APPENDIX G-4

RELATIONSHIP OF THE PROPOSED PROJECT JURISDICTIONAL DELINEATION TO THE LANDSCAPE LEVEL DATABASES

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I. INTRODUCTION

Federal, state and local agencies, in cooperation with local landowners are currently engaged in a comprehensive land use and natural resource planning process for the San Juan Creek and western San Mateo Creek watersheds within southern Orange County. This comprehensive planning process includes preparation of a Special Area Management Plan/Master Streambed Alteration Agreement (SAMP/MSAA). In support of the SAMP/MSAA, the U.S. Army Corps of Engineers conducted a landscape level delineation to identify areas of potential Corps and CDFG jurisdiction along with the mapping of areas of potential wetlands and riparian habitat within the SAMP/MSAA study area.[1] The Corps' Cold Regions Research and Engineering Laboratory (CRREL) also prepared a "Functional Assessment" that addresses the extent and quality of wetlands and other waters of the U.S. located within the San Juan Creek and San Mateo Creek watersheds.[2]

The regional planning process also includes preparation of a Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) that addresses long-term planning for both upland and aquatic resources. As part of the planning process for the NCCP/HCP, a database was developed that included the development of a vegetation layer based on habitat mapping originally performed by Dames and Moore, circa 1992. The mapping was based primarily on color aerial photo (circa 1990) interpretation. The original vegetation layer was updated by Dudek in response to changing biological conditions in the study area, primarily where grading for various large-scale developments has removed vegetation (e.g., Ladera Ranch, Talega) or where areas of habitat restoration has occurred (e.g., Gobernadora Ecological Restoration Area in Cañada Gobernadora and Chiquita Canyon). The most recent revision to the vegetation database was made in 2004. While, there is a substantial overlap between the wetland/riparian resources mapped for the SAMP/MSAA by WES/CRREL and wetland/riparian resources mapped for the NCCP/HCP vegetation database, the data are not interchangeable because of natural changes in the riparian/wetland communities and technical inconsistencies due to the use of different base mapping materials; e.g. vegetation polygons may be of similar size and shape but are not well edge-matched

Beginning in 2002, Wetland Specialists from Glenn Lukos Associates (GLA) conducted a project level jurisdictional delineation for the areas proposed for development under the SAMP/MSAA including the B4, B5, B6, B8 and B9 Alternatives to identify with a higher level of precision, the limits of Corps jurisdiction pursuant to Section 404 of the Clean Water Act[3] and the California

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[1] Lichvar, R., G. Gustina, D. MacDonald, and M. Ericsson. 2000. Planning Level Delineation and Geospatial Characterization of Riparian Ecosystems of San Diego Creek Watershed, Orange County California. Prepared for the U.S. Army Corps of Engineers, Engineering and Research Development Center (ERDC) Cold Regions Research and Engineering Laboratory (CRREL), Hanover N.H. September 2000.

[2] Smith, RD. 2000. Assessment of Riparian Ecosystem Integrity In the San Juan and San Mateo Creek Watersheds, Orange County, California. U.S. Army Corps of Enginerrs, Waterways Experiment Station, Vicksburg, MS, USA.

[3] Glenn Lukos Associates. 2003. Jurisdictional Delineation of Areas Subject to the Jurisdiction of the U.S.

Department of Fish and Game pursuant to Section 1600 of the Fish and Game Code, including areas of riparian habitat.[4] The jurisdictional delineation also identified areas with wetland/riparian resources, which while not subject to Corps or CDFG jurisdiction for various regulatory reasons, would be subject to evaluation under the California Environmental Quality Act (CEQA).

During performance of the project level Corps and CDFG jurisdictional delineation, it became apparent that many features identified by WES/CRREL as Waters of the United States (WoUS) at the landscape level did not meet the criteria set forth in 33 CFR 328.3 due to the lack of characteristics consistent with the presence of an Ordinary High Water Mark (OHWM) or jurisdictional wetlands in accordance with the 1987 Wetland Manual. It was also noted that, as a result of the inherent generalization based on aerial photo interpretation compared to a project-level delineation, areas identified as riparian habitat by WES/CRREL and/or the NCCP/HCP Database sometimes overestimated the extent of riparian habitat and in some instances mapped upland areas as riparian habitat.

The purpose of this analysis is to address the differences between (1) the WES/CRREL and NCCP/HCP landscape level riparian vegetation data and (2) the project-level delineation riparian habitat mapping criteria and results of extensive field mapping by GLA, Corps and CDFG staff. prepared by GLA. It is important to note that such differences are inherent due to the differing analytical tools associated with each work effort and the level of detail possible given the varied scales under which the different tasks were completed. For example, the precision achievable with mapping vegetation polygons on large-scale aerial photographs (e.g., one-inch = 1,000 feet) is low compared with a site-specific delineation where widths of the riparian canopy can be measured to the exact foot with a measuring tape or where wetland limits can be recorded using GPS accurate to one meter. The following analysis addresses these differences and is organized as follows:

- Discussion of the Corps' Regulatory Framework;
- Discussion of the CDFG Regulatory Framework;
- Discussion of WES/CRREL Delineation and NCCP Vegetation Mapping;
- Discussion of how CDFG functionally defines the limits between the limits of jurisdictional riparian habitat versus non-jurisdictional upland habitat;
- Discussion of Field Mapping Methods used in the Project-level Delineation.
- Results/Conclusions

Army Corps of Engineers pursuant to Section 404 of the Clean Water Act. *November 2003.*

[4] Glenn Lukos Associates. 2003. Jurisdictional Delineation of Areas Subject to the Jurisdiction of the California Department of Fish and Game pursuant to Section 1600 of the Fish and Game Code. *November 2003*.

II. CORPS REGULATORY FRAMEWORK

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in Corps regulations at 33 CFR Part 328.3(a) as:

> *(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
> *(2) All interstate waters including interstate wetlands;*
> *(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:*
> *(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
> *(ii) From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or*
> *(iii) Which are used or could be used for industrial purpose by industries in interstate commerce...*
> *(4) All impoundments of waters otherwise defined as waters of the United States under the definition;*
> *(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;*
> *(6) The territorial seas;*
> *(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section.*

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

> *(8) Waters of the United States do not include prior converted cropland.*[5] *Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.*

In the absence of wetlands, the limits of Corps jurisdiction in non-tidal waters, such as intermittent streams, extend to the OHWM which is defined at 33 CFR 328.3(e) as:

> *...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank,*

[5] The term "prior converted cropland" is defined in the Corps' Regulatory Guidance Letter 90-7 (dated September 26, 1990) as "wetlands which were both manipulated (drained or otherwise physically altered to remove excess water from the land) and cropped before 23 December 1985, to the extent that they no longer exhibit important wetland values. Specifically, prior converted cropland is inundated for no more than 14 consecutive days during the growing season…." [Emphasis added.]

shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

The term "wetlands" (a subset of "waters of the United States") is defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987 the Corps published a manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the 1987 Wetland Delineation Manual generally requires that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the manual provides great detail in methodology and allows for varying special conditions, a wetland should normally meet each of the following three criteria:

- more than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the National List of Plant Species that Occur in Wetlands[6]);

- soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions); and

- hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year[7].

Corps jurisdictional areas generally comprise smaller areas than areas regulated by CDFG, and in most cases are located fully within the larger CDFG-jurisdictional area.

III. CDFG REGULATORY FRAMEWORK

In *A Field Guide to Lake and Streambed Alteration Agreements: Section 1600-1607 California Fish and Game Code*, CDFG personnel are provided the following guidance relative to implementation of the Section 1600 Program.

> While there is no definition for the term lake in the Fish and Game Code or associated regulations, there has been little problem with applying the agreement process to lake bed alterations. The term stream, which includes creeks and rivers, is defined in Title 14, California Code of Regulations (CCR), Section 1.72:
>
> > "A stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or

[6] Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands. U.S. Fish and Wildlife Service Biological Report 88(26.10).

[7] For most of low-lying southern California, five percent of the growing season is equivalent to 18 days.

other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

However, this definition is not complete with respect to Sections 1601 or 1603 because it does not define the terms bed, channel, or bank and does not define other stream-related features such a aquatic life, riparian vegetation, etc. It is therefore incumbent on Department personnel to develop a sense of what constitutes a stream for purposes of implementing and enforcing sections 1600 – 1607 and Lake/Streambed Alteration Agreements.

The following concepts have therefore been developed to assist Department employees in this endeavor.

1. The term stream can include intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (United States Geological Survey Maps, USGS), and watercourses with subsurface flow. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent wildlife.
2. Biologic components of a stream may include aquatic and riparian vegetation, all aquatic animals including fish, amphibians, reptiles, invertebrates, and terrestrial species, which derive benefits from the stream system.
3. As a physical stream, a stream not only includes water (at least on an intermittent or ephemeral basis), but also a bed, bank, and/or levee, instream features such as logs or snags, and various flood plains depending on the return frequency of the flood event being considered (i.e., 10, 50, or 100 years, etc.)
4. The lateral extent of a stream can be measured in ways depending on a particular situation and the type of fish or wildlife resources at risk. The following criteria are presented in order from the most inclusive to the least inclusive.

    A. The floodplain of a stream can be the broadest measurement of a stream's lateral extent depending on the return frequency of the flood event used. For most flood control purposes, the 100-year flood event is the standard measurement and maps of the 100-year flood plain exist for many streams. However, the 100-year flood plain may include significant amounts of upland or urban habitat and therefore may not be appropriate in many cases.
    B. The outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats and is therefore a reasonable and identifiable boundary for the lateral extent of a stream. In most cases, the use of this criterion should result in protecting the fish and wildlife resources at risk.
    C. Most streams have a natural bank which confines flows to the bed or channel except during flooding. In some instances, particularly on smaller streams or dry washes with little or no riparian habitat, the bank should be used to mark the lateral extent of a stream.

D. A levee or other artificial stream bank could be used to mark the lateral extent of a stream. However, in many instances, there can be extensive areas of valuable riparian habitat located behind a levee.

Any of the above criteria could be applicable in determining what constitutes a stream depending on the potential for the proposed activity to adversely affect fish and other stream-dependent wildlife resources.

Thus, with respect to the planning areas evaluated for the SAMP/MSAA, the outer limits of CDFG jurisdiction would be defined as the outer limits of habitat functionally considered to be riparian as contrasted with "uplands" habitat.

IV. WES/CRREL LANDSCAPE LEVEL DELINEATION

As mentioned in the introduction, both the WES/CRREL and the NCCP/HCP data were prepared for the purpose of landscape planning, and therefore lacked the precision of a project-level delineation. Smith (2000) described the WES/CRREL methodology in the *Assessment of Riparian Ecosystem Integrity in the San Juan and San Mateo Creek Watersheds, Orange County, California.*

> *For the purposes of this project, riparian ecosystems were defined from a functional perspective as the areas along perennial, intermittent or ephemeral streams where the interaction with surface and groundwater results in distinctive geomorphic features and vegetation communities.* ***Under natural circumstances, the riparian ecosystem includes that bank full stream channel, the active floodplain, and less frequently flooded, historical floodplains/terraces***. [Emphasis Added]

Although this definition is similar to the working definition of jurisdictional riparian habitat developed in the field with CDFG during the project-level delineation (see discussion below on pages 8-10), the WES/CRREL data generally encompasses much more upland habitat including areas that are not within the bank full channel and/or are not part of the active floodplain or historical terraces.[8] Many of these areas are identified as unregulated uplands in their assessment. Unfortunately, there is no simple way, using just the existing WES/CRREL data, to distinguish which portions of these unregulated areas are associated with jurisdictional streambeds.

Consequently, the resolution at which this landscape-level assessment is useful for large-scale planning purposes but more functional definition of " riparian" habitat is needed for a project level field delineation required to map Corps and CDFG jurisdictional areas.

[8] The differences are generally greater for first and second order drainages than for larger order streams such as San Juan Creek and Gabino Creek with the differences due to use of less precise analytical tools than used for the project-level delineation.

V. NCCP/HCP LANDSCAPE LEVEL VEGETATION MAPPING

Similar problems are apparent with the NCCP/HCP data. Differences between the NCCP vegetation layer and the Corps' WES and the CRREL planning level delineation were addressed in Chapter 3 of the Southern NCCP/HCP.

> *In 2000, a work plan in support of the SAMP/MSAA was undertaken in the San Juan Creek and San Mateo Creek watersheds to develop programmatic approaches for compliance with requirements of the federal CWA, State Porter Cologne Act, State Fish and Game Code and federal and State ESAs. A portion of the work conducted by the USACE WES and the CRREL was to evaluate the integrity and functional condition of riverine and non-riverine wetlands. This work effort included new mapping of the "aquatic" habitats (riparian habitats, wetlands, and streamcourses) using current aerial photographs and field verification. The other portion of the work supporting the SAMP/MSAA was conducted by the PCR/BALANCE/PWA team on the physical processes and the underlying geomorphology that contribute to the ecologic conditions of the riparian systems in the study area. This work was intended to supplement and complement the information gathered by the USACE WES and CRREL. The USACE WES/CRREL and PCR/BALANCE/PWA teams used the Gray and Bramlet (1992) habitat classification system, but mapped several additional riparian vegetation communities based on the presence of certain dominant plant species that were not described by Gray and Bramlet. This mapping effort covered the large majority of the NCCP/HCP study area, but did not include the northernmost portion of the CNF or the San Clemente Hydrological Unit in the southern portion of the study area (Figure 8).*
>
> *A comparison of the original aquatic habitats in the Southern NCCP/HCP vegetation database and the new mapping by WES/CRREL and PCR/BALANCE/PWA revealed overlapping, but somewhat different mapping results. While discrete vegetation polygons were similar in shape and size, the vegetation communities attributed to the polygons were sometimes different from the original database. This result would be expected because of actual changes in the habitat over the past decade (e.g., from succession or natural disturbances), technical advances in the aerial photography (i.e., geo-referenced photos) and different field workers, methodologies and mapping decision rules. For example, the labeling of vegetation polygons may be different to reflect current conditions and polygon shapes and positions may be different as a result of some distortion in the original aerial photographs, causing difficulties in edge-matching between different vegetation polygons. For these reasons, the data layers cannot be simply combined to produce a seamless vegetation map (i.e., simply inserting the new aquatic habitats in replacement of the original mapping). Because of the differences in the aquatics mapping in the two databases, they are kept*

separate in the discussion below. Discussion of the upland vegetation communities and non-natural land covers will be primarily based on the Southern NCCP/HCP database and the discussion of aquatic habitats primarily will be based on the WES/CRREL and PCR/BALANCE/PWA database. Also, because the two databases are not seamless, the total vegetation acreages do not sum to the approximately 92,000 acres in the planning area.

VI. METHOD BY WHICH CDFG FUNCTIONALLY DEFINES THE LIMITS BETWEEN THE LIMITS OF JURISDICTIONAL RIPARIAN HABITAT AS CONTRASTED WITH UPLAND HABITAT

Based on the regulatory framework and verified with CDFG personnel in the field, a number of factors were considered/evaluated in determining the limits of vegetation associations that would be regulated by CDFG as Riparian Habitat. The methodology provided for identification of the limits for riparian areas, associated with streambeds, within CDFG jurisdiction. Specific resources used to aid in the identification and delineation of vegetation defined as "riparian" include the following: *National List of Plant Species that Occur in Wetlands* (Reed, 1988)[9] and *A Manual of California Vegetation* (Sawyer and Keeler-Wolfe, 1996)[10]. Reed provides an indicator status for plants that occur in wetlands. Obligate Wetland species (OBL) are defined as species that occur in wetlands 99-percent of the time. Obligate Upland species (UPL) occur in uplands 99-percent of the time. Species between OBL and UPL include Faculative Wet (FACW), that are associated with wetlands 67- to 99-percent of the time with Facultative (FAC) species associated with wetlands 33- to 67-percent of the time. During the field-level delineation and review by CDFG, species considered to be "riparian" in all cases but one, coast live oak, exhibited an indicator status of FAC, FACW or OBL. Dominant species discussed below under descriptions of the identified riparian associations included black willow (*Salix gooddingii*, OBL), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigeta*, FACW), narrow-leaf willow (*Salix exigua*, OBL), white alder (*Alnus rhombifolia*, FACW), Fremont cottonwood (*Populus fremontii*, FACW), black cottonwood (*Populus trichocarpa balsamifera*, FACW), western sycamore (*Platanus racemosa*, FACW), and mulefat (*Baccharis salicifolia*, FACW). Coast live oak (*Quercus agrifolia*, UPL), as noted is the only upland species that is typically included as a dominant riparian species. Sawyer and Keeler-Wolfe, which classifies each vegetation series as either "wetlands" or "uplands" within their description for each series provides the following description for Coast Live Oak Series:

> ***Uplands:*** *slopes oftern very steep; raise stream banks and terraces. Soils mostly sandstone or shale-derived. The national inventory of wetland plants (Reed 1988) does not list coast live oak.* [Bold in original]

[9] Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands. U.S. Fish and Wildlife Service Biological Report 88(26.10).

[10] Saywer, John, O. and Todd Keerler-Wolfe. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento.

Use of the wetland indicator status provided in Reed (1988), as a useful tool for separating "riparian" from "upland" species is supported by an understanding of the origins of riparian systems in areas governed by a Mediterranean climatic regime. The dominant tree and shrub species that occur along perennial and intermittent streams are recognized remnants of the Arcto-Tertiary Geoflora of the Late Tertiary and Quaternary Periods that included wet climates, explaining their high demands for water. [11] In areas now dominated by the drier Mediterranean climate, these species persist in areas where there is a permanent or seasonal surface or subsurface water supply. The dominant genera in southern California include: Willow (*Salix*, spp.), Cottonwood (*Populus* spp.), Alder (*Alnus rhombifolia*), Sycamore (*Platanus racemosa*), Maple (*Acer* spp.), Ash (*Fraxinus* spp.), and in some settings, oak (*Quercus* spp.).[12] The hydrologic requirements for many of these genera differ and are generally well known. For example, well-aerated water that is close to the surface will favor Alder whereas when the water table is relatively deep, Sycamores will predominate as long as the intervening soil aeration is high. Direct measurements of water use by red willow documented water-use rates at 52.7 acre-inches per year with Alder-dominated habitat using 47.0 acre inches of water during the peak growing season July to October).[13]

The methodology described here, incorporated the wetland indicator status for each species as provided by Reed (1988), with the hydrologic requirements as noted above. The methodology also follows Smith (2000) as described on page 6 above and is also consistent with the guidance provided by CDFG as excerpted on Pages 4 and 6. The convention for application of these tools in the field for the project-level delineation was developed with direct input from CDFG biologists during the verification process. The methodology for defining the dimensions of riparian habitat in the field is summarized as follows:

- Designation of an area as "riparian habitat" was generally limited to stands of vegetation that included a predominance of species that exhibited an indicator status of FAC, FACW or OBL. (Coast live oaks were included as riparian habitat in specific instances as further described/discussed below.)

- Where all riparian habitat was included within the bank-full stream channel (e.g., riparian herb), the outermost limits of either the bank or riparian habitat was mapped as the limits of CDFG riparian jurisdiction/habitat.

- Where riparian habitat extended beyond the bank-full channel to the active floodplain, and did not extend outside the active floodplain, the outermost limits of either the active floodplain or riparian habitat was mapped as the limits of CDFG riparian jurisdiction/habitat. By inclusion of the active flood plain and associated riparian habitat, the hydrologic, biogeochemical, and habitat functions not specifically associated with riparian vegetation, such as areas with localized ponding that support aquatic organisms (e.g., invertebrates,

[11] Holstein, Glen. 1984. California Riparian Forests: Deciduous Islands in an Evergreen Sea. In: Warner and Hendrix (Eds). *California Riparian Systems: Ecology Conservation, and Productive Management.* University of California Press, Berkeley.
[12] Holstein, Glen. 1984. California Riparian Forests: Deciduous Islands in an Evergreen Sea. In: Warner and Hendrix (Eds). *California Riparian Systems: Ecology Conservation, and Productive Management.* University of California Press, Berkeley.
[13] State of California Departmentof Public Works. 1942. *Bulletin No. 50: Use of Water by Native Vegetation.*

amphibians, etc.), but providing such hydrologic, biogeochemical and habitat functions, were captured and included within the jurisdictional area(s).

- Where riparian habitat extended beyond the active flood plain to active terraces, the outermost limits of the riparian habitat on the terrace (i.e., canopy edge or "drip line") was mapped as the limits of CDFG riparian jurisdiction/habitat. Similar to inclusion of the flood plain described above, inclusion of the active terraces ensured that functions such as hydrologic exchange with the adjacent uplands, nutrient cycling, shading by overhanging vegetation, bank and channel stabilization by roots, as well as habitat functions were included in the jurisdictional area(s).

  This latter case (i.e., channel stabilization by roots) was most typically applied to southern coast live oak riparian forest. In some cases, particularly in "U"-shaped canyons, the limits of the active terrace were not always discernible. In such cases, coast live oaks (and in a few instances California sycamores) were included as riparian where they either (1) exhibited roots that reached the banks of the drainage, thereby, benefiting from the drainage or by providing stabilization for the banks (i.e., a benefit for the stream) or (2) where meaningful portions of the canopy overhung the stream, thereby providing for shading or litter (nutrient cycling) which would benefit the stream. In some instances, FACW species such as Mexican rush (*Juncus mexicanus*) or clustered field sedge (*Carex praegracilis*) were indicators of shallow subsurface water that was at least seasonally available to the stream environment. Coast live oaks (and California sycamores) located above active terraces or (where terraces were not distinct) beyond where either roots or shading provided direct benefits to the stream, or that supported a predominance of UPL vegetation were not included as CDFG-regulated riparian vegetation.

VII. VEGETATION ASSOCIATIONS IDENTIFIED BY WES/CRREL AND NCCP/HCP

Twelve distinct associations of vegetation were considered in the field mapping of the limits of riparian vegetationin the study area (*Table 1*). In order of their prevalence, they include southern coast live oak riparian forest, willow riparian scrub (southern willow scrub), mule fat scrub, southern sycamore riparian woodland, white alder riparian forest, southern arroyo willow riparian forest, canyon live oak ravine forest, coastal freshwater marsh, giant reed, herbaceous riparian; lemonadeberry riparian, and narrow-leaved willow riparian forest. The lemonadeberry riparian, narrow-leaved riparian and giant reed associations are not included in the Gray and Bramlet (1992) habitat classification system, but were mapped in the WES/CRREL and PCR/BALANCE/PWA study based on the dominance of particular species. The descriptions of these riparian communities primarily are based on Gray and Bramlet (1992) and MBA (1996).

Eight of the habitat associations have high moisture requirements and exhibit a distinct or sharp boundary at the upland interface making them easier to distinguish in aerial photographs, and thus easier to map at a landscape level. The riparian associations that typically exhibit a distinct boundary include: (1) willow riparian scrub (southern willow scrub), (2) mule fat scrub, (3) white

alder riparian forest, (4) southern arroyo willow riparian forest, (5) giant reed, (6) herbaceous riparian; (7) coastal freshwater marsh, and (8)narrow-leaved willow riparian forest. The other four habitats, designated or described in the WES/CRREL and NCCP mappingas riparian habitats (southern coast live oak riparian, southern sycamore riparian woodland, canyon live oak ravine forest and lemonadeberry scrub[14]) have less distinct boundaries that typically make it more difficult to distinguish between riparian and upland communities in aerial photographs. Of these, southern coast live oak contributes most to the differences between the GLA project-level delineation and the WES/CRREL and Southern NCCP/HCP landscape-level delineation. A more detailed discussion of each association is provided below including an evaluation, where appropriate, of differences between the WES/CRREL and NCCP mapping versus the GLA project-level delineation field mapping functional criteria.

1. Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest is dominated by coast live oak (*Quercus agrifolia*, UPL), with western sycamore (*Platanus racemosa*, FACW), Mexican elderberry (*Sambucus mexicana*, FAC) as subdominants. Arroyo willow (*Salix lasiolepis*, FACW), red willow (*Salix laevigata*, FACW), and Goodding's black willow (*Salix gooddingii*, OBL) sometimes occur in the most mesic areas as small clumps or patches. Understory vegetation includes holly-leaf redberry (*Rhamnus ilicifolia*, UPL), California coffeeberry (*Rhamnus californica*, UPL), mule fat (*Baccharis salicifolia*, FACW), coastal goldenbush (*Isocoma menziesii* ssp. *veneta*, UPL), poison oak (*Toxicodendron diversilobum*, UPL), toyon (*Heteromeles arbutifolia*, UPL), laurel sumac (*Malosma laurina*, UPL), California mugwort (*Artemisia douglasiana*, FACW)) and Douglas nightshade (*Solanum douglasiana*, FAC).

Southern coast live oak riparian forest is by far the most common riparian vegetation community in the study area. WES/CRREL mapped approximately 3,241 acres, with 2,074 acres (64 percent) in the planning area and 1,167 acres in the CNF (*Table 1*). This habitat type occurs throughout the study area, including Arroyo Trabuco, San Juan Creek, Cañada Gobernadora, Chiquita Canyon, Cristianitos Creek and its tributaries, Gabino Canyon, Airplane Canyon, Verdugo Canyon, Bell Canyon, Crow Canyon, Trampas Canyon, Live Oak Canyon, Lion Canyon, Hot Spring Canyon, Hickey Canyon and Rose Canyon (*Figure 14*).

[14] As discussed on page 13 below, lemonadeberrry scrub is not a riparian habitat and all areas mapped as lemonadeberry scrub should be considered as upland habitat.

TABLE 1
RIPARIAN AND WETLAND HABITATS IN THE SOUTHERN SUBREGION STUDY AREA[1]

Vegetation Community	Subregion-Total	(a) Planning area	(b) Cleveland National Forest
Riparian/Wetland Habitats Subtotal	***6,948***	***4,698***	***2,250***
Herbaceous Riparian	22	16	6
Willow Riparian Scrub[2]	777	465	312
Southern Arroyo Willow Riparian Forest	300	300	0
Narrow-leaved Willow Riparian	2	2	0
S. Coast Live Oak Riparian Forest[2]	3,241	2,074	1,167
Canyon Live Oak Ravine Forest[2]	376[1]	96	280
Southern Sycamore Riparian Woodland[2]	563[1]	476	87
White Alder Riparian Forest[2]	394[1]	4	390
Mule fat Scrub	746	739	7
Lemonadeberry Riparian	16	16	0
Giant Reed Riparian	24	23	<1
Open Water	344	344	0
Coastal Freshwater Marsh	141	141	0
Slope Wetlands	2	2	0
Watercourses Subtotal	***354***	***353***	***<1***
Intermittent Rivers and Streams	287	287	0
Perennial Rivers and Streams	58	57	<1
Ephemeral Rivers and Streams	1	1	0
Flood Control Channels	8	8	0
Total Aquatic Habitats	**7,301**	**5,051**	**2,250**

Notes:

[1] **Source:** WES/CRREL and PCR/BALANCE/PWA Database except as noted in footnote 2.

[2] For the CNF the NCCP Database was used because the WES/CRREL and PCR/BALANCE/PWA database does not cover the entire area of the CNF within the Southern Subregion study area.

Of the riparian associations mapped by WES/CRREL, this association was subject to the highest levels of over-estimation compared with the GLA project-level delineation as a result of the difficulty of identifying precise limits on large-scale aerial photographs. This is the case for two reasons. First, it is difficult on aerial photographs to distinguish between coast live oaks and other vegetation associations such as scrub oak chaparral, lemonadeberry chaparral, and mixed chaparral. Second, the use of vegetation alone is not sufficient to determine the limits of this association because it is necessary to evaluate the geomorphic surfaces on which the specific trees are associated [see description excerpted from Smith on page 6 above].

Coast live oaks that are not within the active floodplain or on active terraces, are not dependent on nor do they affect either fluvial processes or the morphology of the bed, bank or channel, and are not considered riparian habitat under a project-level delineation. This is the case for two reasons (see discussion in Section VI above). First, as noted on page 7, unlike species such as willows or alders, coast live oak (*Quercus agrifolia*, UPL) is an upland species and does not require proximity to a drainage course for survival due to high water usage. Therefore, individuals that grow beyond the active terrace that are not rooted in the bed, bank, or channel, are not deriving sustenance from the stream and are not considered "riparian". Second, because they are not rooted in the bed, bank, or channel, they are not providing benefits to the stream through bank or channel stabilization and are not affecting or affected by fluvial processes and hence not considered riparian.

2. Canyon Live Oak Ravine Forest

Canyon live oak ravine forest generally is a montane riparian community of steep headwaters of mainstreams dominated by canyon live oak (*Quercus chrysolepis*, UPL), big-leaf maple (*Acer macrophyllum*, FACW), California laurel (*Umbellularia californica*, FACW), coast live oak (*Quercus agrifolia*, UPL), bigcone Douglas-fir (*Pseudotsuga macrocarpa*, UPL), and interior live oak (*Quercus wislenzii*, UPL). Canyon live oak ravine forest comprises 376 acres in the study area, including 96 acres in the planning area and 280 acres in the CNF (*Table 1*). This habitat occurs in scattered locations in the CNF generally north of Arroyo Trabuco (*Figure 14*).

3. Southern Sycamore Riparian Woodland

Southern sycamore riparian woodland is an open to dense woodland dominated by western sycamore and coast live oak. Understory vegetation includes scalebroom, mule fat, willow riparian scrub (see description below), holly-leaf redberry, California coffeeberry, laurel sumac, Mexican elderberry, fuschia-flowered gooseberry (*Ribes speciosum*, UPL), poison-oak, giant ryegrass (*Leymus condensatus*, UPL), beardless wild rye (*Leymus tritocoides*, FAC), lemonadeberry (*Rhus integrifolia*, UPL), Douglas nightshade, and California mugwort. Large patches of grassland dominated by upland brome and Italian ryegrass (*Loliumm multiflorum*, UPL) also may be present.

Sycamore riparian woodland comprises approximately 563 acres in the study area, including 476 acres in the planning area and 87 acres in the CNF (*Table 1*). It generally is associated with floodplains and terraces of larger streams such Arroyo Trabuco, upper San Juan Creek, upper Bell Canyon, Fox Canyon, Lion Canyon, Gabino Canyon, and La Paz Canyon (*Figure 14*). This vegetation type does not exhibit an abrupt boundary with adjacent uplands. Western sycamore is a phreatophyte, meaning that it is deep rooted (sometimes at 60 feet or more), in contact with deep groundwater that is often beyond the rooting depth of upland species. This results in a community/vegetation type that supports FACW, FAC and UPL species with western sycamore exhibiting an indicator status of FACW. As such, CDFG jurisdiction typically was inclusive of the all areas beneath the canopy of sycamores, which in some instances included upland species in the understory.

4. Willow Riparian Scrub (Southern Willow Scrub)

Willow riparian scrub is dominated by willow trees (*Salix* spp.) and also may contain gooseberry (*Ribes* spp.), Mexican elderberry, and an understory of herbaceous hydrophytes. Arroyo willow is the dominant species within perennial and intermittent stream channels at elevations up to about 2,450 feet. Goodding's black willow occurs along streambanks and in wet places within drier habitats at elevations below about 1,500 feet (Faber and Keller 1985).

Willow riparian scrub comprises approximately 777 acres in the study area, including 465 acres in the planning area and 312 acres in the CNF (*Table 1*). Willow riparian scrub is found in lower Arroyo Trabuco and patchy distributions in upper Chiquita Canyon, throughout Cañada Gobernadora, lower San Juan Creek, Cristianitos Canyon, Trampas Canyon, tributaries to Verdugo Canyon, and in various smaller drainages and tributaries throughout the study area in the CNF (*Figure 14*). As noted above, this vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

5. Southern Arroyo Willow Riparian Forest

Southern arroyo willow riparian forest has a closed canopy of arroyo willow in arborescent form. It comprises approximately 300 acres in the study area, all of which are in the planning area. This vegetation community occurs in Chiquita Canyon south of Oso Parkway, portions of lower Arroyo Trabuco, San Juan Creek south of its confluence with Bell Canyon, Cañada Gobernadora throughout Coto de Caza, above and associated with Oso Reservoir, and lower Cristianitos Creek (*Figure 14*). This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

6. Narrow-leaved Willow Riparian Forest

Narrow-leaved willow riparian forest is a classification created by the WES/CRREL and PCR/BALANCE/PWA study. It refers to areas dominated by narrow-leaved willow (*Salix exigua*, OBL). Narrow-leaved willow riparian forest comprises only 2 acres in two patches in San Juan Creek and upper La Paz Canyon (*Figure 14*). This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the willow canopy and the adjacent upland scrub or grassland habitat.

7. White Alder Riparian Forest

White alder riparian forest typically is a montane riparian community found along perennial streams above 4,000 feet. It is dominated by white alder (*Alnus rhombifolia*, FACW), with red willow, black cottonwood (*Populus balsamifera* spp. *trichocarpa*, FACW), California laurel, and big-leaf maple. California mugwort, California rose (*Rosa californica*, FACW) and California blackberry (*Rubus ursinus*, FACW) occur as understory species. White alder riparian forest comprises approximately 394 acres, of which 390 acres are in the CNF in upper Arroyo Trabuco and its tributaries Holy Jim Canyon and Falls Canyon, as well as upper Bell Canyon, Hot Spring Canyon, and Cold Spring Canyon (*Figure 14*). It also occurs in small patches at lower elevations in Cristianitos Creek and Bell Canyon. This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the alder canopy and the adjacent upland scrub or grassland habitat.

8. Mule fat Scrub

Mule fat scrub is dominated by mule fat, but also may include willows (*Salix* spp.), umbrella sedges (*Cyperus eragrostis*, FACW), stinging nettle (*Urtica dioica*, FACW), Bermuda grass (*Cynodon dactylon*, FAC), western ragweed (*Ambrosia psilostachya* var. *californica*, FAC), California mugwort, Douglas nightshade, castorbean (*Ricinus communis*, FACU), cocklebur (*Xanthium* spp., FAC+), rabbit's-foot grass (*Polypogon monspeliensis*, FACW+), knotgrass (*Paspalum distichum*p, OBL), and barnyard grass (*Echinochloa crus-galli*, FACW). (Gray and Bramlet 1992; Holland 1986; Sawyer and Keeler-Wolf 1995). Mule fat scrub usually occurs in intermittent streambeds, seeps, and the toe of landslides where local seeps develop.

Mule fat scrub comprises approximately 746 acres in the study area, of which 739 acres are in the planning area and only 7 acres are in the CNF (*Table 3-2*). Mule fat scrub occurs in drainages throughout the study area. Areas with large concentrations of mule fat scrub include Arroyo Trabuco, San Juan Creek, Cañada Gobernadora, Bell Canyon, lower Gabino Canyon, La Paz Canyon, Verdugo Canyon and upper Cristianitos Creek (*Figure 14*). This vegetation type is typically associated with areas that exhibit at least seasonal water and there is generally a distinct boundary between the mule fat canopy and the adjacent upland scrub or grassland habitat. In some cases, areas mapped as mule fat scrub by GLA for the purposes of determining riparian mitigation may actually include an ephemeral wash component or alluvial scrub species such as including buckwheat (*Eriogonum fasciculatum*, UPL), scalebroom (*Leptospartum squamatum*, UPL), and deerweed (*Lotus scoparius*, UPL).

9. Herbaceous Riparian

Herbaceous riparian is an early successional stage of riparian forest and scrub typically resulting from frequent flooding or scouring of woody vegetation. Disturbed sites are colonized by pioneer wetland species such as verbena (*Verbena lasiostachys*, FACU), California mugwort, knotgrass, barnyard grass, sweet clover (*Melilotus* spp.), Bermuda grass, cattails (*Typha* spp., OBL), smilo grass (*Piptatherum miliaceum*, UPL), Mexican sprangletop (*Leptochloa uninervia*, FAC), cocklebur, willow herb (*Epilobium ciliatum*, FACW), Johnson grass (*Sorghum halapense*, FACW), western ragweed, rabbits-foot grass, mustard, wild radish (*Raphanus sativa*, UPL), white watercress (*Rorippa nasturtium-aquatuicum*, OBL), and water speedwell (*Veronica anagallis-aquatica*, OBL).

Herbaceous riparian comprises approximately 22 acres in the study area, of which 16 acres are in the planning area and 6 acres are in the CNF. Herbaceous riparian occurs in scattered locations, including Chiquita Canyon, Cañada Gobernadora, Trampas Canyon, upper Arroyo Trabuco and lower Hot Spring Canyon (*Figure 14*). This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the herbaceous understory and the adjacent upland scrub or grassland habitat.

10. Lemonadeberry (*Rhus Integrifolia*) Riparian

Lemonadeberry riparian is a classification used in the WES/CRREL and PCR/BALANCE/PWA study and is not included in the Gray and Bramlet (1992) habitat classification system.

It comprises approximately 16 acres in the planning area and only occurs in patchy locations in upper Gabino Canyon, Verdugo Canyon, Lucas Canyon, and an unnamed drainage adjacent to Cristianitos Road northwest of Cristianitos Creek (*Figure 14*). It was not mapped in the CNF. Lemonadeberry is a xeric-adapted chaparral species that is not dependent upon stream or river courses. Lemonadeberry is listed by Reed (1988)[15] as an upland species (UPL) and by Sawyer and Keeler-Wolfe (1996)[16] (under sumac series) as an "uplands" vegetation type and is thus not a riparian species when considered in the context of aquatic functions.

In all cases, the vegetation identified by WES/CRREL as lemonadeberry were classified as southern willow scrub or upland non-riparian habitat in the Southern NCCP/HCP vegetation

[15] Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands. U.S. Fish and Wildlife Service Biological Report 88(26.10).

[16] Saywer, John, O. and Todd Keerler-Wolfe. 1995. *A Manual of California Vegetation*. California Native Plant Society, Sacramento.

mapping. In addition, the three polygons that occur within the GLA project-level delineation study area were identified in the field as upland habitat with which CDFG concurred.

11. Giant Reed Riparian

Giant reed riparian refers to areas dominated by the non-native giant reed (*Arundo donax*, FACW), which is highly invasive and destructive of native riparian and aquatic habitats. It is a classification used in the WES/CRREL and PCR/BALANCE/PWA study and is not included in the Gray and Bramlet (1992) habitat classification system. Giant reed riparian comprises approximately 24 acres in the study area, of which 23 acres are in the planning area. It occurs in scattered patches in Arroyo Trabuco below Oso Parkway and in various locations in San Juan Creek (*Figure 14)*. This vegetation type is typically associated with areas that exhibit an abundance of water and there is generally a distinct boundary between the giant reed canopy and the adjacent upland scrub or grassland habitat.

VIII. PROJECT-LEVEL DELINEATION

Prior to beginning the project-level delineation in November 2002, GLA was provided a copy of a planning level delineation prepared by Lichevar in September of 2000. All areas identified as potentially jurisdictional in the planning level delineation were evaluated for Corps and CDFG jurisdiction based upon the regulatory framework and consideration of aquatic function provided on pages 8-10 above and further discussed below. All suspected or potential jurisdictional areas were field checked for the presence of definable channels and/or wetland vegetation, soils and hydrology. Suspected wetland habitats on the site were evaluated using the methodology set forth in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual[17] (Wetland Manual). The limits of CDFG jurisdiction were determined as described on pages 8-10, in Section VI, above. While in the field the jurisdictional area was recorded onto a 200-scale color aerial photograph using visible landmarks. Other data were recorded onto wetland data sheets.

A. Corps and CDFG Field Verification

Beginning on March 11, 2003, Regulatory Specialists from GLA; a representative of Rancho Mission Viejo; representatives of the Corps including Mr. Russell Kaiser, Ms. Corice Farrar, and Mr. Rob Lawrence; and representatives of CDFG including Mr. Don Chadwick, Mr. Bradley Henderson, and Ms. Donna Cobb conducted a field verification of the project-level delineation. In determining the limits of jurisdictional riparian habitat, CDFG followed the methodology noted below. The field verification was completed on October 27, 2003. Table 2 summarizes the dates of the delineation and verification site visits. The discussion/conclusion section below is based upon the field-verified limits as determined by CDFG.

[17] Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experimental Station, Vicksburg, Mississippi.

TABLE 2
DELINEATION AND VERIFICATION SITE VISIT DATES

Type	Month and Year	Individual Dates
Delineation	October 2002	29, 30, 31
Delineation	November 2003	1, 4, 7, 11, 12, 14, 21, 25, 26
Delineation	December 2002	6, 16
Delineation	January 2003	15
Delineation	February 2003	19, 21, 24, 27
Delineation	March 2003	3, 5, 6, 8, 21, 24, 26
Delineation	April 2003	1, 8, 16, 22, 23, 24, 25, 28
Delineation	May 2003	1, 2, 13, 22, 23
Delineation	June 2003	2, 5, 9, 11, 12, 13, 26, 27
Delineation	July 2003	9, 10, 11, 14
Delineation	October 2003	6, 7, 17
Delineation	November 2003	5
Verification	March 2003	11, 14, 19
Verification	April 2003	1, 11, 29, 30
Verification	May 2003	21, 23
Verification	June 2003	18, 25
Verification	July 2003	2, 3, 8, 9, 14, 22, 23, 30, 31
Verification	August 2003	6, 15
Verification	October 2003	27

IX. RESULTS

The project-level delineation, as verified by the Corps and CDFG, provides more precise mapping, than the WES/CRREL and NCCP data, for the limits of riparian habitat meeting the criteria of Waters of the U.S. set forth in 33 CFR 328.3, the definition of streambed set forth in Section 1602, and the functional definition of riparian vegetation employed during field visits with CDFG within the planning areas identified for the SAMP/MSAA and NCCP/HCP.

In General Certain types of areas included in the WES/CRREL and NCCP mapping of the extent of riparian habitat did not include the functional definition of riparian habitat applied in the jurisdictional field mapping of wetlands and riparian field definition of riparian vegetation areas not meeting the field definition of riparian habitat include:

- Areas mapped as riparian where there was no streambed or other aquatic feature;

- Areas mapped as riparian where only upland vegetation is present;

- Areas mapped as riparian where the vegetation is not associated with active floodplains or terraces.

In some instances there is overlap between the noted categories; however, it is instructive to consider them separately below for purposes of this analysis:

A. Areas Mapped as Riparian where there was no Streambed or other Aquatic Feature

In general, during field verification visits that compared the project-level delineation with the mapping performed by WES/CRREL, it was evident that on larger systems such as San Juan Creek and Gabino Creek, there was a high level of agreement between the project level delineation and the mapping prepared by WES/CRREL. However, in smaller side canyons with smaller tributaries extending into uplands numerous areas were mapped as riparian by WES/CRREL and/or the NCCP/HCP database, which did not exhibit any associated aquatic features (i.e., streambeds, lakes, slope wetlands, etc.), as verified in the field by CDFG and the Corps staff. In many instances, direct observations in the field showed that the vegetation associations in these areas should be classified as southern coast live oak woodland (an upland habitat) rather than the WES/CRREL classification as southern coast live oak riparian [see Photographs 5, and 6]. In other instances, areas that were predominantly chaparral and/or coastal sage scrub (sometimes mixed with scattered oaks) were mapped by WES/CRREL as southern coast live oak riparian forest [see photographs 1, 2, 5, 6, 9, 10 and 13]. In all of these instances, the clear absence of a streambed was a primary reason for classification of these areas as non-riparian and this conclusion was supported by the fact that a substantial amount of the noted habitat consisted of upland coastal sage scrub or chaparral communities.

B. Areas Mapped as Riparian where only Upland Vegetation is Present

In many instances, ephemeral streams were mapped by WES/CRREL as supporting riparian habitat; however, upon review in the field, it was determined that no riparian plant species were present. Areas mapped, for example, as southern willow scrub, actually contained no willows, consisting instead of upland scrub that included coyote brush (*Baccharis pilularis*, UPL), lemondadeberry (*Rhus integrifolia*, UPL), coastal sagebrush (*Artemisia californica*, UPL) and laurel sumac (*Malosma laurina*, UPL) [see Photographs 7 and 8]. Similarly, areas mapped as southern coast live oak riparian forest, consisted of mostly lemonadeberry and coastal sage scrub [e.g., Photograph 13]. One large area in Planning Area 5 (Trampas Canyon) was mapped as southern coast live oak riparian forest which, when field checked during the delineation, indicated that this area supports a mosaic of upland habitats including coast live oak woodland, coastal sage scrub, and non-native grassland [see Sheet 14].

C. Areas Mapped as Riparian where the Vegetation is not Associated with Active Floodplains or Terraces

In numerous instances, extensive areas of southern coast live oak riparian forest was mapped by WES/CRREL far up slopes, sometimes all the way to ridgetops, where, in fact, the limits of the southern coast live oak riparian forest was limited to the channel, floodplain and/or active terraces [see Photographs 3, 4, 11, and 12 and Sheets 8, 9, 10, 11, and 12]. As discussed on pages 8-10 above, during both the delineation, and the verification by CDFG biologists, the limits of riparian habitat were established based on the presence of OBL, FACW and FAC species, associated with specific geomorphic surfaces (see Lichevar and Smith) including the bank-full channel, the active floodplain, and active terraces. In other words, as described above under jurisdictional mapping definitions and/or descriptions or riparian systems, there must be some hydrologic connection between the stream and adjacent vegetation. For "U"-shaped canyons that lacked clearly defined floodplains or active terraces, the limits of southern coast live oak riparian forest included all oaks, sycamores, elderberrys, mule fat, etc.) that were in some manner connected with the channel (e.g., roots were stabilizing channel or in proximity to the channel or where portions of the vegetation were overhanging the stream thereby providing shade or litter).

Oaks (or other species such as sycamores, elderberrys, or mule fat) that were not hydrologically connected to the channel, active flood plain, or active terraces, were not included in the riparian associations because they do not meet any of the functional definitions for riparian habitat as set forth in Section VI above.

X. CONCLUSIONS

The GLA project-level delineation provides an agency approved, project-level quantification of jurisdictional habitat within the B4, B5, B6, B8 and B9 Alternatives within the SAMP/MSAA study area. For the reasons described above, there are inconsistencies between the landscape-level WES/CRREL and Southern NCCP/HCP mapping of jurisdictional habitat. These differences do not preclude the use of either landscape-level database for planning purposes although the results would overestimate actual impacts, with greater overestimates in areas dominated by low-order ephemeral streams than in those areas characterized by higher-order streams such as Arroyo Trabuco Creek, San Juan Creek, Cristianitos Creek and Gabino Creek. Regardless of which database is used to conduct the large-scale planning review, the use of WES or NCCP landscape-level databases for project-level impact analysis would not reflect (a) "on the ground" vegetation conditions verified by extensive field mapping (see Table 2), and (b) the functional definition of riparian habitat reviewed and concurred in section VI and in by Corps and CDFG staff. . Since CEQA requires a comparison of "plan to ground" for impact assessment and mitigation purposes, the field level jurisdictional delineation using the riparian classification criteria presented in Sections III and VI is the most appropriate mapping under CEQA, as well as for assessing Section 404 and 1600 jurisdictional impacts.