

Coastal Zone
Information
Center

California Coastal Zone
Conservation Commission
The Coastal Land Environment

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CALIFORNIA COASTAL ZONE CONSERVATION COMMISSION
1540 Market Street, San Francisco 94102 — (415) 557-1001

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THE COASTAL LAND ENVIRONMENT U.S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
Adopted October 16, 1974 2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

SECTION I: PROTECTION OF NATURAL COASTAL ECOSYSTEMS

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Statewide Finding:

1. THE COASTAL LAND ENVIRONMENT AS A NATURAL SYSTEM

The coastal land environment is a combination of the soils, air, plants, animals, minerals and water courses as they are affected by or themselves affect the ocean—from the pounding surf line to the quiet inland valleys where the coastal fog influences plant species and growth. This vital interrelated system is arbitrarily divided in this planning element into the following sub-categories:

- (a) coastal natural areas, including the salt marshes that are the most vital living link between life in the sea and life on land;
- (b) coastal streams and floodplains;
- (c) coastal mineral resources, primarily sand and gravel;
- (d) coastal soils and their special values for agricultural and forestry use; and
- (e) the coastal airshed as directly influenced by the ocean.

Regional Amplification:

- 1. North Coast:
- 2. North Central:

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CALIFORNIA COASTAL ZONE CONSERVATION COMMISSION

3. Central Coast: "Extensive research and substantial public response to this element demonstrate that watershed areas are the ideal focus for development of management techniques for the maximum utilization and preservation of our natural resources. A comprehensive Watershed Management Program for the coastal zone will emerge, enhanced by additional analysis in the Recreation, Intensity of Development, and Powers, Funding and Government Organization Elements of the Coastal Zone Plan."
4. South Central:
5. South Coast: "The Santa Monica Mountains represent a unique and irreplaceable natural resource to the people of the Region and the State. Uses of the area include recreation, conservation, open space, and utilization and enjoyment of the sea and the mountains... The public interest of present and future generations is not met because of the uncoordinated and fragmented public and private planning of development and conservation activities in the Santa Monica Mountains."
6. San Diego:

Statewide Finding:

2. COASTAL NATURAL AREAS

Many and varied species of animals and plants make their homes in the natural environment of California's coastal zone. Each living community harbors a distinct group of birds, animals, and plants, which interact with each other and their environment as a complex, often unique ecosystem. Some of the types of living communities (ecosystems) in the coastal zone are: dunes, wetlands (including salt and freshwater marshes), estuaries, riparian vegetation, tide pools, redwood and other forests, coastal scrub and sage, and grasslands. Many species of animals range through several ecosystems for diverse food and shelter and some plants are found in more than one type of ecosystem. But many species can survive only in one such ecosystem, their "habitat area".

Wetlands are critical to marine life, as discussed in the Marine Environment Element, but they are also vital to many birds and land

animals. Within the wetland system there are different zones of vegetation, each supporting different animal life: the marine zone (the area continually underwater); the littoral zone (the area subject to tidal submergence); and the maritime zone (the area between the upper edge of the littoral zone and the surrounding upland vegetation communities). In maintaining the dynamic balance of wetland environments, it is essential to recognize that estuaries are much more extensive than the areas subject to tidal influence. The amount, timing, and quality of fresh water entering a wetland system is also critical to the existence of plant and wildlife habitats.

Regional Amplification:

[Note: As used below "habitat type" generally corresponds to "living community" or "ecosystem".]

1. North Coast: "Coastal Estuary:...[in] the North Coast Region, estuaries are in relatively good condition and retain substantial wildlife use. In spite of the small size of many of these estuaries, their importance to the continued maintenance of fish and wildlife should not be diminished. Generally, agricultural practices presently existing around most of the estuaries are compatible with fish and wildlife.

"Riparian Vegetation: Streamside vegetation is one of the most productive wildlife habitat types and it is also one of the most threatened...

"Coastal Lagoon: Coastal lagoons provide an important link in the wetland habitat of the Pacific Flyway. Water-associated bird use is high. Additionally, the lagoons support several species of fish important to sport angling...

"Offshore Islands and Rocks: Most offshore rocks and islands are important sites for marine birds or marine mammals or both...

"Rocky Shore and Tide Pools: The rocky shore and associated intertidal areas provide a food source for many shore birds, marine mammals and fish...

"Lakes Earl and Talawa: Lakes Earl and Talawa and the surrounding wetlands and meadows provide exceptional habitat for water-associated wildlife. The maintenance of these habitats is vital

to the continued survival of local and migratory wildlife species. In terms of the numbers, use by water-associated birds in this area is second only to the Humboldt Bay-Eel River Delta area in Northern California.

Humboldt Bay: Humboldt Bay, in spite of many changes brought by man, still serves as one of the most productive bay-estuarine ecosystems in California. The wide variety of habitats provides necessary life requirements for over 250 species of birds, 50 species of mammals, 95 species of fish, ten species of clams. It is a vital link in the Pacific Flyway for migratory waterfowl and it is the most important area for black brant remaining in California. Humboldt Bay provides a multitude of outdoor recreational opportunities, most of which are closely tied to wildlife use and aesthetic values. Hunting provides in excess of 25,000 hunter-days. Fishing is estimated to be in excess of 35,000 angler-days. Non-appropriative uses are estimated to exceed both hunting and fishing use of the Bay."

2. North Central:

3. Central Coast: "Those wetlands and estuaries within the Central Coast Region are as follows:

San Mateo County

- (1) Laguna Salada
- (2) Pillar Point Marshes
- (3) Pilarcitos Creek Lagoon
- (4) Tunitas Creek Mouth
- (5) San Gregorio Creek Mouth
- (6) Cascade Creek Marshes
- (7) Green Oaks Marsh
- (8) Pescadero Marsh

Santa Cruz County

- | | |
|-------------------------------|----------------------------|
| (1) Waddell Creek Mouth | (14) Buzzard Lagoon |
| (2) Scott Creek Marsh | (15) Valencia Lagoon |
| (3) Laguna Creek Marsh | (16) Ellicott Station Pond |
| (4) Baldwin Creek Marsh | (17) Corralitos Lagoon |
| (5) Wilder Creek Lagoon | (18) Pinto Lake |
| (6) Younger Lagoon | (19) Watsonville Slough |
| (Terrace Point Research Site) | |
| (7) Moore Creek Lagoon | (20) Kelly Lake |
| (8) Neary's Lagoon | (21) Drew Lake |
| (9) Upper Wood's Lagoon | (22) Lake Tynan |
| (10) Schwan Lake | (23) Bonita Lagoon |
| (11) Corcoran Lagoon | (24) Harkins Slough |
| (12) Moran Lake | (25) Black Point Lagoon |
| (13) White's Lagoon | |

Monterey County

- (1) Elkhorn Slough System (including Bennett Slough, Moro Cojo Slough, Tembladero Slough, and McClusky Slough)
- (2) San Miguel Pond
- (3) Espinosa Lake
- (4) Salinas River Mouth Estuary (including Ponds and Old Salinas River)
- (5) Marina vernal ponds (#1 through #6 and #9 through #11 as defined in Marina Freeway Environmental Report of November 1973)
- (6) Laguna Del Rey (including "Robert's Lake")
- (7) Del Monte Lake
- (8) El Estero
- (9) Crespi Pond
- (10) Lake Majella
- (11) Carmel River Estuary
- (12) Little Sur Lagoon
- (13) Point Sur vernal ponds
- (14) Big Sur River Mouth

"Pescadero Marsh and Elkhorn Slough are the two most critical wetland and estuarian resources in the Central Coast Region.

"Elkhorn Slough at Moss Landing in Monterey County is one of the largest wetland areas found in the western United States. Even after years of extensive damming and diking it still encompasses nearly 2,500 acres of submerged marine areas, tidal flats and salt marsh. The entire watershed which empties at Moss Landing forming the vast estuarine system covers over two hundred square miles and includes the Elkhorn, Moro Cojo and Tembladero Sloughs...

"Wetland habitats are essential for providing the living requirements of millions of migratory and water-associated birds in the Pacific Flyway. Thus, the Elkhorn Slough complex in the Central Coastal Zone is extremely important as a natural major stopover in the Pacific Flyway providing for the continued existence and future expansion of water-associated bird populations along the entire Pacific coastline.

"Coastal Dunes. The Central Coast dune habitat forms a delicate transition zone between the marine and terrestrial ecosystems. The fragility of this immediate interface results from the active sand transport processes, especially in recent dune formations, which affect the vegetative succession patterns. The succession patterns are an important natural process and, therefore, should be retained by the use of a variety of native vegetation as surface binders."

4. South Central: "There are at least nine major habitat types represented in the South Central Coast Region, each with its own distinct plant and animal communities. They are: coastal beach and strand (dunes), coastal sage scrub, valley grassland, coastal saltmarsh (estuary), fresh-water marsh (lake), riparian woodland, southern oak woodland (or valley and foothill woodland),

chaparral, and closed-cone pine forest. Some of them (coastal saltmarsh and strand) are found only on the coast, while others are predominantly located within the coastal zone or add to the diversity necessary for coastal plants and animals. Of the nine habitat types in the region, one is still abundant in its natural state (chaparral), one is now almost extinct in an undisturbed state (native grassland) and the rest have been altered to varying degrees and reduced from their original range, especially coastal saltmarsh-estuaries and coastal strand.

"Significant wildlife habitats include (but are not limited to):

San Luis Obispo Co. - Morro Bay, Dune Lakes, Oso Flaco Lake, mouth of San Luis Obispo Creek, mouths of nearly all other coastal streams, Also Piedras Blancas and Lion Rocks for offshore resting areas.

Santa Barbara Co. - Goleta Slough, El Estero (Carpinteria), Goleta Point Marsh, Devereaux Lagoon, Santa Ynez River, Santa Maria River, and Santa Cruz, Santa Rosa, and San Miguel Islands.

Ventura Co. - Hugu Lagoon, Santa Clara River, Ventura River, McGrath Lake and Anacapa and San Nicholas Islands.

"The major attempts to provide for the maintenance of natural areas have been in the form of proposed preserve areas. If implemented, these plans would go far towards the goal of preserving habitat areas. The Department of Parks and Recreation (Coastline Preservation and Recreation Plan, June 1971) has identified 50,922 acres of natural habitats covering 40.5 miles of coastline within the South Central Coast Region to be protected (this includes existing State Parks and Beaches). Appendix IX of COAP listed 45 priority sites in California desired for educational purposes, many of which are already partially or wholly within public ownership and control. Often these sites overlap with State Parks and Recreation proposals...

"A priority site list would represent a first step towards a regional inventory of important locations of environmental concern due to their ecological importance as unique, scarce, representative, and educational natural communities."

5. South Coast: "There are at least eight major habitat types represented in the South Coast Region, each with its own distinct plant and animal community. They are: coastal beach and strand, coastal sage scrub (including sea bluffs and cliffs), chaparral, southern oak woodland, riparian woodland, salt marsh-estuary, freshwater marsh, and grassland-herbland. Several of them (saltmarsh, coastal beach and strand) are to be found only on the coast. Of the eight habitat types in the region, one is still abundant in its natural state (chaparral), one is now extinct in an undisturbed state (native grassland) and the rest are rare and often endangered.

"The San Joaquin Hills and related coastal area (10,000 acres) represents a regional and statewide natural resource. This coastal area provides a unique planning opportunity because of its location, topography and single ownership."

6. San Diego: "Although each ecosystem is unique they can be grouped by vegetation type... In 1971 COAP inventoried plant habitat acreage within a one-half mile strip along the California coast. Nine habitat types were identified on the San Diego County Coast. The total

Vegetation Community	Acreage on San Diego Coast	Percent of San Diego's Acreage Compared with California Coastal Total
Grassland	5,724	5.2%
Coastal Sage	4,297	.9%
Barren	2,624	33.4%
Salt Marsh	1,146	16.3%
Fresh Water Marsh	1,141	33.6%
Other Vegetation Type	342	39.8%
Coastal Forest	269	1.4%
Riparian	244	7.4%
Hardwood	47	3.0%

"Of these nine habitat types, four are found only on the coast: Coastal sage, salt marsh, fresh water marsh, and coastal forest. (Because salt and fresh water marshes were thoroughly discussed in the Marine Element only the coastal land habitats will be discussed here.) Although there appears to be abundant acreage of grassland and coastal sage both are diminishing and threatened with extinction because of urban development.

"Examples of major habitat areas in the San Diego coastal zone are listed below. Each habitat supports a distinct animal population.

Banks of the San Mateo Creek. Grassland and riparian woodland. 2,300 acres of the valley have been leased from Camp Pendleton by the California Department of Parks and Recreation for camping and wildlife reserve.

Banks of San Onofre Creek. Riparian woodland.

San Onofre Bluffs and Camp Pendleton Coast from Los Flores Marsh to Oceanside West of I-5. Grassland.

Camp Pendleton Coast from Japanese Mesa to Los Flores Marsh East of I-5. Coastal sage.

Mouth of Los Flores Creek. Coastal sage.

Mouth of Santa Margarita Creek. Coastal sage. Nesting site for two endangered species, California least tern and Belding's savannah sparrow. In 1969, the California Department of Fish and Game prepared a wildlife Survey and Enhancement Plan but, as yet, the plan has not been funded or implemented. [Staff note: The Belding's savannah sparrow has been recently added to the California endangered species list by the Department of Fish and Game; it is not on the Federal endangered species list.]

Mouth of San Luis Rey River. Grassland. Existing wildlife has been substantially decreased by urban development.

Land Surrounding Buena Vista Lagoon. A small riparian community upstream from the lagoon and on the southeast perimeter.

Land Surrounding Agua Hedionda. Coastal sage except on the north shore where development has replaced vegetation. At the extreme east end there is a several acre marsh with riparian vegetation.

Land Surrounding Baticuitos. Coastal sage south side, grassland north and east side, riparian southern perimeter.

Encinas Canyon. Riparian.

Encinitas Boulevard Canyon. Coastal sage.

Cardiff Canyon. Coastal sage.

Land Surrounding San Elijo. Coastal sage and grassland.

Lux Canyon. Riparian.

San Dieguito Valley. Coastal sage and grassland.

Gonzales Canyon. Coastal sage.

Carmel Valley. Woodland on northeast side.

Soledad Valley. Coastal sage woodland on south side.

Penasquitos. Coastal sage on east and north side. Coastal forest on south side, city owned property.

Crest Canyon. Grassland.

Del Mar Canyon. Chaparral.

Torrey Pines Reserve and Proposed Extension. Coastal forest. State Reserve with 280 acres of marshland proposed for acquisition with funds from 1974 Bond issue.

Mt. Soledad. Coastal sage.

Tecolote Canyon. Coastal sage.

Fort Rosecrans. Coastal sage.

Cabrillo National Monument. Coastal sage. Currently an 87-acre U.S. Navy Department of Interior reserve with 54.9 additional acres of Navy surplus land proposed for acquisition pending Congressional approval.

Kendall Frost Reserve (Mission Bay). University of California reserve. [Predominantly a salt marsh vegetation type.]

U.S. Navy Radio Station (Silver Strand). Beach Strand.

Sweetwater Riverbed. Riparian.

Paradise Creekbed. Riparian.

Otay Riverbed. Riparian.

Border Field, Land Surrounding Tia Juana Estuary. Grassland. Currently being examined by the U.S. Bureau of Sports Fisheries for environmental impact of proposed state park.

"Four species of birds on the Rare and Endangered Lists are found on the San Diego Coast (California least tern, light footed clapper rail, Brown pelican, and Beldings savannah sparrow). While these animals are accorded full protection by State and Federal Laws, their ability to survive depends on continued maintenance of their habitats. Endangered plant species in California have been identified by the California Native Plant Society. About nine species are or were found in the San Diego coastal zone and of these nine, two are found only in San Diego County. (Dudleya blochmaniae ssp. brevifolia, found in Torrey Pines Reserve, and Chorizanthe orcuttana, found on Pt. Loma.) These species and their habitats need protection because loss or degradation of habitat is the prime reason for their extinction."

Statewide Finding:

3. VALUE OF NATURAL AREAS TO MAN

The various natural areas within the coastal zone are utilized by man for food and fiber production, for enjoyment, for recreation as varied as bird watching and hunting, for scientific investigation and experimentation, and for education and training.

Regional Amplification: None.

Statewide Finding:

4. THREATS TO NATURAL AREAS AND PLANT AND ANIMAL SPECIES

Substantial destruction of natural areas along California's coast has been caused by such factors as expanding urban development, the noise and pressure of man's recreational activities, alterations of vegetative cover, and the indiscriminate use of pesticides. These activities are reducing the habitat areas available to all plants and animals and are threatening some species and some unique communities, which can exist only in limited areas, with extinction. The continued existence of abundant and varied life forms on the coast depends upon proper safeguards for whole living communities as well as for plant and animal habitats. An especially serious problem in coastal zone wildlife management is the degradation or reduction of wetlands, tide pools, and dunes—the narrow and often fragile transition zone between marine and terrestrial ecosystems.

Regional Amplification:

1. North Coast: "Human disturbance [of the offshore islands and rocks] during periods of breeding, nesting and raising young is the greatest threat to the...survival [of marine birds and mammals]."
2. North Central:
3. Central Coast: "Man's encroachment...often subjects the dune habitat to degradation and destruction by upsetting the delicate balance between dune stability and vegetation.

"Many 'living' dune formations have been degraded and disrupted through excessive use: off-road vehicles creating numerous paths, mining of sand, and construction activities for development on the dunes themselves. Dunes can be compatible with limited human use, however, and some degraded areas can be restored. Protection of the remaining Central Coast dunes requires strict management.

"Twenty-one plant and six wildlife species in the Central Coast Permit Zone and many others in the planning region have been designated rare and/or endangered."

4. South Central: "Eight species (or subspecies) of birds and mammals on the Rare and Endangered Lists are to be found in the South Central Coast Region."
5. South Coast: "There has been extensive destruction of valuable natural habitat in the South Coast Region, particularly along the coastal plain from Santa Monica to Corona del Mar. Wetlands have been our most serious loss; there are only three major salt-marshes remaining in the region. The coastal mountain ranges, which contain many and varied habitats, are under continual threat from urbanization, contributing to related problems of major concern: smog, pollution, pesticide poisoning, and overuse."

"Eight species (or subspecies) of birds and mammals on the Rare and Endangered Lists are to be found in the South Coast Region... There are instances of rare and endangered plants which are known to grow in only two localities in the region or on only one island."

6. San Diego: "Most of San Diego's habitats are threatened with extinction from urban development and related problems including pesticides, pollution, overuse, and change in vegetative cover. While the largest, best preserved, and perhaps most valuable, habitats are found on military property (Camp Pendleton, Fort Rosecrans, Silver Strand, and Border Field), even these habitats are threatened with destruction if not properly managed."

"While public land ownership preserves many habitat areas in the San Diego coastal zone, many of the unique natural areas are still unprotected. This is true of land adjacent to the county wetlands, land which provides a needed buffer for the wetlands wildlife and provides access for wildlife to the wetlands."

"The coastal zone upland habitat most threatened by the activities of man in the San Diego Region is the gallery forest and riparian vegetation found along coastal streams."

Statewide Finding:

5. EXISTING PROTECTION FOR NATURAL AREAS AND SPECIES

Public land ownership, including wildlife refuge areas and parks, preserves many habitat areas, but much of the unique natural area of the coast is still unprotected. The State Department of Fish and Game has some regulatory power to protect habitat areas of rare and

endangered animal species and to restrict hunting of threatened animals. Rare and endangered plant species have recently been extended some limited protection on the Federal level, but no protection for rare and endangered living communities now exists. Moreover, there is limited, if any, regulatory power to assure that more living communities, and individual plant and animal species, do not become rare and endangered in the future.

Regional Amplification: None.

Statewide Policy:

1. PRESERVE VALUABLE NATURAL AREAS

Because of the value of coastal ecosystems for habitat preservation, scientific study, education, and appropriate recreation, ecologically significant areas of all coastal natural living communities shall be preserved by public ownership or other appropriate means essentially as recommended by the State and Regional Coastal Commissions, the Department of Parks and Recreation (California Coastline Preservation and Recreation Plan), the Department of Fish and Game, and the Comprehensive Ocean Area Plan (Appendix IX, Education and Research). Designations shall be based on the following criteria (areas meeting more than one criterion may be especially important):

- a. Restricted natural communities-ecological areas which are scarce, involving only limited area.
- b. Rare and endangered wildlife species habitat.
- c. Rare and endangered plant species range.

- d. Specialized wildlife habitat.
- e. Outstanding representative natural communities.
- f. Sites with outstanding aesthetic or educational value.
- g. Wilderness or primitive areas.

The agency designated to carry out the Coastal Plan shall be adequately funded to inventory natural habitat areas and to establish the acreage needed to support the resident population of plants and animals so that additional preserve areas can be appropriately designated. Coastal canyons with recreation and natural study value shall not be used for sanitary landfill when other alternatives are available.

Sites shall be large and numerous enough, and appropriately located, to ensure that vegetation and wildlife will not only survive but thrive, that the genetic health and diversity of plant and animal species will be sustained, and that the catastrophic effects of a major fire or flood would be minimized. Preserve areas shall be managed to restore and enhance habitat values in recognition of the harmful impacts of excessive access or recreational use. Development in adjacent areas shall be controlled carefully to prevent adverse impacts which may significantly degrade the quality of those areas.

Regional Amplification:

1. North Coast: "Coastal Dune Community. Some remaining undeveloped coastal dunes should be acquired, protected by enforceable restriction, or zoned for open space or recreation. Uses which would result in significant disturbance or destruction of dune vegetation should be prohibited. [See Policy #4.]

"Coastal Estuary. Coastal estuaries shall be protected from uses which endanger existing habitats. Key wildlife areas should be acquired and managed..." [See also Policy #2.]

2. North Central: "Examples of such representative areas are identified in the California Department of Parks and Recreation's Coastal Preservation Plan (18,000 + acres in this region) and the California Comprehensive Ocean Area Plan (500 + acres)."
3. Central Coast: "Coastal Dune Formations. Since dunes still undergoing vegetative succession are subject to potential degradation, and destruction if significantly encroached upon, all the remaining post-Flandrian and recent dunes (as mapped by Cooper, 1967) shall be preserved to the greatest extent possible through acquisition or other methods. In the meantime, access across dunes which are stabilizing shall be limited. Further, no future development shall be allowed that may adversely affect "living" Flandrian dune formations as mapped by this Commission."
4. South Central: "Adequate acreage must be protected and preserved within each of the areas on the priority site list...
"As more complete information is compiled, this inventory should be expanded and revised."
5. South Coast: "Future planning and development in the South Coast Region shall provide for the conservation (and restoration when necessary) of adequate acreages of each of the eight habitat types to the region.

"Adequate acreage shall be protected and preserved within each of the areas on the priority site list."

PRIORITY SITE LIST

LOS ANGELES COUNTY

Class I Priority

Point Dume
 Zuma Canyon and Watershed
 Malibu Lagoon, Canyon and Watershed
 Tuna Canyon and Watershed
 Rustic Canyon and Sullivan Canyon
 Ballona Creek [El Segundo Dunes, Hyperion-El Segundo]
 Airport Dunes [El Segundo Dunes, Hyperion-El Segundo]
 Madrona Marsh [Torrance]
 Palos Verdes Coast
 Portuguese Bend Landslide Area [Palos Verdes Peninsula]
 Bent Spring Canyon [Palos Verdes]
 Terminal Island Site
 Harbor Park [Los Angeles]
 Bixby Slough [Los Angeles]
 San Gabriel River Mouth, North Bank [Long Beach]
 San Clemente Island
 San Clemente Island [Canyons]
 Santa Catalina Island
 [Possible addition being reviewed: Corral Canyon and other canyon habitats of the mountain king snake in Santa Monica Mountains.]

Class II Priority:

Santa Ynez - Temescal Canyons and Watershed
Malaga Canyon [Palos Verdes Estates]
Agua Amarga Canyon [Palos Verdes Estates]
Rolling Hills Canyon

ORANGE COUNTY

Class I Priority:

Anaheim Bay [Seal Beach]
Bolsa Bay
Newport Marina
Upper Newport Bay, Bluffs and Big Canyon
San Joaquin Marsh
Pelican Hill [San Joaquin Hills]
San Joaquin Hills
Laguna Lakes and Watershed
Aliso Creek and Watershed
South Laguna Hills

Class II Priority:

Golden West Ponds [Huntington Beach]
Wood Canyon
Niguel Lake [Sulphur Creek Reservoir]
San Juan River Mouth

"Public owned lands in the coastal planning area shall remain in public ownership, and whenever endangered or important habitat types exist on such lands, they shall be preserved, protected, and restored."

6. San Diego: "No development shall be allowed which will further reduce the existing acreage of riparian vegetation unless a significant public benefit will result..."

Statewide Policy:

2. PRESERVE, RESTORE AND ENHANCE COASTAL WETLANDS

Because coastal wetlands serve as a vital link in marine ecosystems and also provide important habitat areas vital to the life systems of many coastal birds and animals, all remaining coastal wetlands shall be preserved and enhanced, and where possible, restored. As an interim guideline, pending completion of all elements

of the Coastal Plan, the Commission finds there is no overriding public need that would require encroachment on remaining wetlands which cannot be met at an alternate location, or through intensifying existing facilities, or by selecting less sensitive areas (with the possible exception of minor expansion of some existing ports as defined in the upcoming Transportation Element).

Buffer areas necessary to protect wetlands areas and their wildlife and bird habitat values must also be preserved, and where necessary, restored. Development in adjacent uplands shall be controlled carefully to prevent adverse impacts on wetland habitat values or significant degradation of the quantity and quality of water entering wetlands by siltation, pollutants (including toxic, thermal, and organic pollutants), or effluent discharge.

Regional Amplification:

1. North Coast: "The special biological significance of Humboldt Bay is complicated by many existing uses, competing demands, and a multitude of ownerships and jurisdictions. Further development along the shore or in the salt marshes adjacent to Humboldt Bay or along the various sloughs that drain into the bay shall be strictly regulated to minimize any damage to the marsh habitat or degrade the quality of the water that enters the bay. The pasture lands around the bay are extremely important to wildlife and should be protected from any development that will alter or destroy this habitat.

"Due to the high productivity and sensitivity of coastal lagoons, no further commercial, industrial or residential developments shall be permitted on the watershed unless it can be shown that they will not significantly degrade the water quality of the lagoon or the creeks draining into the lagoons [Including Stone, Big, Dry and Freshwater Lagoons]. Present uses of agriculture and forestry are compatible uses within the watershed and should be retained as long as they concur with Water Quality Control standards. The development of major water-related facilities should be avoided to retain wildlife and fishery values."

2. North Central:

3. Central Coast: "The Elkhorn Slough System is extremely important in California as an outstanding, highly complex, and intricate wetland system. To enhance its productivity and protect its water and wildlife resources this irreplaceable wetland system requires extremely careful management and stringent protection. (Any development in the vicinity of the Slough System shall be allowed only when it can be proven that the adverse effect on the quality of this resource would be insignificant.) There exists the potential opportunity to increase the rich resources of the Slough through water quality improvement, the advantages of the Slough's location and its relative natural state. Based upon the recognized values of the Elkhorn Slough System, the Central Coastal Commission recommends that Elkhorn Slough and its environs...be fully protected by public acquisition.

"In addition to the area delineated...for Elkhorn Slough boundaries, we also recommend similar protection and careful management for the southern portions of the Slough System composed of Moro Cojo, and Tembladero Sloughs."

4. South Central:
5. South Coast: "Natural areas of biological importance shall be protected against damage from development and pollution within their environs. Both saltwater marshes and freshwater marshes in the priority site list...are surrounded by urban areas and subject to many physical insults."
6. San Diego: [Refer to the Marine Environment Element.]

Statewide Policy:

3. PROTECT RARE AND ENDANGERED PLANTS, ANIMALS AND NATURAL COMMUNITIES

Because each species and natural community is an irreplaceable resource, contributing to the variety of life forms in ways we do not fully understand, rare or endangered plants, animals, and communities shall be protected from extinction and their existence enhanced. New legislation to assist in the designation, preservation, and restoration of rare or endangered plants and communities (habitat types) should be adopted, patterned after or expanding existing laws mandating protection for endangered species. Such

communities and habitat areas, whether publicly or privately owned, shall be protected from destruction or further degradation, and restoration efforts shall be aggressively pursued. Activities shall be restricted and public access shall be carefully managed to prevent any disruption of the habitat values.

Regional Amplification:

1. North Coast: "Habitat areas whether publicly or privately owned, should be protected from destruction and degradation. These areas will be designated on a map and...no further development in these areas shall be permitted. Any adjacent land use practice that may alter or destroy these unique areas shall not be allowed."
2. North Central:
3. Central Coast: "Botanical and zoological management is necessary for the protection and preservation of these natural areas (habitats). In the future as new areas are identified and recognized, they shall receive similar protection."
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

4. MINIMIZE HABITAT DAMAGE

To achieve the continued existence of optimum populations of all species of living organisms and to keep additional species or natural communities from becoming rare or endangered, urban development, roads, logging, farm operations, or other activities of man which reduce or affect natural areas shall be reviewed to minimize the amount of natural land and vegetation that is altered and to strictly avoid unnecessary impact of such activities on

these life resources. All new subdivisions, new structures on lots in existing subdivisions, and all other development activities shall be regulated to prevent destruction or significant disturbance of dune vegetation and to maintain a natural vegetation buffer strip as necessary to protect habitat areas, but in no case less than 50 feet wide, except for minor intrusions upon natural vegetation, along all intermittent and perennial rivers, streams, lakes, lagoons, and wetlands in the coastal zone. Priority shall be given to proposed developments that are complementary to wildlife uses, such as grazing lands which serve as auxiliary feeding areas for protected wildfowl. No development or use proposed along the coast or adjacent uplands which unnecessarily disturbs or destroys shoreline and intertidal habitats shall be permitted.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Each habitat supports plants that have advantageously adapted to the local soil and climatic conditions. These adaptations should be respected with concern to replanting procedures resulting from development to maintain the natural balance of each individual habitat."
4. South Central:
5. South Coast:
6. San Diego:

SECTION II: THE ROLE OF COASTAL STREAMS

Statewide Finding:

6. THE ROLE OF COASTAL STREAMS

The Coastal Land Element deals with many issues that relate to coastal streams and rivers, such as anadromous fish runs, sand supply to beaches, flooding, natural ecosystems, agricultural water supply, and groundwater recharge. Because the entire course of a stream from the head of the watershed to the coastline is a single system; and because the impacts of flood plain development, flood control projects, and water conservation projects are closely interrelated and regional in nature, watershed areas are an ideal focus for development of management techniques for the maximum utilization and preservation of natural resources.

Regional Amplification: None.

Statewide Finding:

7. SALMON AND STEELHEAD TROUT DECLINE

Salmon and steelhead trout spend part of their lives in the sea and part in freshwater streams. These fish are an important State recreational resource and in the case of salmon, a commercial resource as well, but their abundance has declined by at least 50 per cent over the past 30 years, primarily due to human activities. The upstream spawning and nursery areas have been the most severely damaged habitat areas.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Significant major efforts by the Department of Fish and Game and the State Wildlife and Conservation Board to maintain and restore the population have failed to prevent the overall decline although the rate of decline has been reduced on some streams."
4. South Central: "Within this region the streams south of San Luis Obispo County contain small and inconsistent spawning runs with the exception of the Ventura River."
5. South Coast: "The Department of Fish and Game has recently started a three-year experimental program which involves stocking the mouths of certain coastal rivers in the region with one-year old Striped Bass to restore anadromous fishes."
6. San Diego: "Historically, there were steelhead trout and silver salmon in Southern California streams. However, San Diego's populations have been destroyed because of inadequate stream flow in part due to low rainfall since 1938, and in part due to water diversion for domestic and industrial use."

Statewide Finding:

8. COASTAL STREAM HABITAT DAMAGE

The upstream habitat has been damaged by many activities: dams that provide no adequate fish bypass facilities and that flood large spawning and rearing areas; water diversions and stream channelization; sand and gravel mining from streambeds; grading or logging operations that induce habitat-smothering erosion and siltation along streambanks, even from remote sites in the watersheds; land fills for various purposes; increases in water temperature caused by removal of shade vegetation; and discharges of toxic, thermal, or organic pollutants into habitat streams.

The State Department of Fish and Game, Regional Water Quality Control Boards, and the Division of Forestry all have some regulatory powers in this area, but there is no agency with authority over new projects affecting habitat areas, and funding of existing programs is inadequate to enforce present habitat protection measures. The Department of Fish and Game notes that existing authority and funding is inadequate to provide full protection to spawning areas.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Some of the anadromous fish habitat spawning and nursery areas have been completely destroyed, while nearly all have sustained major damage, such as the Salinas, Pajaro and San Lorenzo Rivers and Pescadero and San Pedro Creeks in the Central Coast Region."
4. South Central:
5. South Coast:
6. San Diego: "If selected streams are to be rehabilitated as habitats for anadromous fish, the streams will have to be supplied with continued flows of fresh water. Restoration of the habitats could have beneficial effects for wildlife, plants, and man. The State Department of Fish and Game recently began stocking the Santa Margarita River with silver salmon. While the intent of the program is to stock the lagoon every year for fishermen and not to reestablish the Santa Margarita River as a spawning ground, restoration options should not be foreclosed by upstream activity."

Statewide Finding:

9. BEACH SANDS FROM COASTAL STREAMS

Though beach sand may come from cliff erosion, landslides, dunes, or onshore transport, most of California's beach sands are delivered by coastal streams. The principal mechanism by which the sands are

collected and transported is flooding. The amount of sediment contributed by each stream depends on such factors as the area of the watershed, erodability of the watershed formation, runoff, land use, and stream slope. A number of studies have been done on the transport of beach sands from major rivers. For instance, in the past two years the U.S. Geological Survey has completed studies on the Eel, Mad, and Russian Rivers, and Redwood Creek.

Regional Amplification:

1. North Coast: "[One source estimated] that in [the] Eel River watershed 60-65 per cent of stream sediment is deposited during high stream flows. The Eel River during a three day period beginning December 22, 1964, discharged an estimated 116 million tons of suspended sediment."
2. North Central:
3. Central Coast: "The sand on most central coast beaches is delivered by streams. The largest sand supplying rivers are the San Lorenzo, the Pajaro, and the Salinas. Small streams are regionally important to beach existence, especially in areas which are not in close proximity to the large rivers."
4. South Central: "Although it is difficult to determine how much beach sand is contributed by erosion of the coastal bluffs, streams in the South Central Region are estimated to contribute more than 95 per cent of the sand on the beach. However, stream supply is dwindling because of inland water management devices and streambed mining, and this reduced supply is causing beach erosion."
5. South Coast: "Most beach sand is delivered by winter flooding along the streams of southern California; many of these streams extend inland beyond the five mile coastal zone... Both the San Joaquin Hills and the Sheep Hills play an important and integral role in the watershed of the Laguna Beach Greenbelt... Variations exist in the effect on sand supply between the larger rivers, which once flowed over very extensive alluvial fans, and the smaller, incised, streams of the coastal mountain areas. Due to the essentially complete regulation of the larger rivers and development of their flood plains, the coastal mountain streams may represent an important source of natural sand supply. A study of the sediment production of the coastal mountain streams and their role in sand supply is needed."

6. San Diego: "In Southern California, streams supply an estimated 95 per cent of the sand on the beach. The only other sources of sand are coastal bluff erosion and biogenous material produced by plants and animals (coral, shell, etc.). Because biogenous material contributes an insignificant supply in San Diego, coastal bluffs will become a more significant source of sand as stream supply diminishes. Without the buffer of a sandy beach, the bluffs will erode at a much faster rate than in the past. The San Diego County Department of Sanitation and Flood Control estimates that during a typical non-flood year, no sediment is contributed to the beach. It is only during major floods that stream flow reaches velocities sufficient to transport significant amounts of sediment to the beach."

Statewide Finding:

10. MAN-MADE OBSTACLES IMPEDE BEACH SAND SUPPLY

Dams, settling basins, all flood control works, watershed erosion control, certain farming practices, urbanization, control of natural runoff on range and forest land, and other conservation practices reduce the natural flood flows of coastal streams and so eliminate or impair the continued generation and delivery of beach sands. Where the normal process of sand supply has been seriously impaired, severe depletion of beach sands has resulted, necessitating costly and continuous sand importation measures.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "...severe depletion of beach sands has...caused problems such as cliff erosion and reduction of recreational spaces... There is no flood control project-caused beach erosion problem in the Central Coast Region critical enough to warrant importation of sand at this time, although only partial information is available to adequately assess the situation. However, based on most available scientific opinion, the impairment of the Salinas River's sand-carrying ability may be contributing to shoreline erosion in southern Monterey Bay."

4. South Central:
5. South Coast: "If massive beach sand replenishment by artificial means is not practical, then the beaches of the Malibu and southern Orange County coast may be depleted and coastal erosion will proceed—unless a significant number of the remaining watersheds are left in their essentially natural state. The beach erosion problem can be exacerbated locally by improperly designed jetties and groins which interfere with sand transport, thereby starving beaches to the south. Artificial methods of sand passage around such existing obstructions are both feasible and desirable."
6. San Diego: "... Much of the reason why little sand has been supplied to the beach in recent years is because there has not been enough rain. According to the County Department of Sanitation and Flood Control, the last major flood was in 1916 which was comparable to the calculated 100-year frequency flood... When a major flood does occur, sediment contribution to the coast can be reduced by sediment traps, flood control devices which reduce the peak flow, or flood plain development. Sediment traps can be natural features or man-made. Lagoons and flat sections of a stream course are naturally occurring sediment traps. Dams and mining pits are manmade traps. Each causes stream velocity to decrease, and therefore, sediment to settle out of continued stream flow.

"Flood control dams are designed to hold flood water and release it slowly over time... By reducing peak flow, flood control dams also reduce sediment yield downstream of the dam. All of the dams in San Diego County are designed for water storage rather than flood control, and therefore, are not equipped with a mechanism to slowly release the water downstream. If a flood occurs when the dams are full, water will spill over through the spillway. However, even these dams reduce peak flow. They also prohibit sediment movement in a non-flood year because only when the dam is full will any water spill over into the downstream course. Flood plain development also has a negative impact on beach sand supply since it covers a portion of the sediment which would otherwise be carried to the coast during a flood. Extensive development in the flood plain permanently traps sand in the lower course of the stream and reduces the volume of material available for beach replenishment...

"The State Department of Water Resources estimates that the 50 year sediment yield on San Diego's coastal streams has been reduced 22 per cent by dams and flood plain development.

"a. San Mateo Creek. The creek has a watershed area of 218 square miles and an estimated sediment yield of 134,157 cubic yards. (This figure is the computed annual average of the volume which typically comes once every 50 or 100 years.) Because the creek is in the Camp Pendleton Federal Reserve, there are no commercial mining operations in the streambed. There are no major dams obstructing the natural drainage area.

"b. Santa Margarita Creek. The natural watershed area is approximately 750 square miles; however, the stream flow and sediment of the upper watershed are diverted to Lake O'Neill, thus

reducing the area of the watershed effective for beach replenishment. There is some mining in the streambed by the military but because the creek is in the Camp Pendleton Federal Reserve, there is no commercial mining.

- "c. San Luis Rey River. The natural drainage area is 565 square miles but two dams on the river (Henshaw and Turner) and one diversion to Lake Wohlford have reduced the effective area by 37 per cent. The current annual estimated sediment yield is 208,621 cubic yards. This estimate, however, does not take into account the impact of sand mining from the stream bed.
- "d. Buena Vista Creek. The drainage area of this less significant stream is 19 square miles and there are no dams or diversions on the creek.
- "e. Agua Hedionda Creek. The drainage area is 29 square miles. But 2 dams (Peckstein and Squires Dam) have reduced the area effective for beach replenishment.
- "f. San Marcos Creek. The drainage area is 46 sq. miles. One dam (Lake San Marcos) reduces the area available for sediment yield. Much of the sediment transported is deposited in Batiquitos Lagoon rather than on the coast.
- "g. Escondido Creek. The natural drainage area is 78 square miles but the effective area has been reduced by three dams on the creek.
- "h. San Dieguito River. The natural drainage area is 350 square miles but 93 per cent is blocked by three dams on the river (Hodges, Sutherland and Poway). The estimated current annual sediment yield is 15,385 cubic yards. Below Hodges Dam, the lowest dam on the river, sand is extracted from the streambed which may reduce the potential yield even more.
- "i. Los Penasquitos. There is one dam (Miramar) on the stream which reduces the 166 square mile watershed area available for beach replenishment. The annual yield is estimated at 102,156 cubic yards. However, much of this is deposited into the lagoon which acts as a sand sink.
- "j. San Diego River. The natural drainage area is 483 square miles; however, 66 per cent is blocked by five dams on the river (Murray, Jennings, Cuyamaca, El Capitan, and San Vicente). The effective area is 213 square miles with an estimated current annual sediment yield of 131,080 cubic yards. This does not take into account the impact of the heavy mining activity in Santee and Mission Gorge area. Most of the 4.2 million cubic yards of sand extracted by the mining industry in 1973 was extracted from the San Diego River below El Capitan.
- "k. Las Chollas Creek. The creek is a less significant watershed that drains into San Diego Bay. It is channelized in its lower reaches.

- "l. Sweetwater River. Of the 219 square miles of natural drainage area, only 41 square miles are now unobstructed. Sediment yield has been reduced 85 per cent because of four dams on the river (Loveland, Sweetwater, and two at Palo Verde Estates). The current annual estimate is 25,231 cubic yards. There is also light mining activity in the lower reaches of the river.
- "m. Telegraph Creek. The Creek drains into San Diego Bay and is channelized from I-805 to the Bay.
- "n. Otay River. Two dams on the river (Upper and Lower Otay) have reduced the effective watershed area from 124 square miles to 36, thus reducing sediment yield 71 per cent. The current annual estimate is 22,154 cubic yards. There is no mining in the riverbed because the supply available was exhausted by the heavy operations when the river was the primary source for the metropolitan market area.
- "o. Tijuana River. Three dams on the river (Morena, Barrett, and Rodriquez) have reduced the drainage area from 2,325 square miles to 629, thus reducing sediment yield by 73 per cent. Current estimates are that 387,086 cubic yards per year could be transported. The sand is the finest grained of all stream deposits in the county and it is only lightly mined.

"Alternatives to the Natural Process of Beach Sand Replenishment. Further study of the potential sediment yield of each coastal stream may reveal that some streams can no longer supply sand to the beach. Extensive flood plain development, dams and heavy mining activity may be found to render significant sediment transport impossible. If streams do not supply beach sand, then alternative modes must be established. Such alternatives include:

- "a. Dredging sand from the lower courses of the stream. There are deep deposits of sand at the mouths of the river which, because of high salt content, have no value to the mining industry. These deposits are, therefore, sources for beach material with no competing alternative use.
- "b. Manufactured sand. Currently, the mining industry grinds down rock to various sizes. One of the by-products of the process is sand size grains and this may be a viable method for producing beach sand.
- "c. Offshore deposits and bay dredging. Offshore deposits and bay dredging are potential sources of beach sand. However, in the long run, deposits such as San Diego Bay and Zuniga Shoal are dependent on coastal streams for their sand supply.

"Stream Sediment Yield Studies in Progress. The San Diego County Department of Sanitation and Flood Control has begun a several year study aimed at estimating the precise sediment yield of each stream to the coast and determining if there are particular streams or sections of streams where mining activities would not affect beach sand supply because of natural features which prevent that material from ever reaching the coast. San Pasqual Valley may be such a section."

Statewide Finding:

11. BENEFICIAL ROLES OF FLOODING

Minor flooding is a frequent occurrence; major floods occur less frequently but unpredictably. The beneficial roles of floods on coastal streams include the maintenance of salmon and steelhead spawning grounds; the continued supply of beach sands; the removal of vegetation choking the river channel, restoring the channel's capacity to contain minor flood flows; the long-term deposition along the flood plain of sediments that provide highly fertile soils; flushing of undesirable salts from the surface layers of soils; and the preservation of valuable plant communities on overflow lands, such as giant redwood groves. During flooding, flood plains augment the streambed's normal capacity and provide a temporary storage area for flood waters. Uncontrolled development in the flood plain diminishes both of these functions. (It should be noted that flooding may also destroy valuable habitat areas and kill wildlife.)

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "One historic benefit of flooding which generally is no longer true is the long-term deposition along the flood plain of sediments that provide highly fertile soils. Instead, man now uses modern fertilizers to replace the effects of hundreds of years of flooding."
4. South Central:
5. South Coast:
6. San Diego:

Statewide Finding:

12. HUMAN USES INTENSIFY FLOOD DAMAGE

The loss of life and property damage caused by floods is due in large part to poorly conceived uses of the flood plain. Clearing of vegetation and paving of areas can contribute to the intensity of flooding. Buildings, bridges, and other obstructions in the flood plain back up the flood water until those obstructions are swept away. Demolished structures may then contribute hazardous debris and pollution downstream. The cumulative effect of many small structures reduces the flood plain's storage capacity. Along with changes in hydrologic characteristics of the watershed, such reduction may increase velocity of flood waters, thereby diminishing seepage necessary for groundwater recharge.

Regional Amplification:

1. North Coast: "Most of man's losses from major floods result from improper planning and use of flood plains; i.e., the 1964-65 disaster which occurred along the north coast where more damage was caused from floating debris than from the high water."
2. North Central:
3. Central Coast: "The Central Coast experienced severe flooding and damage to urban areas in the winter of 1955-56. The San Lorenzo River basin flooding caused over 8 million dollars in damage and seven lives were lost. However, the most economically damaging flood in the Central Coast Region occurred in a non-urban area, the Salinas River basin in 1969. Most of the 32 million dollar loss was due to inundation of vast areas of agricultural land, a land use generally considered to be acceptable in the flood plain. Some smaller coastal streams, such as San Pedro, Pescadero, Soquel Creek, and the Carmel River have flooded as many as four times in ten years."
4. South Central:
5. South Coast: "Flood protection against natural hazard must be understood as man's short-term response to long-term, random climatological events in southern California. Flooding is

natural and its occurrence is unpredictable. Protection of lives and property has been accomplished by a system of engineering works that provide, at best, near absolute safeguards to certain flood levels. The occurrence of flooding is unpredictable, however.

"A limited degree of flood protection often leads to a false sense of security by users of flood plains. Substantial property loss and deaths have occurred when floods exceed the level of protection."

6. San Diego: "A review of San Diego County's flood history and an examination of the major drainage areas clearly demonstrate that the county is susceptible to major flood damage. While in the earlier days the vast majority of lands within the main drainage basins were in a natural state, today much of this land is developed with buildings, roads, and other impervious surfaces which aggravate the flood hazard. Water storage dams located throughout the county, while reducing the frequency of minor floods, will be of little or no flood control value during periods of excessive runoff. Furthermore, the protection these dams afford during the more frequent minor floods creates a false sense of security which leads to the encroachment and use of the flood plains that are subject to large and infrequent flood flows."

Statewide Finding:

13. CHANGES IN FLOOD CONTROL REGULATIONS

In the past, emphasis has been on flood control projects that often ignore the beneficial aspects of floods. Public policy is increasingly recognizing that flood plains should be developed only for uses that can endure periodic flooding and that will not contribute to the flood hazard. The flood insurance program of the U.S. Department of Housing and Urban Development offers incentives and will soon include sanctions to encourage local governments to restrict uses on the flood plain.

On the State level, the Cobey-Alquist Flood Plain Management Act now requires establishment of flood plain regulations as a condition of State contributions toward the cost of lands, easements, and rights of way for local flood control projects. Substantial public funds can and should be saved by early planning which permits

acquisition of right-of-way before land costs are elevated by urbanization and by land use regulations which eliminate the need to build costly protective structures. Additionally, flood insurance premiums and federally subsidized insurance monies can be reduced by preventing inappropriate flood plain land uses. Because flood plain land use policies (or lack of policies) in one community can endanger communities at far distant points, inter-agency liaison is necessary as well as an established regional authority for cohesive application of policies.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "All three counties in the Central Coast Region have Open Space and Conservation elements and zoning regulations which follow this changing philosophy. However, flood plain zoning has actually been applied in only a few places. The flood insurance program of the U.S. Department of Housing and Urban Development offers incentives and includes sanctions to encourage local governments to restrict uses on the flood plain. No community in our region is presently under HUD's program, though compliance with the program is required by summer, 1975."
4. South Central:
5. South Coast: "Many of the flood-prone areas are already mapped and delineated. Flood Insurance Studies (done by the Federal Insurance Administration of HUD) exist for many of the cities of Los Angeles and Orange Counties, including Los Angeles. Flood Plain Information Reports for several streams in Orange County (Aliso Creek, San Juan Creek, San Diego Creek and Peter's Canyon Wash, Laguna Canyon), and a preliminary inundation map for the Santa Ana River were developed by the Army Corps of Engineers."
6. San Diego: "In San Diego County, only the County and seven cities (to varying degrees) have adopted regulatory provisions for flood plain management..."

Statewide Policy:

5. COMPREHENSIVE WATERSHED MANAGEMENT PROGRAM

Because coastal streams provide many functions such as sand replenishment, ground water recharge, and anadromous fish habitat, and because the natural system and flood control-water conservation or development projects and beach sand replenishment programs are closely interrelated, regional in nature, and affect the entire California coastline, the planning and management of all new flood control-water diversion projects, streambed mining operations, agricultural practices, and development within the watershed (except in areas already substantially urbanized) shall be done on a comprehensive watershed basis, and an appropriate agency with regional jurisdiction shall be designated to manage the coastal stream system. A procedure shall be developed by which notice of such projects shall be given sufficient that all interested persons and agencies will have adequate opportunity to participate in their review, normally at the stage when an environmental impact statement is being prepared and reviewed. Each such project shall be subject to review, modification, approval or disapproval by the agency designated to implement the Coastal Zone Plan. The agency shall consider the environmental costs and benefits as well as the economic costs and benefits of each project within the watershed. All approved projects shall be required to provide for (a) anadromous fish runs, (b) maintenance of sand transport capability within the streams or alternative supply or other replacement, and (c) replacement of any fish, wildlife, or valuable plant habitat substantially adversely affected by the project. Costs of such programs shall be included in the operating budgets of the projects.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast:
4. South Central:
5. South Coast:
6. San Diego: "Comprehensive Coastal Stream Management Plan. Because the entire course of a stream from the head of the watershed to the coastline is a single system; and because the impacts of flood plain development, flood control projects and water conservation projects are closely interrelated and regional in nature, an appropriate agency, with regional jurisdiction, shall be designated to comprehensively manage the coastal stream system. The agency shall:
 - "a. Determine the impact of mining operations on beach replenishment and identify locations where the impact would be minimal.
 - "b. Investigate methods for sediment bypass of lagoons. In a natural system lagoons eventually fill up with the sediment transported to the river mouth. Since this has a negative impact on beach replenishment and the lagoon ecology, artificial methods for allowing sediment to bypass lagoons should be developed. Because lagoons are an important part of the coastal stream system, the proposed lagoon management plan adopted in the Marine Element should be part of the Coastal Stream Management Plan.
 - "c. Investigate specific streams to determine the potential for restoring anadromous fish habitats.
 - "d. Monitor sediment buildup behind dams.
 - "e. Prepare a management plan for each coastal stream which ensures continued beach replenishment."
[The Department of Fish and Game notes that they are already constitutionally authorized to investigate streams.]

Statewide Policy:

6. PROTECT, ENHANCE AND RESTORE SPAWNING AREAS

To protect and restore the upstream spawning and nursery areas needed by salmon and steelhead trout:

- a. The agency designated to carry out the Commission's Coastal Zone Plan shall be authorized to work with other affected agencies and to review, modify, approve or disapprove any new or expanded permanent dam, water diversion project, sand and gravel mining operation, removal of shade vegetation, stream channelization, discharge of toxic, thermal, or organic pollutants, or grading or logging operation that might adversely affect the spawning reaches of streams. The best available mitigation measures, such as fish ladders, flume channels, or provision of adequate hatchery capacity, shall be required as part of approved projects.
- b. The authority and fiscal resources of the Department of Fish and Game, the Regional Water Quality Control Boards, and the Division of Forestry shall be extended to ensure that salmon and steelhead trout habitats will be protected and restored from the adverse effect of man's activities. Sections 1601 and 1602 of the State Fish and Game Code shall be amended to provide for the denial of permits by the Department when a request would adversely affect the fish and wildlife resources of the State. Where spawning areas cannot be restored, appropriate mitigation measures (such as the building of additional fish hatcheries) shall be employed.
- c. The California State Department of Fish and Game shall be given the fiscal resources and manpower to systematically survey

anadromous fish streams to determine fish populations, to identify and delineate critical spawning habitat (and associated riparian vegetation), its conditions, its potential for improvement, and suggested management and restoration. The Coastal Commission and successor agency shall work with appropriate Federal, State, local, and private entities to develop implementation methods for such protective and restorative measures. Appropriate maps and reports shall be forwarded to the California Division of Forestry to effectuate those provisions of the Forest Practice Act relating to stream protection and to appropriate agencies for control of polluting discharges.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "All, both private and publicly owned, critical spawning and nursery areas should be identified and permanently protected and where possible restored. The riparian habitat necessary to protect the salmonoid population shall be permanently protected."
4. South Central:
5. South Coast: "If the Department of Fish and Game's experimental programs for the restoration of anadromous fish in the Region proves feasible, the continuation of this program shall be supported and encouraged as a means of enhancing this coastal resource." [The Fish and Game Department points out that the present program is designed to provide an adult fishery rather than to restore the spawning area.]
6. San Diego:

Statewide Policy:

7. RESTRICT USE OF FLOOD PLAINS

Because floods jeopardize human life and property in the flood plains, because development in flood plains often creates pressures for construction of costly and environmentally damaging flood control projects, and because flood plains provide flood water storage areas and sand for beach replenishment, on presently unprotected flood plains, the agency designated to implement the Coastal Zone Plan shall allow only new developments that can sustain periodic flooding and that will not create public burdens by aggravating the flood problem or impeding the storage capacity (for example, some agriculture and recreational uses, including incidental structures). During flood-prone periods, flood plains shall not be used for log decks or storage of materials that can be carried downstream by flood waters unless mitigation (such as anchoring devices or berms) can be demonstrated to be adequate. A procedure shall be developed by which affected persons and agencies could review and comment upon proposed projects located in flood plains that are outside of the coastal zone but upon which projects would affect the coastal zone.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Local governments should proceed to zone as 'flood plain' those hazardous areas which are not zoned so already. Hazardous areas are those marked as 'flood prone' on the U.S.G.S. maps prepared for the HUD insurance program."

4. South Central: "Priority shall be given to those uses, such as agricultural uses, recreational uses, and open lands, which minimize the public burden of constructing flood control improvements and reduce the possibility of loss to life and property."
5. South Coast: "On partially protected flood plains a concept of flood damage reduction through land use controls shall be employed... The implications of two Federal enactments...[requiring] evaluation of flood hazard in locating Federally owned or financed projects...[and] that participating governmental units adopt flood plain ordinances consistent with Federal standards...[shall be considered in planning for the coastal zone]. Existing and planned flood control channels must be considered for multiple public use and visual amenities, rather than as single-function installations."
6. San Diego: "Priority shall be given to those uses, such as agricultural uses, recreational uses, and open lands, which minimize the public burden of constructing flood control improvements and reduce the possibility of loss to life and property."

Statewide Policy:

8. MAINTAIN OR REPLACE NATURAL SOURCES OF SAND

Natural sand supply linkages between beaches and upstream watersheds shall be maintained wherever possible. The agency designated to carry out the Commission's Coastal Zone Plan shall be authorized to review, modify, approve or disapprove any activity (such as streambed mining operations) or structure that would interfere with natural sand supply processes. Any such project that is approved must provide for alternative supply or other replacement for the loss of needed beach sand. Where information is lacking or incomplete to document sand supply from inland sources, or the effect of coastal mining, an appropriately designed study project shall normally be initiated prior to approval of any such activity. However, if it can be established that such delay would result in unwarranted hardship, and that the public interest could be adequately

protected through the posting of a bond or other appropriate legal guarantees, to be forfeited if the project is subsequently established to be detrimental to public resources, a project may be allowed to commence prior to the completion of such a study. This project should be given overall direction by the Commission or successor agency, utilizing the appropriate technical resources of agencies such as the U.S. Geological Survey, U.S. Army Corps of Engineers, Department of Water Resources, Division of Mines and Geology, State Lands Commission, Department of Parks and Recreation, universities and colleges and marine laboratories.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "... In order to be useful, the study should include the rivers' roles as well as cover sand supply and movement in all facets: long shore transport; on and offshore deposition (including to submarine canyons); cliff erosion; dune dynamics; loss to sand mining, both on and offshore; and water projects."
4. South Central:
5. South Coast: "Such natural sand supply linkages as continue to exist between watersheds and beaches, through erosional action and runoff, must be maintained. The following watersheds must be protected from intensive development—from growth inducing roads, sewers, and storm drains, (the list is not inclusive, research in the relation of beach sand supply from existing natural watersheds to regional beaches may warrant additions to the list):

"Malibu Area: Arroyo Sequit Canyon, Trancas Canyon, Zuma Canyon, Ramirez Canyon, Escondido Canyon, Solstice Canyon, Corral Canyon, Malibu Canyon, Carbon Canyon, Los Flores Canyon, Tuna Canyon, and Topanga Canyon.

"Orange County: San Joaquin Hills Canyon, Upper Laguna Canyon, Aliso Creek, Sulfer Canyon, Salt Creek, San Juan Canyon and Boat Canyon.

"Catalina: Avalon Canyon and White Cove Canyon.

"...remedial technological responses to man's past alteration of the natural system of sand supply down water courses to the beaches [shall be considered].

"Man-made changes in the stream regimes of differing types of streams shall be studied. Considerable data are at hand concerning the characteristic larger rivers, but more study must be undertaken of smaller water courses, such as Zuma and other coastal watersheds in the Malibu area. Not enough is known of the provision of sand in the pocket beaches of Palos Verdes Peninsula, of the role of streams in southern Orange County and of the pristine areas of Catalina and San Clemente Islands.

"Governmental procedures shall be developed for the maintenance of existing natural watersheds by [such] means [as] acquisition in fee simple or partial, such as a 'watershed maintenance' easement concept that would prevent any alteration of the natural flooding and beach nourishment system;..."

6. San Diego: "If water management devices such as dams are considered necessary because of high intensity development in the flood plain, then the agency responsible for the flood control project shall also be responsible for maintaining sediment supply to the beach using some alternative mode of transport."

SECTION III: COASTAL ZONE MINERALS

Statewide Finding:

14. COASTAL ZONE MINERAL RESOURCES

California's coastal zone contains many non-petroleum minerals; sand and gravel are the most important economically. Construction material needs can be largely met by mining non-coastal mineral deposits, with the exception of specialty sand and other unique coastal minerals. Increased demand for non-petroleum minerals is helping encourage development of offshore mining. Recent developments in offshore mining technology are helping to make offshore mining competitive with land operations. Seawater also holds promise as a source of more salt, magnesium, and other minerals. On land, the geographic sprawl of cities threatens to cover many mineral deposits, primarily sand and gravel resources located near urban areas. Also, urban residents often object to nearby mining operations.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Coastal mineral extraction is an important economic activity in each of the Central Coast Region counties, especially in Santa Cruz and Monterey Counties.

"Though the use of sea water is limited at this time, it holds promise as a rich source of salt, magnesium, and other minerals. Kaiser Refractories magnesia plant at Moss Landing is a good example of a valuable sea water using operation.

"Mineral deposits may be located in places which cause important land use decisions to be made. The geographic sprawl of cities threatens to cover many mineral deposits, primarily sand and gravel resources located near urban areas. Also, mineral deposits may be located in valuable recreational, open space, or other environmentally sensitive areas. Decisions must be made as to which use better serves the long term public interest."

4. South Central:

5. South Coast: "The South Coast Region contains few non-petroleum minerals, and only sand and gravel are presently important economically..."

"Mining and processing of minerals in the South Coast Region contributes, directly or indirectly, a portion of each citizen's annual economic welfare. Because the greatest demand for these minerals is the Region's metropolitan areas, the economic feasibility for supply of sand and gravel to these areas by truck is limited to a 40-mile radius.

"Past practices and present trends indicate that significant mineral deposits (sand and gravel, clay-shale) in the South Coast Region will be converted to other land uses before the mineral deposits are depleted.

"In the South Coast Region the most promising sea floor minerals are phosphorite nodules, sulfide muds, and offshore sand and gravel."

6. San Diego: "The commercially significant non-petroleum mineral deposits in the San Diego Coastal area are rock products (sand and gravel, and stone), specialty sand, clay, salt, and magnesium. Rock products are by far the most significant, accounting for approximately 90 per cent of the volume and dollar value of minerals extracted in the county.

"In San Diego there are presently no companies mining sand from the beach and few companies within a mile of the coast. Most of the mining activity today is concentrated in Santee within the San Diego River bed. What impact sand mining has on beach replenishment is at the time, a debatable issue... The volume of sand extracted in 1973 was 4.2 million cubic yards but what may be a more serious impact on beach replenishment are the open pits left in the streambed after excavation. When sediment does move downstream during a flood it will settle out into the pits rather than moving further downstream to the coast. Beaches and the mining industry rely on streams for their material regardless of how far they are from the coast... Policies directed toward the mining industry must recognize that sand and gravel extractions are an important part of the San Diego economy. As the length of haul increases the cost to the consumer may also increase.

"The extraction of salt and magnesium from sea water in San Diego Bay are industries that are coastal dependent and, with proper controls, may be compatible with the coastal environment. Depending on the weather between 50,000 to 100,000 tons of salt are produced each year. Increased demand for non-petroleum minerals may eventually encourage more development of offshore mining."

Statewide Finding:

15. ENVIRONMENTAL HAZARDS OF MINERAL EXTRACTION

Non-petroleum mineral extraction, primarily of sand and gravel, suffers from many environmental hazards. Open pit mining removes all vegetation, creates disposal problems, may pollute both air and surface water, and deprives wildlife of habitat. Suction dredging, using vacuum pressure to recover underwater resources, disrupts bottom life, can pollute the water with silt and residual material, and can create dredge spoil disposal problems. Dragline mining, which scrapes off surface materials with a bucket suspended from an arm, either on land or underwater, can cause the environmental damages of either open pit mining or suction dredging. Sand and gravel extraction also can reduce spawning grounds. Mining of coastal sands has noticeably depleted this resource in some locations. Strict environmental controls, such as dredge disposal standards, dust and noise control equipment, and reclamation of pit mines, could alleviate many of the problems, although they would also increase mineral extraction costs. Some such regulation is now being done, but it is not uniform throughout the coastal zone.

Regional Amplification:

1. North Coast:
2. North Central:

3. Central Coast: "In the Central Coast Region, mining for specialty sand (sand used for sandblasting, filters, glass, etc.) occurs in two environmentally sensitive areas, the dunes of Monterey Peninsula and the dune belt and beaches of southern Monterey Bay. On the Monterey Peninsula, unique dunes in Del Monte Forest are now almost gone due to mining. According to most available scientific opinion, sand mining in the surf zone in southern Monterey Bay may be contributing to an already existing coastal erosion problem."
4. South Central:
5. South Coast: "In the South Coast Region, the mining operations most commonly used for recovery are: ...open pit mining,... suction dredging, (there has been only small operational usage in the South Coast Region and a permit must be obtained from the State Department of Fish and Game prior to work commencement), [and]...dragline mining..."
6. San Diego: "In San Diego the Regional Air Pollution Control District controls dust emission. The dust ordinance requires every rock producer and operator to obtain a permit from the APCD which insures that the operation runs dust free. Noise control, on the other hand, has not been handled on a regional basis. The City and the County of San Diego each have a noise ordinance. Uniform regulations controlling reclamation of open pits are needed."

Statewide Policy:

9. PROPERLY LOCATE COASTAL MINING ACTIVITIES

Because sensitive areas like estuaries, marshes, lagoons, "living dunes", some streams, and other coastal water areas and landforms (N.B. to be mapped in the Coastal Plan) are fragile and valuable natural environments, mining shall not be allowed in these areas. Mining shall be allowed in other coastal areas only if it can be demonstrated that the minerals cannot feasibly be supplied from inland locations and that the mineral extraction will not have a substantial or long lasting adverse impact upon coastal zone resources, or that the sand supply of the particular watershed is sufficient to allow

mining without adverse impact. To reduce the pressure to mine sand and gravel and other non-petroleum mineral resources in fragile coastal areas, the location, quantity, and quality of resource deposits shall be inventoried statewide, concentrating on potential resources near urban areas where materials can be transported at reasonable cost. Near-city mines and reserves shall be protected from urban encroachment.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Because they are a unique resource, those dunes identified by the Commission as being critical should not be mined. Because all available scientific information shows that surf zone sand mining has detrimental effects on the Southern Monterey Bay littoral cell, sand extraction rates, based on 'detailed study' should be adjusted to a maximum allowable level which will not contribute further to shoreline erosion."
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

10. CONTROL ENVIRONMENTAL DAMAGE FROM MINING OPERATIONS

To minimize environmental damage from mining operations, uniform statewide regulations shall be adopted and enforced to provide a minimum level of control of noise and dust, surface water pollution, waste materials and dredge spoil disposal, and reclamation of

extractive sites. Where feasible, extractive sites shall be restored for future park or open space utilization. Implementing all these requirements will require the cooperation of the many local, regional and statewide agencies that would be involved, coordinated by an agency such as the State Office of Planning and Research or the successor agency to the Coastal Commission.

Regional Amplification: None.

SECTION IV: SOILS, AGRICULTURE AND TIMBER

RESOURCES OF THE COASTAL ZONE

Statewide Finding:

16. IDENTIFICATION OF COASTAL SOILS RESOURCES AND PROBLEMS

Soils are a valuable and irreplaceable coastal zone resource that form the basis for all land-based activities, absorbing and storing rainfall that recharges underground aquifers, sustaining agriculture and timber production, and supporting natural vegetation, wildlife habitat, and other uses of the land. Soil maps inventory the distribution, quality, and limitations of the land. Such maps can aid in land use planning and in review of development proposals by identifying areas of prime soils for agriculture and timber production and areas with potential soil erosion, waste disposal, instability or other problems. Several coastal counties have already completed detailed soils surveys. Data presently available includes Department of Water Resources surveys classifying California lands for suitability for agriculture in terms of slope, soil texture, and other limiting characteristics. Major land use categories, including urban development, agriculture, and certain types of recreation are being mapped periodically to determine changes in land use. Most of the coastal areas have been mapped twice at an interval of about ten years, which demonstrates land use trends.

Regional Amplification:

1. North Coast:
2. North Central:

3. Central Coast: "Soils are formed over long periods of time as a result of the weathering process in rocks and minerals, and are irreplaceable. They support the growth of both commercial crops and natural vegetation, absorb water, recharging the groundwater system and reducing the hazard of flood.

"Groundwater is an important contributor to the overall water supply of the Central Coast Region, for both domestic and agricultural uses. The majority of water for agricultural uses comes from wells. So that the groundwater system can be continually used as a resource, research must be done to establish how much water we have and how much is being utilized."

4. South Central: "Within the South Central Region, soils maps are available for all of the coastal valleys."
5. South Coast:
6. San Diego: "Several coastal counties, including San Diego, have already completed detailed soils surveys."

Statewide Finding:

17. ADVANTAGES OF THE COASTAL ZONE FOR AGRICULTURE

Particular combinations of soil and climate along the coast create special conditions which are required by certain "coastal-dependent" crops and provide high productivity for other "coastal-related" crops and for general agricultural uses. The moderating marine influence extends the effective growing season, provides timing advantages for national markets, and reduces the dangers of large scale crop loss from freezing. Information from the Department of Water Resources land classification maps has been combined with climatic data to create a crop adaptability map demonstrating the broad categories of crops suitable for the areas delineated on the map. The rich soil resources of the coastal zone are not limited to the production of specialty crops, and in the event of need, agricultural production could be converted to staple crops. Many of the soils could grow varieties of wheat, oats, and other basic cereals, and many other necessary crops.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Particular combinations of soil and climate along the Central California coast create special conditions which are required by certain 'coastal-dependent' crops and enable very high productivity for other 'coastal-related' crops... The good air quality of the Central Coast Region is crucial for agricultural production. Specialty crops, such as lettuce and flowers are particularly susceptible to damage from air pollutants. Many crops have been relocated in the coastal zone as a response to the decrease [in] air quality in more urbanized sections of the state."
4. South Central: "It is estimated that one-half of Santa Barbara County's agricultural production is made possible by the uniqueness of the climate."
5. South Coast: "The mediterranean climate of this region together with relatively good soils combine to produce an area ideally suited to intensive specialty agriculture.

"Agricultural lands along the south coast have a high yield per acre and produce crops of high quality; the region's longer growing season allows the production of 2 or 3 crops per year (often crops which are out of season in the rest of the country)."

6. San Diego: "The combination of climate and soil characteristics in north San Diego County's coastal areas are particularly important for the specialty crops produced there. The climate in the marine influenced coastal areas is moderated by the ocean breezes and thus requires less modification of the land environment to maintain optimum agricultural production and at lower costs. Additionally, optimal daylight conditions lengthen growing periods. San Diego's coastal areas usually have at least 10 hours of sunlight in winter, compared to less than 7 hours in most other parts of the country."

"Coastal truck crop production in San Diego County relies heavily on climatic conditions. Such conditions enable harvesting to occur 3-4 weeks ahead of other areas and supply local markets with such crops as tomatoes and strawberries when they would not be otherwise available.

"San Diego's flower industry is heavily dependent on the combination of climate and soil found in the north county, especially in Carlsbad. These conditions are unique, particularly for Ranunculus and Anemone (bulb) production, north of Batiquitos Lagoon and east and west of I-5. A similar combination of conditions is not known to exist anywhere else in the county, state, or country."

"A combination of scarce suitable soils, a growing market demand and increasing property taxation have dictated the expansion of greenhouse production, especially in floriculture. Coastal greenhouse production can, with greater ease and at lower costs, optimize climate-soil conditions for more intensive crop yields. In addition, pesticide use can be better managed especially where there are nearby residences, as there are with the multitude of small farms in the north San Diego County... Soils suitable to support specialized agriculture are extremely limited in San Diego's coastal areas. There may be small acreages currently unused for agriculture in the north county which might be particularly suitable for agriculture but where economics prevent such uses."

Statewide Finding:

18. EXTENT AND NATURE OF COASTAL AGRICULTURE

Over $3\frac{1}{2}$ million acres are now being used for agriculture within the coastal counties, with about 340,000 of this used for principal coastal-dependent and coastal-related crops (24 major fruits and vegetables). The balance is used for irrigated or non-irrigated pastures for sheep, dairy cattle, and beef. Some pasture lands could be converted to specialty crop producing areas if market, financial, climatic, and water supply conditions were favorable. (Even for grazing uses, coastal lands enjoy unusually high productivity.) Acreage estimates of lands presently utilized are being developed from sources such as the Department of Water Resources land use data as part of the Commission's mapping program. Coastal-related agricultural lands may extend far beyond the present 1,000 yard permit line. Much of the coastal agricultural land is considered prime by U.S.D.A. Soil Conservation Service standards, but even lower quality soils can be valuable for producing crops with special climate requirements (e.g., avocados, brussels sprouts, broccoli, artichokes, and celery). Grasslands constitute a major renewable resource converted to milk, meat, and other products on a short-term basis. Agricultural

operations may have such adverse effects as introduction of toxic pesticides and nutrients leading to eutrophication of watercourses, removal of large areas of native vegetative cover (common in the development of citrus and avocado orchards), and heavy drafts on surface and ground water supplies.

Regional Amplification:

1. North Coast: "The three north coast counties have substantial acreages of coastal agricultural lands. Del Norte County has 29,156 acres in agricultural uses with 5,106 acres in crops (95 per cent of which are considered prime); Humboldt County has approximately 65,000 acres of coastal agricultural lands with the most productive lands being in the Ferndale Bottoms, the Arcata Bottoms, and the Redwood Creek Bottoms; Mendocino County has 28,760 acres of marine terrace land, 3,930 acres of which are prime (as defined by Soil Conservation Service). Principal agricultural productions in the three counties' coastal agricultural areas are: dairying, beef cattle, sheep raising, and flower bulb production.

"Historically, more intensive agriculture has been carried on in part of the North Coast Region and currently the trend is toward more intensive agriculture in some of these areas (primarily areas with prime soils)."
2. North Central:
3. Central Coast: "In the Central Coast Counties, approximately 408,100 acres are presently under agricultural production. In Santa Cruz and San Mateo Counties most of the crops are grown in the coastal zone and are dependent on its soils and climate (brussels sprouts, broccoli, artichokes, strawberries and flowers). In Monterey County even though most of the agriculture is not located directly adjacent to the coast, the success of the particular crops grown is dependent on proximity to the ocean and the resulting climatic conditions. Monterey County is nationally important in the production of lettuce, strawberries, artichokes, spinach, and cauliflower."
4. South Central: "Within the South Central Region, the percentage of the State's total acreage for broccoli and celery production is over 45 per cent. The Region also supplies a large portion of the State's acreage for green lima beans, cabbage and spinach, with 42 per cent, 33 per cent, and 25 per cent of the State's total, respectively."

5. South Coast: "Approximately 11,500 acres are now being used within the coastal zone for the production of coastal-dependent and coastal-related specialty crops; oranges, lemons, strawberries, celery, avocados, tomatoes, and ornamental plants are among the most critical crops for which nationwide seasonal shortages could easily occur if South Coast farming disappears."
6. San Diego: "The primary agricultural uses in San Diego County's coastal areas are truck crops and flower production. Strawberries, fall tomatoes, cut flowers and bulbs, account for nearly half the value of the county's total agricultural production."

"Specialty of Coastal Agriculture in High-Value Crops. The reduction of coastal land available and usable for agriculture, as well as increased property tax assessments, have resulted in coastal agriculture specializing in intensively cultivated, high-value crops."

Statewide Finding:

19. ECONOMIC IMPORTANCE OF AGRICULTURE

Coastal agriculture provides many jobs. Estimates are as high as 350,000 jobs in and serving agricultural operations within five miles of the coast. Agriculture and food processing employment is substantial in some counties (e.g., Santa Cruz and Monterey). Gross revenues from agricultural crops are a major portion of the State's economy. In 1969, the value of the 24 principal coastal crops in the 15 counties was estimated at almost \$500 million—over half of the State total for these crops. They are also important nationwide.

Regional Amplification:

1. North Coast: "Agriculture in the North Coast Region has generated substantial annual incomes for each county: Del Norte had an income in 1973 of \$6,500,000; Humboldt generated \$22,000,000 in 1973; and Mendocino County's coastal revenues are around \$1,000,000 per year."
2. North Central: "...agricultural uses provide necessary food production as well as other benefits..."

3. Central Coast: "Agriculture is a crucial part of the economy of the Central Coast Region, especially in Monterey and Santa Cruz Counties. Agriculture is the single most important industry in Santa Cruz County, being valued at \$66 million and providing 16 per cent of all the jobs in the county. This includes related processing and shipping industries (and counts only full-time employment, seasonal labor figures are much higher). In Monterey County, agriculture produces an income of about \$358 million per year, which is approximately 40 per cent of the county's total income."
4. South Central: "In 1973, agricultural products of San Luis Obispo, Santa Barbara, and Ventura Counties were valued at \$81 million, \$152 million, and \$277 million respectively, or a total value of \$510 million for the three counties."
5. South Coast: "The F.O.B. value of these coastal crops in 1972 was in excess of \$19,240,000."
6. San Diego: "Truck and flower crops produced in the North County are important in supplying State and national market demand. Ninety per cent of the vegetable production is marketed outside the county and 50 per cent out of the state. Ninety per cent of the flowers grown in the county are exported out of California. Approximately 10 per cent of all floriculture crops in the United States are produced in coastal north San Diego County."

Statewide Finding:

20. THREATS TO CONTINUATION OF AGRICULTURE

Vast areas of agriculturally productive lands have been lost to urban expansion. More than eight per cent of the 1958 total croplands in the coastal counties were lost in the succeeding decade. Although some recent studies indicate that public revenues from agriculture are greater than public costs, the traditional concern for an expanding economy, employment, and tax base, combined with current tax assessment policies, continue to give precedence to urban development. Urban development pressure causes other problems for agriculture: subdivisions and lot splits fragment land and ownership patterns, making some farm operations less practical; high land costs and taxes increase operating costs; residential development near agricultural

areas brings complaints about farm dust, odor, pesticides, and noise, while increasing vandalism, trespass, dogs and other animals, and air pollution effects upon agriculture.

Regional Amplification:

1. North Coast: "Urbanization of prime agricultural lands does not appear to be a problem in Del Norte County, but it is a significant problem in Humboldt County and a substantial problem in Mendocino County."
2. North Central:
3. Central Coast: "Vast areas of agriculturally productive lands have been lost to urban expansion. In the ten year period from 1959 to 1969, land in agricultural use in San Mateo County decreased by 56 per cent. In the period from 1958 to 1967 Santa Cruz County lost 14.5 per cent of its cropland. It is interesting to note, that during the same period, Monterey County's agricultural acreage increased by 10.8 per cent. Part of this acreage consists of crops displaced from Southern California. Recent vineyard plantings have contributed about 27,000 acres to the increase in land under agriculture in Monterey County.

"Monterey County is one of the few coastal counties which could put additional land under agricultural production. The limiting factor is the lack of a suitable water supply for irrigation. The use of reclaimed wastewater could increase the available water supply and allow some of this land to be farmed."
4. South Central: "It was projected by the Soil Conservation Service in 1970 that the conversion of prime soils to urban use from 1967 to 1980 will total 21,715 acres in the South Central Region, over 17,000 acres alone in Ventura County."
5. South Coast: "With the present trend of urbanization our region is losing agricultural land very rapidly. This loss of agricultural land will cause an increase of costs and higher energy requirements in the production of certain foods and ornamental plants which are adapted to our region's mediterranean climate and soil types.

"... In many instances zoning ordinance regulations prohibit commercial agriculture. Also, public owned land, when land use or zoning changes, tends to be sold for development."
6. San Diego: "Since 1950, some 3,600 acres of agriculturally productive land within the marine influence area of the coastal zone in San Diego County have been committed to urban development. The remaining agricultural uses along the San Diego coastline are primarily in the North County from Camp Pendleton to Solana Beach, and in the Tijuana River Valley.

"Because of historical land ownership patterns and encroaching urbanization, most of the agricultural crop lands in San Diego County's coastal areas are in 1 to 100 acre parcels. Their smallness disqualifies them from being placed into agricultural preserves under existing laws. The incremental conversion of small farms to more intensive urban uses may not be noticeable, but the cumulative impact will be measurable if not critical. Characteristically, coastal agriculture is carried out by the farmer leasing suitable land for production from a land owner. This relationship, in some cases, masks the actual intent for future land use of a parcel. It does indicate, however, that there are individuals who wish to pursue agricultural endeavors in the coastal zone."

Statewide Finding:

21. REASONS FOR PROTECTING AGRICULTURAL LANDS

A growing public desire for open space to limit urban sprawl, combined with well-publicized food shortages, price rises, and balance of payment considerations, have spurred public interest in preserving agricultural production areas. Projections of future food needs—and the lesser efficiency or impossibility of growing many crops outside the coastal zone—make existing coastal agricultural lands a natural resource of statewide and national concern. Fuel and fertilizer shortages, and the probability that future yield increases will be relatively small and achieved only through energy-demanding techniques, add to the value of naturally fertile coastal lands. Retention of agricultural land, whether for specialty crops or less intensive grazing, not only helps provide food but can also guide urban growth, reduce public expenditures for urban service extensions, preserve open space and wildlife habitats, provide beneficial use of land that is hazardous or inappropriate for other types of development, and maintain future land use options (such as conversion of grazing lands to more intensive crops).

Regional Amplification:

1. North Coast:
2. North Central: "Agricultural uses within the coastal zone provide food and fibre, employment, managed open areas, reduced fire hazard, and scenic resources."
3. Central Coast: "Agricultural technology has brought about significant increases in yield per acre due to fertilizers, new plant varieties and hybrids, and pesticide controls. Future yield increases are likely to be small and should not be depended on to compensate for the loss of agricultural lands."
4. South Central:
5. South Coast:
6. San Diego: "Much of the distinctive quality of the north county coastal communities has been promoted by their semi-rural character. Open field agriculture has provided pleasant relief from a rapidly urbanizing coastline. Therefore, the importance of protecting coastal agriculture extends beyond soil/climate utilization, and economic worth, to values of community character, openness contrasted with urbanization and other coastal amenities such as scenic values."

Statewide Finding:

22. WAYS TO PROTECT AGRICULTURE

Some measures are now in effect in California, but new and expanded techniques and increased public awareness are needed to preserve valuable agricultural production areas. California and the local jurisdictions efforts to preserve agriculture are hampered by the lack of a Federal agricultural land policy, although the agricultural lands are a national resource. Existing laws are generally deficient in providing for the preservation of valuable agricultural land. This problem is not unique to the coast, although perhaps more urgent due to high urbanization pressures. Further revision of State and local tax assessment policies, strengthening of the Williamson Act (for instance, by authorizing the Coastal Commission to designate

preserves), revision of State and Federal inheritance taxes, a "land gains" tax on land sale profits, or other techniques to discourage land speculation should be investigated. Development easements, development rights transfers, or purchase-leaseback arrangements (scenic lands could be leased for limited grazing) could offer semi-permanent public protection of agricultural lands. Loan programs (such as long-term low-interest loans for capital improvements needed to meet environmental quality regulations) and subsidies may also be necessary to maintain the economic viability of agricultural operations, as might the mandatory application of protective methods by local jurisdictions (for example, by requiring local governments to zone prime agricultural lands for exclusive agricultural use).

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast:
4. South Central: "Regional tax equalization, the distribution of taxes over a broader area, could reduce the competition between jurisdictions for new revenue..."
5. South Coast:
6. San Diego:

Statewide Finding:

23. TIMBER AS A RESOURCE

The commercial timberland of the coastal zone is a valuable natural and economic resource. It must be managed carefully to ensure its protection as an economic resource and to retain its valuable

wildlife and fisheries habitat, its scenic and recreational potential, and its protection of watersheds from erosion and excessive runoff due to the removal of vegetation.

Regional Amplification:

1. North Coast: "The results of clearcut operation are very unsightly to many coastal users. The aesthetic value of forest vegetation plays an important part in the recreational use of coastal resources... There is an obvious need for an interdisciplinary resource management approach to forest lands of northwestern California."
2. North Central:
3. Central Coast:
4. South Central:
5. South Coast:
6. San Diego:

Statewide Finding:

24. FOREST MANAGEMENT

In the past, unsound forest management practices, conversions of timberland to other uses such as residential development or agriculture, and site dominance by noncommercial successional plant species have long contributed to the decline in the historical timber inventory in California. The California Forest Practice Act of 1973 has as major objectives the maintenance of commercial timberland to ensure long-term sustained yield, and the protection and enhancement of fish and wildlife habitat, soil and watershed resources, and recreational uses of timberland.

Regional Amplification:

1. North Coast: "The forest products industry...is undergoing rapid technological changes in logging and equipment, processing and utilization of more and more of the fiber resulting in less waste... In addition, the method of forest land management in redwood is shifting from old-growth to a young-growth system as old-growth stock is utilized and replaced by a new crop of young growth... The converting of old growth forests to young growth increases the site yield, while detracting from the visual resource. After timber harvesting a five to six year period usually exists before the return of a substantial vegetative cover."

2. North Central:

3. Central Coast: "Other than past poor forest management, the principal damage to the timberland of the coastal zone is through loss to residential development and conversion to other agricultural uses..."

"The objectives [of the California Forest Practice Act of 1973] can be achieved and will result in correcting most, if not all, of the past poor logging practices if the Act is properly funded and administered."

4. South Central:

5. South Coast:

6. San Diego:

Statewide Finding:

25. TIMBER TAXATION

Current methods of timber taxation encourage unsound forest management on small timber ownerships resulting in reduced forest yield. Revision of present timberland taxation practices which tax standing timber (for example, a "yield tax" that would tax the timber as it is removed) is needed to encourage conservation and long-term renewal of this resource. Past land division activities have produced small uneconomic parcels that force the harvesting of timber when it is not desirable.

Regional Amplification:

1. North Coast: "The 70-per cent/40-year rule in many cases discourages wise silvicultural practices necessary for sustained-yield forest management."
2. North Central:
3. Central Coast:
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

11. PROTECT VALUABLE SOIL RESOURCES

Because soils are an essential non-renewable resource, and prime soils in the marine influence area of the coastal zone are of particularly high value, soil productivity shall be protected and development regulated to prevent soil depletion or degradation. To this end, natural resource inventories, including detailed soil surveys, shall be completed for the entire coastal zone and used to identify valuable soils that shall be protected when formulating land use plans and evaluating proposed projects. Agricultural practices that minimize soil loss, such as contour plowing, shall be encouraged. Because non-agricultural developments are often a key contributor to significant soil erosion, existing building and grading regulations aimed at minimizing erosion degradation shall be strengthened and strictly enforced, including review of local ordinances by the Commission or successor agency to ensure that such ordinances are in full conformance with this policy.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Because soils are non-renewable resources and essential for agriculture, timber production, and recharging of the groundwater system, it is necessary to carefully map the soils of the Central Coast Region. Soil surveys done in the three counties by the Soil Conservation Service are presently being updated. Where lacking, more specific information such as bearing capacity, instability, septic tank capability, erosion hazards, etc., should be included for each soil series."
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

12. PRESERVE PRIME AGRICULTURAL LANDS

Because of the productivity of coastal agricultural lands and their importance in providing State and national food supplies, all prime agricultural lands (as defined in Government Code Section 51201) and all lands now being used or appropriate for producing coastal-dependent and coastal-related crops shall be maintained in agricultural use, unless the Commission determines in a subsequent element of the Coastal Plan that there is an overriding public need requiring conversion to another use. Any facilities built pursuant to an approved conversion of agricultural land shall be sited and designed to minimize impact on resource areas.

Regional Amplification:

1. North Coast:
2. North Central:

3. Central Coast: "Because of the particular combination of soils and climate in the Central Coast Region, which produces high value specialty crops, and because of the limited supply of land suitable for agriculture which remains in the coastal zone, and because of the significant amount of economic activity that agriculture and its supportive industries contribute to the Central Coast Region, all agricultural lands in this region shall be preserved, unless it can be clearly demonstrated that there is no possible alternative location for a conflicting use."
4. South Central:
5. South Coast:
6. San Diego: "Because of the unique dependence of floriculture activities on locations along the North San Diego County coastline; because of the community character and visual amenities they provide; and because of their importance in state and national flower and bulb production, these uses shall be preserved and protected."

Statewide Policy:

13. MINIMIZE CONVERSION OF OTHER AGRICULTURAL LANDS

Because non-prime land and non-coastal related agricultural uses aid in supplying food and fiber, provide jobs, constitute scenic resources, supply wildlife habitat, and provide a reasonable use of land without irreversibly committing it to other uses, the conversion of such lands shall not be allowed unless it can be clearly demonstrated that continued or renewed agricultural use of the parcel is infeasible because of location, size, soil type, or other characteristic; or the Commission finds that a necessary public use or activity cannot be located inland or elsewhere on the coast. If the infeasibility is economic in form, before conversion is permitted all types of public subsidy and public acquisition and probable future needs for agricultural production shall be examined. This should include the possible recombination of small parcels into larger units where agriculture can be profitably practiced. The proposed alternate use must be

fully consistent with other elements of the Coastal Plan. Such determination should be made after consultation with local agricultural producers and appropriate professional advisors. The Commission will advocate specific legislative proposals to aid in agricultural land protection (such as the Commission or successor agency being empowered to participate directly in Williamson Act contracts or open space easements) in the Powers, Funding and Government Organization element.

Regional Amplification: None.

Statewide Policy:

14. PREVENT URBAN INTRUSIONS AND
LAND DIVISIONS AFFECTING AGRICULTURE

To prevent fragmentation of land ownership and urban pressures that adversely affect agriculture, scattered urban development or land divisions shall be permitted in rural areas only where it can be shown that they will not interfere with continued agricultural uses of land and where preservation of agricultural lands can be assured. Subdivisions and lot splits shall not be permitted to reduce the parcels to a size that could be uneconomic or impractical for continued agricultural production. Where divisions of agricultural lands are allowed for agricultural purposes such as long-term leasing of specific parcels, the approval of such divisions should be conditioned on the recording of appropriate restrictions precluding the future division of the parcels and limiting the use of the parcels to agricultural activities.

N.B. On an interim basis, land divisions are subject to additional specific guidelines adopted by the Commission on July 10, 1974, which will be reevaluated as part of the Intensity of Development Element.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Because many of the major crops grown in the Central Coast Region are particularly susceptible to damage from certain air pollutants, activities which could substantially affect the present air quality and harm agricultural production shall be allowed in the coastal zone only if the developer can prove that there will be no further significant degradation of air quality."
4. South Central:
5. South Coast: "...local jurisdictions may determine the type of agricultural activities permitted (i.e., 'light agriculture'-nurseries, ornamental plants, row crops, etc. vs. 'heavy agriculture'-feeding operations, grazing, etc.)

"Public owned land shall be maintained in public ownership and shall be used for producing specialty crops when feasible and where the land is neither a natural habitat area nor is suitable, because of size or location, for public open-space recreational purposes."
6. San Diego:

Statewide Policy:

15. ENCOURAGE AND MAINTAIN AGRICULTURE

To make continued agriculture increasingly feasible, high priority shall be given to appropriate regulatory, taxation, and research programs. Those considered shall include State, regional, and local land use controls to prevent unwarranted conversions of land, strengthening of the Williamson Act, strengthened subdivision regulations, a land gains tax, inheritance tax changes, development easement or purchase-leaseback techniques (ideally used prior to urbanization pressures), farm loans or subsidies, encouragement of multiple use of farmlands, and research in new crop strains, pest

control management, agricultural pollution control, the use of reclaimed water in agriculture to avoid overdraft of coastal aquifers and possible salt water intrusion, and long-term land management practices designed to avoid soil erosion or soil degradation. Since Article 28 of the State Constitution establishes the importance of agricultural soils for the production of food and fiber and as an economically viable way to retain land in open space, the State shall provide permanent protection of valuable lands through legislative action, and shall require the application of such protective methods by local jurisdictions. The Commission will advocate specific legislative proposals to aid in agricultural land protection (such as empowering the Commission or successor agency to participate directly in Williamson Act contracts or open space easements) in the Powers, Funding and Government Organization element.

Regional Amplification:

1. North Coast:
2. North Central: "...local government agencies should provide for ...control over agricultural pollutants, as well as tax incentives to promote sound range and farm land use and improvements. Where severe agricultural-related soil erosion or soil degradation develops, government agencies should be authorized to require range improvement practices."
3. Central Coast:
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

16. PROTECTION OF FOREST RESOURCE VALUES

Because in addition to the economic resource of timber production, coastal forest lands are important as wildlife habitat, as watersheds, as recreation sites, and as scenic resources, the agency designated to carry out the Coastal Plan shall participate with other agencies in the development of interdisciplinary watershed plans which develop appropriate multiple use concepts. The Commission shall regulate timber harvesting and timberland conversions on a case by case basis to maximize protection of the public interest while allowing appropriate utilization of this important renewable resource. The following criteria shall apply to all timber harvesting in the coastal zone:

- a. Conversions of high quality redwood, Douglas fir, or other commercial timberlands (site I, II, or III) by division into non-commercial size units shall be prohibited, except for necessary timber processing facilities.
- b. Coastal timber lands with high scenic value visible to coastal visitors from public roads, foot and bicycle trails, coastal rivers and streams, or parks, shall be identified and mapped, and timber harvesting, including road construction and debris removal, shall be regulated to protect these scenic qualities.
- c. Timber harvesting in key watershed areas and along stream banks shall be strictly regulated, with the extent of each specific "buffer zone" to be established with assistance from water quality, wildlife, and fisheries agencies. Where the term "buffer zone" is used, that means no harvesting of

timber will be allowed within that area. The depth of required "buffer zones" will be determined in the final Plan. Because of their vital importance to dependent coastal communities, key watershed areas shall be identified and forest management practices within these areas shall recognize the local importance of these areas.

- d. Since successional shrub and hardwood species can severely delay conifer dominance and future timber harvests, rehabilitation programs should be developed subject to approval of the Coastal Commission or the successor agency with State financial assistance and implemented according to priorities developed as part of watershed plans.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "... Because the conversion of commercially valuable timberland in the coastal zone to alternate land uses, such as grazing land or residential subdivision, results in the loss of significant amounts of this valuable resource, the subdivision of commercial timberland into non-commercial size units shall be prohibited."
4. South Central:
5. South Coast:
6. San Diego:

Statewide Policy:

17. TIMBER TAXATION POLICY

Because present property tax methods can force small property owners to harvest timber where its removal is not desired, and changes are needed to protect and enhance continued timberland productivity, the agency designated to carry out the Plan should work aggressively to ensure that State laws governing taxation shall be modified as appropriate to encourage a sustained yield basis for timber production. Necessary changes will be specified in the Powers, Funding, and Government Organization Element of the Coastal Plan.

Regional Amplification: None.

SECTION V: AIR RESOURCES OF THE COASTAL ZONE

Statewide Finding:

26. AIR RESOURCES OF THE COASTAL ZONE

Air quality varies greatly among different portions of California's coastal zone. Pollution sufficiently severe to damage human health occurs in some locations, (generally urbanized areas with adverse meteorological and topographic conditions) and contrasts with normally clean air in others. Studies made under Environmental Protection Agency auspices are increasingly quantifying the detrimental effects upon health of air pollution levels even under existing secondary standards. Clean air portions of the coast provide a needed refuge for people with asthma and other illnesses. Clear air also constitutes an identifiable economic resource in many coastal localities, such as cut-flower and specialty crop agriculture areas and recreational locations valued for their clear and healthful air.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast:
4. South Central: "Within the South Central Region, air pollution occurs within two different air basins. The South Central Coast Air Basin includes all of San Luis Obispo County and the northern three quarters of Santa Barbara County north of the Santa Ynez Mountains. Air quality is very good (generally the lowest pollution levels from north of San Francisco Bay to the borders of Mexico), with some visibility reduction from Santa Maria to San Luis Obispo.

"The South Coast Air Basin includes southern Santa Barbara County and all of Ventura County. This air basin is geographically and climatologically connected to the metropolitan Los Angeles area. Some visibility reduction is common with plant damage to certain crops reported in Ventura County."

5. South Coast: "The climate and physiography of this region and its intense urbanization have combined to produce air pollution sufficiently severe to adversely affect life and threaten coastal resources."
6. San Diego: "Historically, the enjoyment of San Diego's coastline has been associated, in part, with the high quality of its air resources. In post-war years, the quality of the coast's air resources, as well as throughout the rest of the San Diego Air Basin has deteriorated progressively. Since 1968, new air pollution control efforts have resulted in some gradual improvements in San Diego's air quality in the central city area. However, in 1972, Federal standards for total oxidants in coastal areas were still exceeded approximately 30 per cent of the days in the year.

"In San Diego County, the problem of air pollution is principally regional in nature, encompassing the San Diego Air Basin which extends from Camp Pendleton to the Mexican border and from the Pacific Ocean landward to the 2,000' elevation of the first mountain range. The attainment and maintenance of acceptable air quality levels must be approached on a regional basis."

Statewide Finding:

27. SOURCES OF AIR POLLUTANTS

Air pollutants originate from many sources. Motor vehicles constitute the single largest source of nitrogen oxides, carbon monoxide, and organic gases; industry, including fossil-fuel electric plants, is the chief source of sulfur dioxide. Suspended particulate matter comes from mining, agricultural, and lumber operations, as well as from motor vehicles, incineration, and the combustion of fuel. All these are in addition to natural sources such as dust and saltwater particulates.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Suspended particulate matter is produced by certain industrial processes, e.g. cement manufacture, recovery of magnesium from seawater, iron and steel making, ore smelting; from open pit mining; from asphalt and cement batching; from agricultural burning and spraying; and from other incineration, e.g. backyard and other open burning."
4. South Central: "Air pollutants originate from many sources. Transportation sources are responsible for the majority of pollutant emissions, in particular, hydrocarbons, nitrogen oxides, carbon monoxide and lead. Industrial sources constitute the main source of suspended particulate matter. Fuel combustion at fossil-fuel burning power plants and other stationary sources is the major source of sulfur dioxide and a significant source of nitrogen oxides. To date, such power plants have been located along the Region's coastline at Ormond Beach and Mandalay Beach in Ventura County, and at Morro Bay in San Luis Obispo County. Air pollutants associated with agricultural activities, mining, construction and open-air burning are relatively minor and can be more easily mitigated."
5. South Coast: "Presently, stationary sources contribute less to the air pollution problem than mobile sources; however, stationary source pollution could threaten the attainment and maintenance of national air quality standards even if automotive pollution were totally eliminated..."

"Coastal emissions serve as precursors of pollution for down-wind coastal areas like Riverside. Since prevailing winds are inland, emissions created in the coastal zone reach inland cities and even contribute to the adverse impact of emissions which pass beyond the mountains to the desert region.

"A substantial portion of hydrocarbon emissions through evaporative losses occurs during the handling and transfer operations associated with the sale of gasoline,... These emissions can be controlled by implementing devices which control the evaporative emissions during operations. The combined uncontrolled emissions...from these last two fuel handling operations are projected to be approximately 159 tons per day in 1977 in the south coast basin." [Air Pollution Control Districts in the San Diego, Los Angeles, and Bay Area metropolitan areas are presently implementing requirements of this type for most new service stations, although implementation has been delayed because of equipment shortages in some cases.]

6. San Diego: "Significatn air pollution sources in the San Diego Air Basin include motor vehicles, industrial plants, electrical generating plants and, to a lesser extent, agricultural and mining operations. Additional pollutants in the basin are transported by air currents from Los Angeles and Orange Counties on the north and from Mexico on the south. In turn, these impact the health of the basin's population, its scenic amenities, recreational qualities, agricultural crops and a variety of other living and nonliving matter...

"Transportation sources are responsible for the majority of pollutant emissions in San Diego County, in particular, hydrocarbons, nitrogen oxides, carbon monoxide and lead. Industrial sources constitute the main source of suspended particulate matter. Fuel combustion at fossil-fuel burning power plants and other stationary sources is the major source of sulfur dioxide and a significant source of nitrogen oxides. To date, such power plants have been located along San Diego's coastline. Air pollutants associated with agricultural activities, mining, construction and open-air burning are relatively minor in the San Diego Region and can be more easily mitigated."

Statewide Finding:

28. SPECIAL AIR POLLUTION CHARACTERISTICS OF THE COAST

Several distinct meteorological aspects of the coastal zone affect air pollution problems. Temperature inversion layers, which trap pollutants by stopping upward air movement, tend to occur more frequently, at much lower levels, and last longer into the day along much of the California coast, due to high-pressure centers off the Pacific Coast or to land-water temperature differentials. Land-sea breezes are caused by the temperature differential between the land surface and the ocean surface, on both a daily and seasonal basis. These breezes may push pollutants back and forth without dispersing them throughout a larger area, especially where the topography helps trap pollutants and when winds are relatively weak, as they are in winter. During the summer season, the fog and low clouds along the coast usually prevent formation of photochemical smog, but as winds move the air inland, pollutants produced in the coastal zone

can contribute to severe smog at inland locations where the pollutants react with sunlight. Sulfur dioxide pollution is more dangerous in coastal fog areas, where chemical reactions can produce a weak solution of sulfuric acid, injurious to human, animal, and plant health, and damaging to many materials.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast:
4. South Central:
5. South Coast: "Temperature inversions and the area's topography are two important factors which contribute to [the Region's] high air pollution levels... Approximately 90 per cent of sulfur dioxide discharged into the air of the Los Angeles and Orange Counties is generated within the coastal zone of the counties."
6. San Diego:

Statewide Finding:

29. AIR POLLUTION DAMAGES COASTAL RESOURCES

Air pollution limits specifically set to protect human health are now being exceeded in some locations along the coast, creating not totally quantified but very real damage and human suffering. The extent of air pollution damage to wildlife and vegetation resources (including native plants, forests, landscaping, and agricultural crops) is increasingly being documented. A statewide study estimates crop losses alone from air pollutants in 1970 to be almost \$26 million, not including invisible damage.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "...even smaller urbanized areas such as Salinas Valley, Santa Cruz and Carmel Valley have enough photochemical smog to be in violation."
4. South Central: "Air pollution is often credited with having damaged the productivity of the orange and lemon groves in Los Angeles, Orange, and Ventura Counties. A statewide study estimated 1970 crop losses from air pollution to be \$26 million. Cut flower growing and specialty crop agriculture thrive on clean, clear air. Certain vegetables, especially tomatoes, are also very sensitive to air pollution."
5. South Coast:
6. San Diego: "Cut flower growing and specialty crop agriculture thrive on clean, clear air. Certain vegetables, especially tomatoes, are also very sensitive to air pollution. Although there is presently only limited evidence that air pollution has damaged agricultural crops in San Diego County, continued degradation of its coastal air resources could well lead to severe crop reductions and even destruction."

Statewide Finding:

30. AIR POLLUTION CONCENTRATIONS CAUSED BY DEVELOPMENT PATTERNS

The location and intensity of air pollution concentrations greatly influence their effect. Studies suggest intensive transportation corridors are major sources of concentrated vehicle emissions along the line of the corridor, creating a special hazard for humans, wildlife, and plants located nearby. When freeways encourage a net increase in vehicular mileage, they also add to total air basin pollution. Buildings also affect pollution dispersal, generally slowing wind speed over urban areas and modifying wind patterns within particular building masses.

Regional Amplification: None.

Statewide Finding:

31. PROJECT DESIGN CAN REDUCE AIR POLLUTION

Careful project design can minimize interference with wind currents, especially in local circulation patterns, and maximize natural ventilation. Properly located vegetation barriers ("green belts") can substantially reduce particulate air pollution and some types of gaseous pollutants, especially near ground level, by trapping it on the foliage. Even a 30-foot-wide strip densely planted with trees and shrubs can filter out more than a quarter of some types of pollutants. Project designs which minimize automobile use also aid in reducing pollution.

Regional Amplification: None.

Statewide Finding:

32. PRESENT AND PROPOSED AIR QUALITY REGULATIONS

Present regulation of air pollution in California is shared among local air pollution control districts, the State, and the Federal government, and is coordinated by the State Air Resources Board. Present regulations focus on limiting pollutants emitted from stationary and vehicular sources. There is currently no authority to coordinate land use and transportation systems as a means to control air pollution, but this is now being proposed by the State Air Resources Board and the Environmental Protection Agency. Indirect source controls are also being developed. The

Environmental Protection Agency is also considering limiting the extent of allowable degradation of existing air quality in any air basin, rather than setting only upper limits on total pollution levels (that is, air quality standards designed to incorporate appropriate margins of safety). In addition to requiring each state to prepare and enforce a plan to meet the primary national ambient air quality standards, the Federal Clean Air Act also requires each state to prepare and submit by June, 1975, an Air Quality Maintenance Plan showing how air quality standards will be maintained.

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast:
4. South Central: "...the EPA has directed the State of California to prepare and submit to it a plan developed in cooperation with local air pollution control districts which includes a program for attaining and maintaining acceptable air quality. Such a plan considers stationary and mobile sources, point and area sources, and direct and complex sources. The success of implementing such a plan in the South Central Region will depend heavily on multi-jurisdiction planning and coordination with land-use and transportation planning. A major component of the plan will be the transportation control portion, especially for ground transportation."
5. South Coast:
6. San Diego: "...the EPA has directed the State of California to prepare and submit to it a plan developed in cooperation with local air pollution control districts which includes a program for attaining and maintaining acceptable air quality. Such a plan considers stationary and mobile sources, point and area sources, and direct and indirect sources. The success of implementing such a plan in San Diego County will depend heavily on multi-jurisdiction planning and coordination with land use and transportation planning. A major component of the plan will be the transportation control portion, especially for ground transportation."

Statewide Policy:

18. PROTECT, ENHANCE AND RESTORE COASTAL ZONE AIR QUALITY

All new coastal development (including small-scale development that taken with other projects of the same type would have a cumulative effect upon coastal air quality) shall be designed to protect and restore coastal zone air quality to the maximum extent possible. All developments that could have substantial air pollution potential shall be allowed in the coastal zone only ~~if~~ it can be demonstrated that there will be no significant degradation of air quality.

- a. Major Pollution Sources. Major pollution-generating developments, including refineries, freeways, new coal or oil fired electric generating plants and modernization or expansion of existing plants shall meet all applicable Federal, State, and local air quality standards and all criteria specified in relevant Plan elements.

Such developments shall not be built in areas of the coastal zone designated by the Air Resources Board as critical air areas or in areas where coastal resources (such as resort or agricultural areas) would be adversely affected unless the agency designated to carry out the Coastal Plan (in consultation with the State Energy Resources Conservation and Development Commission for power plant sites) determines there is no alternative inland or coastal location where siting would result in less environmental degradation.

In no case shall modernization or expansion take place in a critical air area or in an area where coastal resources would

be affected unless there is a net decrease in generating system emissions of pollutants for which national or State ambient air quality standards have been established. Normally this requirement will apply to each individual plant for which alterations are proposed, unless it can be demonstrated that the emissions from two or more nearby plants affect the same geographic area in an equivalent manner. If such a determination can be made, then the plants involved can be treated as one unit for the purposes of this policy.

In other areas of the coastal zone, pollution-producing developments shall meet all criteria specified in relevant Plan elements. In either type of location, any approved project shall be designed and sited to minimize pollution, including use of best available technology.

b. Prevent Significant Deterioration of Air Quality by Requiring Coordination of Land Use Patterns and Transportation Facilities.

Additional residential development shall wherever possible be located in areas served by public transit systems. Because residential developments in locations removed from employment and commercial service areas contribute to air pollution by increasing automobile use, residential developments and major commercial or industrial developments or other uses that would generate substantial auto traffic shall not be permitted in such remote locations unless adequately served by alternative transportation modes that are less polluting or that reduce total vehicle mileage (such as buses), or unless it can be clearly demonstrated that the project will not harm coastal

resources or contribute directly or cumulatively to significant degradation of air resources.

c. Stress Maintenance and Restoration of Coastal Air Quality.

To achieve restoration of coastal air quality, the Commission and successor agency shall work actively with existing agencies now preparing Air Quality Maintenance Plans for localities with air quality problems. Similar cooperation shall be exercised in developing air quality carrying-capacity estimates for each clean air region. Also, the Commission and successor agency shall vigorously support the development and utilization of improved air quality technology for both stationary and mobile sources; and development of improved means for assisting and evaluating air pollution technology.

d. Strongly Encourage Alternative Transportation Modes. Alter-

native transportation modes and reductions in total vehicle miles traveled shall be strongly encouraged in all new and existing developments, by requiring financial contributions to public transit systems in lieu of parking spaces, through public subsidies of bus systems, by restricting arterial design capacities and on-site parking, or other appropriate means.

e. Design Projects to Reduce or Mitigate Air Pollution. Because

specific project design can substantially affect local air quality, all new projects in the coastal zone shall be evaluated and appropriate mitigation measures required to reduce pollution problems (e.g., on-site open space, green belts, internal circulation systems, and buildings designed and sited to maintain favorable wind currents).

Regional Amplification:

1. North Coast:
2. North Central:
3. Central Coast: "Because some uses...have intensive pollution generation characteristics and could have serious effect on the clean air of the Coastal Zone and because clean air is essential to the agricultural and tourist industries and general welfare of the residents of this region, all uses which could have substantial air pollution potential shall be allowed in the Coastal Zone only if it can be demonstrated that there will be no further significant degradation of air quality.

"Because some local climatic and topographic factors are conducive to airshed pollution concentration, the location and arrangement of land use and population density should be planned to avoid such concentrations."

4. South Central: "Prior to any expansion of existing coastal freeways or fossil-fuel generating plants, the Commission or the agency designated to implement the Coastal Zone Plan shall determine that the cumulative air pollution levels following such expansion shall not endanger nor harm the important coastal resources (such as agriculture) or health of the people of the air basin.

"Project design shall be consistent with the adopted Policies of this Region's Appearance and Design Element of the Coastal Zone Plan."

5. South Coast: "Because of the critical levels of air pollution already existing in the region's coastal zone, new intense pollution-generating developments shall not be located in the coastal zone.

"Pollution sources which are coastal related shall be required to use the best practical technology and design studies to minimize pollution to the largest extent possible.

"Modernization and expansion of existing pollution sources shall be permitted provided that new emission levels are decreased for individual projects; however, as these sources become obsolete (e.g. due to technological considerations or as they attain their life expectancy) consideration shall be given to recycling to more coastal dependent land uses.

"All new service station developments shall be required to install devices by which evaporative losses during fueling operations will be minimized. [Such requirements are now being implemented in several California urban areas, although there have been delays.]

"Development of alternative transportation modes (e.g. public buses, trains, etc.) shall be strongly encouraged in new and expanding existing developments (e.g. restricting access and on-site parking via limited arterial design capacities, mandatory private financial support for alternative modes, in lieu parking fees and public subsidies for transport facilities.)"

6. San Diego: "...recognition shall be given to protecting coastal resources in preparing the air pollution implementation plan for the San Diego Air Basin and State of California, pursuant to the mandate of the National Clean Air Act of 1970.

"...major sources of air pollution...shall not locate near the immediate coastline unless no alternative exists and unless such development is water-dependent. It shall be the long-range goal of the Commission, or its successor agency, to evaluate and promote locations for such development that will contribute the least to the degradation of the Basin's air quality.

"...prior to the construction of new fossil-fuel power plants, or any expansion of existing plants, the Commission, or its successor agency, shall find that the cumulative air pollution levels following such construction or expansion, shall not endanger any important coastal resources nearby or downwind, including agricultural uses. It shall also be determined that such expansion will be consistent with Federal Air Quality standards.

"Because the amenities of the coastline of San Diego County generate a significant amount of recreational automobile traffic, the accommodation of recreational trips should be given special attention in the Transportation Control Plan for the San Diego Basin.

"...landscaping can help filter air pollutants from nearby sources, enclosure of certain activities can contain pollutants' dispersal, and pollutant dispersion can be enhanced through better air circulation and ventilation."

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