Juan Creek Watershed, outside the Chiquita Sub-basin.

5.4.2.4 Alternative B-10 Modified

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program that focuses on protection of upper portions of the Chiquita Sub-basin and the main portion of Verdugo Canyon in the San Juan Watershed and the Gabino and La Paz Sub-basins in the San Mateo Watershed. This alternative was also selected because it is one of three reserve alternatives that specifically address the recommendations set forth in the Southern Planning Guidelines and Watershed Planning Principles. Under this alternative, 7,683 acres of future development would be focused within the San Juan Creek Watershed and the Talega Sub-basin in the San Mateo Watershed. Low intensity uses are also proposed in the Cristianitos Sub-basin.

5.4.2.5 Alternative B-12

This alternative is potentially capable of meeting the SAMP Purpose as it proposes an Aquatic Resources Conservation Program that focuses on protection of middle and upper portions of the Chiquita Sub-basin, Gobernadora Creek, San Juan Creek, and the main portion of Verdugo Canyon in the San Juan Watershed and the Cristianitos, Gabino, La Paz, and Talega Sub-basins in the San Mateo Watershed. This alternative was also selected because it was designed to specifically address the recommendations set forth in the Southern Planning Guidelines and Watershed Planning Principles and to respond to issues raised by the USACE, CDFG, USFWS, the environmental community, and the general public concerning the level of development within the Chiquita Sub-basin and within the San Mateo Watershed. Under this alternative, 5,873 acres of future development would be focused within the San Juan Creek Watershed and the Talega Sub-basin in the San Mateo Watershed.

5.5 AQUATIC RESOURCE PROTECTION FEATURES OF THE ALTERNATIVES

This subchapter expands the above descriptions to set forth the assumptions regarding the Aquatic Resources Conservation Program. The circulation systems necessary to support the development associated with each alternative are described in subchapter 5.6.

5.5.1 AQUATIC RESOURCES CONSERVATION PROGRAM ASSUMPTIONS

Each of the reserve program alternatives carried forward for further consideration proposes an Aquatic Resources Conservation Program that includes aquatic resources identified for preservation, restoration, and management. The following is a description of the areas identified for preservation under each alternative.

5.5.1.1 Alternative B-8

Impacts to aquatic resources in the Ortega Gateway area, Gobernadora Sub-basin, and Trampas Sub-basin would occur under this alternative. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings) and thus the mainstem creeks would largely be preserved. This alternative focuses on preservation of aquatic resources in the Chiquita Sub-basin, Verdugo Sub-basin, and all of the San Mateo Watershed. The following riparian systems would be preserved under this alternative:

- Chiquita Creek—one of only two generally perennial creek systems in Orange County (along with Gobernadora Creek) and characterized by: a) sandy soils in the valley floor and major side canyons and (b) a distinctive groundwater system with groundwater movement directed more toward Chiquita Creek than toward San Juan Creek;
- Verdugo Creek—a major source of coarse sediments (important to arroyo toad and other aquatic/riparian species' habitat) that are generated and transported to San Juan Creek by episodic storm events;
- Cristianitos Creek—a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;
- Gabino Creek—a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;
- La Paz Creek—a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and
- Talega Creek—a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located in RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under this alternative would be as described in subchapter 5.5.2.

5.5.1.2 Alternative B-10 Modified

Impacts to aquatic resources in the Ortega Gateway area, Chiquita Sub-basin, Gobernadora Sub-basin, Central San Juan and Trampas Sub-basin, Verdugo Sub-basin, Cristianitos, and Talega Sub-basin would occur under this alternative. The mainstem creeks would largely be preserved. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings). This alternative focuses on preservation of aquatic resources in the Gabino and La Paz Sub-basins in the San Mateo Watershed. The following riparian systems would be preserved under this alternative:

- Cristianitos Creek—a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino

Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;

- Gabino Creek—a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;
- La Paz Creek—a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and
- Talega Creek—a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located on the RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under this alternative would be as described in subchapter 5.5.2.

5.5.1.3 Alternative B-12: RMV Proposed Project

Impacts to aquatic resources in the Ortega Gateway area, Chiquita Sub-basin, Gobernadora Sub-basin, Central San Juan and Trampas Sub-basin, Verdugo Sub-basin, Blind Sub-basin, and Talega Sub-basin would occur under this alternative. Limited impacts to mainstem creeks would be those associated with infrastructure (e.g., road crossings) and thus the mainstem creeks would largely be preserved. This alternative focuses on preservation of aquatic resources in the Cristianitos, Gabino, La Paz and Talega Sub-basins in the San Mateo Watershed, in addition to Chiquita Creek, Gobernadora Creek, San Juan Creek and Verdugo Creek. The following riparian systems would be preserved under this alternative:

- The proposed B-12 Alternative's open space would protect habitat and species in the Chiquita Sub-basin in drainage catchments located in middle Chiquita above the SMWD treatment plant and below Tesoro High School and west of Chiquita Creek.
- Gobernadora Creek would be protected, including areas identified for restoration and the Sulphur Canyon headwaters area.
- Verdugo Canyon riparian resources and terrains generating coarse sediments would be protected.
- The San Juan Creek floodplain and associated riparian habitats would be protected, including a 1,312-foot-wide (400 meter) minimum wildlife movement corridor.
- A large block of aquatic resources habitats and associated species in the San Mateo Creek Watershed in the Cristianitos, La Paz, and Gabino Sub-basins would be protected under this alternative, including:
 - Cristianitos Creek—a relatively rapidly evolving creek system influenced by adjacent clay soils that connects important aquatic/riparian systems in Cristianitos Canyon, Gabino Canyon, and La Paz Canyon with Talega Creek and downstream habitats located outside the RMV Planning Area;

- Gabino Creek—a creek system that contains three distinctive geomorphic reaches and that forms confluences with La Paz Creek in its middle reach and with Cristianitos Creek in its lower reach;
- La Paz Creek—a creek system that links Gabino Canyon to large-scale federal open space areas to the north (Cleveland National Forest) and east (San Mateo Wilderness and MCB Camp Pendleton) and that provides a source of cobbles and other coarse sediments important for downstream habitat systems; and
- Talega Creek—a major creek system with a very large population of arroyo toads, with part of the creek and canyon system located on the RMV Planning Area and the remainder located on MCB Camp Pendleton property.

Restoration and management of preserved aquatic resources under the B-12 Alternative scenario would be as described in subsection 5.5.2.

5.5.2 RESTORATION OF AQUATIC RESOURCES

Restoration of aquatic resources within the SAMP Study Area is guided by two planning documents: (1) Riparian Ecosystem Restoration Plan for San Juan and Western San Mateo Creek Watershed: General Design Criteria and Site Selection prepared by Smith and Klimas of the USACE Engineer Research and Development Center (2003), termed “Watershed Restoration Plan,” as provided in Appendix F1; and (2) Aquatic Resources Restoration Plan prepared by GLA (2005). The latter, the Aquatic Resources Restoration Plan, more specifically addresses the RMV Planning Area and is included in its entirety in Appendix F2. Both documents are summarized here.

5.5.2.1 Watershed Restoration Plan

“The objective of the Watershed Restoration Plan is to facilitate development of an aquatic resources reserve program in the San Juan and San Mateo Watersheds through an evaluation of the potential for restoring a riparian ecosystem. The general approach to achieving this objective is to classify each riparian ecosystem in terms of its geomorphic characteristics, characterize the current condition of each riparian area, assign a general restoration design template, and then estimate the level of effort necessary to meet the target design” (page ii, Smith and Klimas, 2003). Five geomorphic zones were established in the Watershed Restoration Plan for the SAMP Study Area as follows:

- **Geomorphic Zone 1:** Riparian areas in V-shaped valleys with predominantly bedrock control.
- **Geomorphic Zone 2:** Small floodplains and terrace fragments in mountain and foothill valleys, where meander belt formation is restricted by lateral impingement of alluvial fans, colluvium, and large boulder rocks.
- **Geomorphic Zone 3:** Boulder-dominated floodplain and terrace complexes.
- **Geomorphic Zone 4:** Alluvium of meandering channels within broad lowland valleys.
- **Geomorphic Zone 5:** Large alluvial valleys.

A classification of potential Restoration Templates applicable across all geomorphic zones was developed. Ninety-six riparian reaches were analyzed to establish specific restoration criteria in terms of channel cross section and form, the scale of terraces present, and dominant vegetation types appropriate to each of the Restoration Templates. Using aerial photography, baseline assessment data, and field verification, one of six restoration templates was assigned to each riparian reach in the SAMP Study Area based on the condition of the channel, riparian vegetation, and surrounding land uses. The assigned restoration target was intended to represent the best possible restoration target given the potential natural patterns expected for the Geomorphic Zone, as described above. The restoration templates are described below.

- **Natural Template:** assigned where channel, floodplain, and terrace morphology and vegetation, as well as an upland buffer of native vegetation can be restored to a condition approximating the estimated undisturbed condition for the Zone and site-specific conditions.
- **Incised Channel Template:** applied to channels that have been incised or laterally scoured such that the existing condition did not fall within the normal range for channel, floodplain, or terrace dimensions, but where the full variety of community types expected for the Geomorphic Zone could be re-established in proportions generally reflecting the undisturbed condition.
- **Constrained Channel Template:** assigned to channels that would otherwise be included in the Incised Template, except that the immediate adjacent landscape prevents restoration of one or more components of stream geometry (e.g., flood prone width, sinuosity, terraces configuration) to normal ranges.
- **Aggraded Channel Template:** applied to only those reaches where the channel and floodplain are currently filled with sediments such that there is no distinct organization of surfaces.
- **Engineered Channel Template:** assigned to stream segments that are confined with concrete or riprap “banks” and which much remain so due to flood conveyance and safety concerns, or because only very limited recovery of ecological benefits is feasible.
- **Restoration Impractical:** applied to stream segments where there is no practical way to address the deficiencies present, within the guidelines adopted for this study, which preclude recommending fundamental changes to major roads and developed areas, or massive excavations.

Based on the field evaluation of 96 riparian reaches, a scale estimating the level of effort that would be required to restore a riparian reach to the prescribed Restoration Template was developed and assigned to each riparian reach. Level-of-effort was intended to serve as a tool for planners based on the assumption that there will be limited resources available for restoration, or limited potential sites available to offset certain type of impacts, and it may be useful to be able to consider cost as a factor in the event that a variety of potential scenarios must be assessed for feasibility and efficacy. To that end, the level-of-effort scale represents a crude surrogate of construction costs. There is no consideration of land purchase costs or similar issued included in these estimates, and unforeseen issues could easily change the estimates dramatically. Nevertheless, the following level-of-effort estimates are a useful planning tool.

- **Level of Effort– None:** no restoration necessary, because the reach is functional in its current condition, and requires only vigilance to prevent invasion of exotic plants species. Level of Effort–None reaches are assigned one level-of-effort unit (rather than a zero) to facilitate the calculations used in the assessment process.
- **Level of Effort– Light Planting:** no reconfiguration of the land surface is needed. Treatment consists of control of exotic species and spot-planting of native species. Three level-of-effort units are assigned to reaches in this category.
- **Level of Effort– Light Earthwork:** in addition to the activities mentioned under “Light Planting” large numbers of plants must be introduced and/or significant mechanical site preparation in the form of grubbing, tilling, or similar site preparation may be required prior to planting. Five level-of-effort units are assigned to reaches in this category.
- **Level of Effort– Moderate Earthwork:** involves excavation of less than six feet of soil depth and reconfiguration of site contours, in addition to those activities mentioned under “Light Earthwork.” Seven level-of-effort units are assigned to reaches in this category.
- **Level of Effort– Heavy Earthwork:** encompasses a wide range of possible actions, all of which involve extensive site preparation and heavy planting. Ten level-of-effort units are assigned to reaches in this category.
- **Level of Effort– Impracticable:** extreme effort required assigned 20 level-of-effort units, but this does not imply that the costs involved to restore these identified reaches are similar amongst the reaches or that they are in proportion (i.e., 20 times) to the effort required on other reaches.

Restoration simulations were performed using the assigned Geomorphic Zone, Restoration Template, and Level of Effort for each riparian reach in the SAMP Study Area. Hydrology, water quality, and habitat integrity indices were then re-calculated based on the conditions that could be expected to exist after applying the prescribed Restoration Template. Three possible restoration simulations were then conducted:

- **Simulation 1:** identify the riparian reaches where application of the restoration template would result in the maximum possible increase in riparian ecosystem integrity regardless of the level of effort required.
- **Simulation 2:** identify riparian reaches where application of the restoration template would result in the greatest increase in riparian ecosystem integrity while considering the level of effort required.
- **Simulation 3:** identify riparian reaches where application of the restoration template as well as restoration of land uses in the local drainage basin of the riparian reach would result in an increase in riparian ecosystem integrity. In this simulation, the effects of revegetation on broad terraces as well as conversion on upland areas from agricultural or grazing uses to natural vegetation are considered.

It is important to recognize that the simulations are intended as a planning tool to determine the feasibility of restoring individual reaches, and to prioritize restoration actions based on the functional benefits likely to be realized. Although the USACE expects that final restoration designs will resemble the recommended Restoration Templates and associated relative dimensions, site-specific restoration designs would have to be developed that include grading

plans and specify planting stock, planting densities, irrigation practices, and similar requirements that constitute the precise specifications for a restoration project.

5.5.2.2 RMV Planning Area Aquatic Resources Restoration Plan

The Aquatic Resources Restoration Plan is the next step in restoration planning for the RMV Planning Area (Appendix F2). Using the Watershed Restoration Plan as a starting point and the Restoration and Management recommendations for aquatic resources set forth in the Southern Planning Guidelines and Watershed Planning Principles, specific riparian reaches within the RMV Planning Area are identified as potential candidates for restoration.

The Aquatic Resources Restoration Plan describes an area-specific conceptual approach for the creation, restoration, and/or enhancement of wetlands and non-wetland riparian habitats in the RMV Planning Area, including a summary of an invasive exotic control program for San Juan and Trabuco creeks as set forth in greater detail in the Invasive Exotics Control Plan, part of the Aquatic Resources Adaptive Management Program reviewed in subchapter 5.5.3 (the Aquatic Resources Adaptive Management Program is provided in Appendix F3). The term “restoration” is inclusive in this conceptual plan as it addresses the spectrum of possible restoration activities within the RMV Planning Area, ranging from creation of new habitats that in some instances may require substantial grading to enhancement of existing degraded habitats that could include limited grading or may require far less intensive measures such as minor recontouring, removal of invasive species, and/or some replanting.

As a planning area-wide comprehensive program, this subchapter summarizes the Aquatic Resources Restoration Plan restoration recommendations for several sub-basins and explains how these actions, implemented through the Aquatic Resources Adaptive Management Program, could contribute to a more effective Aquatic Resources Conservation Program. The restoration recommendations have been developed to ensure no-net-loss of either acreage or function associated with Waters of the U.S. subject to the jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act. The approach taken in this program is consistent with recent Regulatory Guidance Letter No. 02-2, dated December 24, 2002, issued by the USACE regarding mitigation, which emphasizes watershed-wide and function-based programs where feasible.

In addition to employing a watershed and function-based approach, the Aquatic Resources Restoration Plan also describes site preparation, plant palettes, short-term and long-term monitoring and maintenance, and annual reporting of the restoration program to provide a framework and guidance for the restoration plan. The Aquatic Resources Restoration Plan is a working draft and will be subject to refinement and modification during the SAMP process including the environmental analysis of proposed permitting procedures in Chapter 8.0. However, it is important to note that extensive data have been collected on the aquatic ecosystems on the RMV Planning Area. These data, along with data collected during monitoring of approximately 125 acres of created and restored wetland and riparian areas in the RMV Planning Area, provide a data set that can be used to inform and guide future restoration projects.

Finally, the Aquatic Resources Restoration Plan would provide for low intensity monitoring and maintenance (as necessary) for approximately 18 acres of existing created alkali marsh, alkali meadow, and southern riparian scrub in the GERA. These 18 acres of existing wetland habitat were created in 1998 and 1999 as part of the Ladera Ranch wetland restoration program that, according to conditions in the Section 404 and Section 1603 authorizations from the USACE and CDFG, included a sliding scale whereby excess creation areas (i.e., areas not specifically

needed to offset impacts associated with Ladera Ranch) could be utilized for future projects within the RMV Planning Area portion of the Aquatic Reserve. The 18 acres have achieved the five-year performance standards and will be subject to ongoing monitoring until such time as they are used to offset future impacts associated with USACE Section 404 Authorizations.

The Aquatic Resources Restoration Plan (Appendix F2, and reviewed in Chapter 8.0) includes the following components:

- Regulatory Considerations
- Definition of Terms
- Habitat Restoration Goals
- Success Criteria
- Preliminary Designation of Streams to be Restored
- Preliminary Designation of Wetland Restoration/Enhancement Areas
- Preliminary Designation of Non-Wetland Riparian Restoration/Enhancement Areas
- Implementation Plan
- Maintenance Plan
- Monitoring Program

The main goal of the Aquatic Resources Restoration Plan is to set forth the methodologies for: (1) enhancement or restoration of wetland and/or riparian habitats that have been substantially degraded such that measurable losses of hydrologic, biogeochemical or habitat functions have occurred, and whereby the lost function(s) can be restored or reintroduced; (2) creation of wetland and/or riparian habitats to replace wetland or riparian areas lost to development, ensuring a no net loss of USACE jurisdictional acreage; and (3) enhancement, restoration, or creation that would replace hydrologic, biogeochemical and habitat functions such that there is no-net-loss of wetland functions. As noted above, a substantial portion of the compensatory mitigation can be implemented in advance of impacts, providing a high level of certainty that no-net-loss of function or acreage occurs. Areas evaluated and identified as potential restoration sites are set forth below. Based on the detailed evaluations, all of these sites represent excellent candidate sites; however, it may not be necessary or desirable to use each site, or only portions of these sites may ultimately be utilized. The determination of which candidate restoration site to be used would depend on the level of impact associated with the proposed permitting procedures reviewed in Chapter 8.0 and the associated mitigation in the form of aquatic resources identified for preservation, restoration, and management under the Aquatic Resources Conservation Program.

Potential Habitat Creation/Restoration Areas

Potential Habitat Creation/Restoration Areas are discussed in detail in the Aquatic Resources Restoration Plan and include areas within GERA, various locations in Gobernadora Canyon, Sulphur Canyon at the confluence with Gobernadora Creek, Chiquita Creek between the

“Narrows” and the SMWD Treatment Facility, Chiquita Creek between SMWD Treatment Facility and Cow Camp Road, and lower Chiquita Canyon.

Stream Restoration

In addition to the areas identified above for restoration, several locations for stream restoration have been identified including Gobernadora Creek at the knickpoint located adjacent to GERA, Chiquita Creek between the “Narrows” and the SMWD Treatment Facility, and the upper reaches of Gabino Creek. These locations are also discussed in detail in the Aquatic Resources Restoration Plan.

Invasive Exotic Control

Removal of giant reed from San Juan Creek has been identified as a “high priority” component of the Invasive Species Control Plan. The Invasive Species Control Plan, provided in Appendix F4, describes in detail the extent and type of invasive species present on the RMV Planning Area and identifies methods for their control, including the control of giant reed (*Arundo donax*). San Juan Creek supports populations of the arroyo toad and least Bell’s vireo along with other special-status species such as the yellow-breasted chat, yellow warbler, southwestern pond turtle, and two-striped garter snake. As set forth in the Invasive Species Control Plan, *Arundo donax* can have a number of adverse impacts on native riparian ecosystems including alteration of hydrologic regimes, alteration of fire regimes, and elimination of native riparian habitat (i.e., willow scrub and forest) by direct competition. Elimination of *Arundo donax* would substantially enhance the ability of the reach of San Juan Creek associated within the Aquatic Resources Conservation Areas to support the arroyo toad and least Bell’s vireo, contributing significantly to recovery of these species within the SAMP Study Area.

Removal of *Arundo donax* and Pampas Grass from Trabuco Creek between Crown Valley Parkway and Avery Parkway has been identified as a “high priority” component of the Invasive Species Control Plan. Trabuco Creek supports a major population in a key location of least Bell’s vireo along with other special-status species such as the yellow-breasted chat, yellow warbler, and two-striped garter snake. Elimination of *Arundo donax* would substantially enhance the ability of this reach of Trabuco Creek to support least Bell’s vireo, contributing significantly to recovery of this species within the SAMP Study Area.

5.5.3 MANAGEMENT OF AQUATIC RESOURCES

Where applicable, management of aquatic resources will be carried out in accordance with the SAMP Aquatic Resources Conservation Program and applied to the Aquatic Resources Conservation Areas identified for RMV lands. Aquatic resources adaptive management and monitoring activities would be conducted primarily in the RMV Planning Area as mitigation for impacts to aquatic resources subject to USACE jurisdiction. These management and monitoring activities are summarized below in subchapter 5.5.3.1, the Aquatic Resources Adaptive Management Program (Appendix F3, and reviewed in Chapter 8.0).

Under some circumstances, supplemental adaptive management and monitoring activities within adjacent upstream lands or coordination with measures undertaken outside the RMV Planning Area (e.g., Caspers Regional Park) may be necessary to ensure the overall health of the preserved aquatic resources where stressors can cause loss of habitat value and where conditions in one area can affect other preserved aquatic resources. *Arundo* is an excellent

example of such a stressor. Stressors that would require management and monitoring on other lands are exotic species and fire risk from fuel load buildups.

5.5.3.1 RMV Planning Area Aquatic Resources Adaptive Management Program

The Aquatic Resources Adaptive Management Program describes management actions for riparian/wetland resources and their associated focal species for the RMV Planning Area (Appendix F3). Key elements of the Aquatic Resources Adaptive Management Program are summarized here.

By definition, adaptive management is an experimental and flexible approach to resource management that integrates ecological theory, modeling, hypotheses generation, field manipulations and interventions, and feedback that allows for refinement of the model(s) and hypotheses and, ultimately, improved management of the resource. As stated by Gunderson (1999), adaptive management is “adaptive because it acknowledges that managed resources will always change as a result of human intervention, that surprises are inevitable, and that new uncertainties will emerge.” A key concept of adaptive management is that the world is uncertain and flexibility in resources management is crucial (Holling 1995; Holling and Meffe 1996). This approach requires a departure from the traditional command-and-control approach to management, which assumes that the managed system is relatively simple and predictable (Holling and Meffe 1996).

Adaptive management programs exhibit the following characteristics:

- 1) Available theory, empirical information, and expertise are used to develop dynamic models that make predictions about the outcomes of different management actions (Carpenter et al. 1999; Walters 1997). Modeling is a powerful tool to simulate the spatial and temporal dynamics of key ecosystem factors, or what Holling (1995) terms “structuring variables,” and to generate and screen hypotheses that may not yield useful data or are unlikely to be effective management policies (Walters 1997).
- 2) Models, hypotheses, and experiments must meet on-the-ground managers’ needs and should be developed in collaboration with managers (Rogers 1998). As part of this process, the monitoring tools, the options, and strategies available to managers, and strategies for utilizing new data and information should be developed (Bosch et al. 1996).
- 3) Adaptive management is a “dual control problem” where short-term management goals and objectives need to be met while also learning about the managed system (Nichols 1999).
- 4) Adaptive management strategies may not yield decisive results for a decade or two and, thus, the agencies and stakeholders must be patient (Lee 1993; Walters 1997).
- 5) Adaptive management strategies may pose risks for some populations and habitats of endangered and rare species (Johnson 1999a; Walters 1997), but the focus should be on restoring and maintaining ecological resiliency such that risk and catastrophe to other resources are avoided. In other words, there are likely to be difficult tradeoffs in the adaptive management of habitats and species.

- 6) Reversible treatments should be used where possible so that if hypotheses turn out to be incorrect, the resource is not permanently lost (e.g., loss of a population, state-transition of a habitat) (Walters 1997).

The purpose of adaptive management within the framework of the SAMP is to help maintain and, where feasible, enhance the long-term net habitat value of riparian/wetland resources within the Aquatic Resources Conservation Areas.

The first and underlying guiding principle of the Aquatic Resources Adaptive Management Program is that management and monitoring should be directed towards environmental factors known or thought to be directly or indirectly responsible for ecosystem changes that would be inconsistent with meeting the three broad goals of:

- Ensure the persistence of a native-dominated vegetation mosaic in the Aquatic Resources Conservation Areas.
- Restore or enhance the quality of degraded riparian/wetland vegetation communities in the Aquatic Resources Conservation Areas.
- Maintain and restore biotic and abiotic natural processes, at all identified scales, for the Aquatic Resources Conservation Areas.

For example, allowing *Arundo donax* to proliferate would be inconsistent with the goal of ensuring the persistence of a native-dominated riparian/wetland vegetation community in the Aquatic Resources Conservation Program area. Natural flood events have both the adverse effect of destroying mature riparian systems that support certain species such as nesting raptors and the beneficial effect of rejuvenating the riparian system and creating habitat for endangered species such as the arroyo toad and least Bell's vireo, as well as many other species that thrive in early to mid-successional riparian systems. These natural and anthropogenic disturbance factors, called "environmental stressors," may have both adverse and beneficial effects on ecosystem characteristics such as vegetation communities and species. Natural and human-caused stressors known or likely to significantly affect riparian/wetland vegetation communities and aquatic/riparian species in the Southern Subregion include habitat fragmentation, altered hydrology, altered geomorphic processes, precipitation, exotic plant and wildlife species, wildfire, over-grazing, and human uses, including recreation.

It is important to understand that the aquatic vegetation communities and associated species in the aquatic resource program area are basically in good general health, but that certain known and potential stressors operate and can be identified (e.g., *Arundo* invasion of San Juan Creek). For this reason, the stressor approach is particularly appropriate and the basic management needs are to (1) address existing stressors so that net habitat value can be increased, and (2) identify future stressors that could reduce or adversely alter long-term net habitat value.

In conclusion, the environmental stressor approach is the guiding principle of the Aquatic Resources Adaptive Management Program both because it is state of art science for management and monitoring of ecological systems (e.g., Noon 2003a) and is particularly appropriate for the RMV Planning Area.

The Science Advisors identified five fundamental elements of an adaptive management program as follows:

- Setting Management Objectives

- Preparing Management Plans and Conceptual Models
- Identifying Uncertainties and Knowledge Gaps in Management Plans
- Monitoring the Management Program
- Incorporating Monitoring and Research Results Into Revised Management Plans

Figure 5-14 shows a conceptual flowchart for adaptive management that incorporates these fundamental concepts and which are addressed in the description of the Aquatic Resources Adaptive Management Program (Appendix F3). For the wetland/riparian communities, the Aquatic Resources Adaptive Management Program describes how these five fundamental elements are addressed, including the establishment of management objectives and the description of a management plan and conceptual model designed to respond to the identified management objectives. Uncertainties and knowledge gaps are identified in the Aquatic Resources Adaptive Management Program, as is how the management program would be monitored. Lastly, and key to the Aquatic Resources Adaptive Management Program approach, is how results get fed back into a “revised” management plan.

5.6 CIRCULATION SYSTEM ASSUMPTIONS

Implementation of the development associated with the alternatives carried forward for further consideration in Chapter 6.0 would require a supporting circulation system. The following describes the circulation system assumptions for each “B” Alternative carried forward for further consideration. Certain circulation facilities are common to all “B” Alternatives. The following are additions to or revisions to Master Plan of Arterial Highway (MPAH) facilities common to all “B” Alternatives, except where noted:

- **Cow Camp Road**– an addition to the MPAH of a new east-west arterial highway on the north side of San Juan Creek. Cow Camp Road would be constructed as a major arterial between Antonio Parkway and SR-241 (SOCTIIP), and as a primary arterial between SOCTIIP and Ortega Highway in a “with SR-241” scenario. In a “without SOCTIIP” scenario, Cow Camp Road would be constructed as a major arterial between Antonio Parkway and F Street and as a primary arterial between F Street and Ortega Highway.
- **Cristianitos Road**– depending on the alternative, existing Cristianitos Road between Avenida Pico and the development area in Trampas Canyon would remain a private ranch road (Alternatives B-8 and B-12), or be upgraded to a County collector with variances for existing geometry and constraints (Alternative B-10 Modified). From the proposed Trampas Canyon development area to the proposed development area in the Gobernadora Sub-basin, a new north-south arterial highway would cross San Juan Creek and Cow Camp Road, and connect to the proposed SR-241, in a “with SOCTIIP” scenario and Oso Parkway in a “without SOCTIIP” scenario (all alternatives).
- **Avenida Talega**– an MPAH reclassification of the segment of roadway in unincorporated Orange County from a secondary arterial highway to a collector road (all alternatives).
- **La Pata Avenue/Antonio Parkway**– existing La Pata Avenue/Antonio Parkway would be widened from the northerly limit of the RMV Planning Area, north of Ortega Highway, to the southerly limit of the RMV Planning Area. Also, the road would also be extended

further to the south beyond the RMV Planning Area to Avenida Pico outside of the SAMP Study Area.

- **Ortega Highway (SR-74)**– existing Ortega Highway would be widened from east of the intersection with La Pata to the westerly boundary of the RMV Planning Area. Also, the widening would extend further west into the City of San Juan Capistrano.

In addition to arterial highway improvements, certain local circulation facilities would be necessary including, but not limited to:

- **Gobernadora Road**– either a four-lane secondary or modified collector to provide internal circulation to development in Gobernadora Sub-basin.
- **Center Gobernadora Road**– a two-lane collector road to provide internal circulation to development in Gobernadora Sub-basin.
- **Trampas Canyon Road**– a two-lane collector road with a right-of-way reserve for four lanes to provide internal circulation for development in Trampas Sub-basin.

Under the B-8 Alternative, no north-south connector would be built in a “with SOCTIIP” scenario. In a “no SOCTIIP” scenario, Cristianitos Road would extend from Planning Area 3 to Oso Parkway. For Alternative B-10 Modified, F Street, an access controlled north-south road is proposed to extend from Cow Camp Road and connect to Tesoro Creek Road (in a “with SOCTIIP” scenario) or connect to Cristianitos Road (in a “without SOCTIIP” scenario). Under Alternative B-12, in a “with SOCTIIP” scenario, no north-south road would be constructed to connect with Tesoro Creek Road. In a “without SOCTIIP” scenario, Cristianitos Road would extend from PA 3 to Oso Parkway.

Development in the Verdugo sub-basin under the B-10 Modified and B-12 Alternatives would be accessed via collector roads internal to the development area from Cow Camp Road.

Alternative B-10 Modified would provide for estate development in Gabino Canyon. These estates would be accessed primarily through Planning Area 4 and then from Verdugo Road, a rural collector with variances for existing geometry and constraints, with access to individual estate lots from existing/improved to all weather access ranch roads. A secondary all-weather wildfire evacuation road may be required for the limited development proposed in upper Gabino under the B-10 Modified Alternative. Should such a facility be required, the existing ranch access road from upper Gabino to existing Cristianitos Road could serve as an evacuation route.