

IMPERIAL COUNTY GENERAL PLAN

OVERVIEW

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IMPERIAL COUNTY GENERAL PLAN OVERVIEW

I. INTRODUCTION

A. Preface

The Imperial County General Plan consists of nine Elements entitled Land Use, Housing, Circulation and Scenic Highways, Noise, Seismic and Public Safety, Agricultural, Conservation and Open Space, Geothermal and Transmission, and Water. Also included in the General Plan is a Land Use Map designating a series of land use categories which identifies locations, and describes the type and anticipated maximum allowable density of ultimate development.

This comprehensive General Plan has been developed following a thorough examination of the County's physical and cultural resources, socio-economic conditions, and business climate. It provides a balance of land use policies and programs which seek to maintain the "quality of life" in the region. The General Plan is a dynamic document in that it can and should be amended as needed to respond to changing community and regional goals, physical and public infrastructure resources, and social concerns.

The General Plan presented herein is the product of a cooperative effort on the part of County staff, a community Ad Hoc Advisory Committee, Planning Commission, Board of Supervisors, and many citizens and groups. This effort began in 1987 and was completed in 1993. The Plan is aimed at creating a comprehensive guide for development within the County and provides mechanisms to achieve desired community goals and objectives through a coordinated implementation program.

This Overview is not an adopted Element of the General Plan, but rather is intended to provide a wide range of historical, statistical, and other informative data about the County in one document and, at the same time, supplement each of the Elements by avoiding repetitious statistics. This Overview may be revised, without being considered a General Plan Amendment, as updated information becomes available.

B. What is a General Plan?

A General Plan is the public document required by state law (Government Code Section 65300 *et seq.*) and adopted by local government as the policy guide concerning the desirable future physical development of a community. It serves to express in text and diagram form the type of physical environment and the organization of physical development within the community, in order to create a functional, healthy, decent, and efficient place in which to live. It also serves to provide sufficient information about the long range goals of the community in order to enable public and private interests to coordinate their activities and to work in harmony toward creating a desirable community. Finally, the General Plan serves to provide technical knowledge about the area's resources and potential so that future growth and change may be directed in an orderly and well planned fashion.

The general plan seeks to direct growth, particularly urban development, to areas where public infrastructure exists or can be provided, where public health and safety hazards are limited, and where impacts to the County's abundant natural, cultural, and economic resources can be avoided.

This directive nature of the general plan is needed in order to provide for the preservation and

conservation of adequate scenic, recreational, and wildlife habitat open space, agricultural areas, mineral resources, and the air and water quality of the County.

C. Legislative Mandate

For the reasons stated above, the California legislature has established the General Plan as the comprehensive statement of public policy by which to evaluate all decisions regarding the development of land, the extension of public infrastructure, and the conservation and wise use of natural resources.

Preparation of the General Plan responds to requirements set forth by the State of California Government Code Section 65300, which states that each "county or city shall adopt a comprehensive, long-term general plan for the physical development of the county or city..." Further, Government Code Section 65302 continues that, "The general plan shall consist of a statement of development policies and shall include a diagram or diagrams and text setting forth objectives, principles, standards, and plan proposals." The Government Code identifies seven required elements of a General Plan, which are the following: Land Use Element, Circulation Element, Housing Element, Conservation Element, Open Space Element, Noise Element, and Safety Element.

The seven mandatory elements included in the Imperial County General Plan are briefly described below:

- The [Land Use Element](#) designates the general distribution, location, and extent (including standards for population density and building intensity) of the uses of land for housing, business, industry, agriculture, open space, public facilities, and other categories of public and private uses.
- The [Housing Element](#) (amended 2000) identifies existing and projected housing needs and establishes goals, policies, objectives, and programs for the preservation, improvement, and development of housing to meet the needs of all economic sectors of the community.
- The [Circulation and Scenic Highways Element](#) identifies the location and extent of transportation routes and facilities. It is intended to meet the transportation needs of local residents and businesses, and as a source for regional coordination. The inclusion of Scenic Highways provides a means of protecting and enhancing scenic resources within highway corridors in Imperial County.
- The [Noise Element](#) examines noise sources and provides information to be used in setting land use policies to protect noise sensitive land uses and for developing and enforcing a local noise ordinance.
- The [Seismic and Public Safety Element](#) identifies goals and policies that will minimize the risks associated with natural and human-made hazards, and specifies land use planning procedures that should be implemented to avoid hazardous situations.
- The [Conservation and Open Space Element](#) provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space.

As provided by Government Code Section 65301(a), the County of Imperial has chosen to combine the Open Space Element with the Conservation Element and incorporate Scenic Highways, an optional element, with the Circulation Element. The County has also chosen to include three other optional elements, as permitted by Government Code Section 65303, and which comply with requirements that are requisite to all Elements within the General Plan and have the same force and effect as the mandatory Elements. These optional Elements are described below:

- The [Agricultural Element](#) describes the status and trends of local agriculture and expresses community goals with regard to conserving productive agricultural lands within the County and minimizing or avoiding conflicts with urban and other land uses.
- The [Geothermal and Transmission Element](#) contains the latest knowledge about local geothermal resources, current development technology, and County, State, and federal policy regarding the exploration, development, and transmission of geothermal energy.
- The [Water Element](#) identifies and analyzes the sources and availability of water within the County and establishes policies and programs to maintain its availability, conserve its use, and preserve its quality.

II. IMPERIAL COUNTY: A CONCISE HISTORY

A. Native American Period

A generally accepted outline of Imperial County cultural history is recognized by the archaeological community, with the realization that many details are not yet fully understood. Yet evidence clearly indicates occupancy as early as 12,000 years ago. Based on the earliest relics, rock features, and cleared circles discovered to date, hunter-gatherer patterns of occupation existed until about the time of the filling of Lake Cahuilla at about A.D. 1050.

In the northern Colorado Desert, the Cahuilla and Chemhuevi bands represented a Shoshonean intrusion between 1000 and 1500 years ago. These peoples occupied portions of the Lake Cahuilla shoreline and the Colorado River region. The closely related Kumeyaay and Yuman peoples inhabited the Colorado Desert and lower Colorado River area, respectively.

Desert Cahuilla inhabited the northern end of the Salton Trough in Coachella Valley. Lines of trade and communication existed between the Shoshonean-speaking Cahuilla and the Yuman-speaking Kumeyaay neighbors to the south. Aggressive interactions between these peoples were rare.

Cultural descriptions of these Native American groups, from the time of early European contact to the present, have been preserved in the writings of explorers, soldiers, settlers, ethnographers, and Native Americans. Based upon these written works of two centuries, a rather complete picture of native Colorado Desert people can be recreated.

The agriculturally-oriented Yuman, who call themselves Kwichyana or Kuchiana, were first named "Yuman" by Friar Kino in the early 1700's. Today, the Native Americans of this region identify themselves as Quechan, a derivation of the Kwichyana (or Kuchiana) name.

Due to their location along the lower Colorado River, the Quechan people experienced the earliest European contact in Southern California. The first European to encounter the Quechan was Hernando de Alarcon when he sailed up the Rio de los Tizonas (Colorado River) in 1540.

Following the early explorers, missionaries entered the Colorado River region. The Kumeyaay were first encountered by the Spanish during the 1775 expedition of Juan Bautista de Anza and Father Hermengildo and later by Francisco Garcés in 1781. The establishment of missions in Yuman territory, however, was not successful. Two missions were established in 1779 only to be destroyed within two years by Quechans rebelling against a regimented regime. A punitive force of Spanish soldiers under Pedro Fages was sent to the territory, but the missions were not rebuilt or reoccupied. Following this exploratory period by the Spanish, few contacts between Native Americans and Anglos occurred until gold rush immigrants passing through the Gila/Colorado River along the Southern Immigrant Trail traveled across the Valley in 1848 and 1849. Due to numerous hostile confrontations during this period, the United States established the military fortification of Fort Yuma.

As settlers entered the Imperial-Mexicali Valley and adjacent areas, inevitable conflicts occurred due to the competition for the scarce water and arable land within the desert. Native American lifestyles were jeopardized by disease, drought, white settlement, and assimilation into Anglo Imperial Valley or onto Indian Reservations.

B. Settlement of Imperial Valley

In the nineteenth century, Imperial Valley held little attraction for settlers. The stage routes along the Southern Emigrant Trail and the Alternate Eastern Route to San Diego were the main transportation corridors through the valley in the early years. Although many people traveled through Imperial Valley, few recognized its agricultural potential.

Attempts were made in the latter half of the nineteenth century to irrigate and develop Imperial Valley; however, lack of funds as well as water and government restrictions deterred any substantial development. The initial irrigation of Imperial Valley eventually resulted from the efforts of Charles R. Rockwood and George Chaffey, experienced water engineers who organized the California Development Company in the early 1890's. To entice settlers, the developers called the newly irrigated area, the Imperial Valley.

In March of 1900, surveys for a feasible canal route from the Colorado River to Imperial Valley were conducted and the Imperial Land Company was formed as a subsidiary of the California Development Company. The Imperial Land Company was organized to promote opportunities for agricultural and other development of the Valley and to bring in settlers. The settlers would be able to claim government land under the Desert Land Act.

The California Development Company succeeded in conveying the first irrigation water to Imperial Valley in 1901, with the opening of the Alamo Canal. The Alamo Canal project spawned a series of towns and the large agricultural area in Imperial Valley. The community of Imperial was laid out in 1901.

From 1901 to 1905, Imperial Valley developed rapidly as land was cleared and more irrigation and drainage ditches were completed. By 1907, the California Development Company had succeeded in attracting nearly 15,000 people and Imperial County, originally part of San Diego County, was incorporated as a separate jurisdiction.

Initially, the transcontinental line of the Southern Pacific Railroad was located along the north end of Imperial Valley and northeast of the Algodones Sand Dunes to Yuma. To serve the new settlements in Imperial Valley, a branch line was built from Niland in the spring of 1903, permitting increased commercial export of agricultural products.

A faulty canal entry on the Colorado River caused disastrous flooding in the Imperial Valley between 1905 and 1907, inundating new and valuable agricultural lands and creating the Salton Sea in the north end of Imperial County. Following a monumental effort by the California Development Company and the Southern Pacific Company, the river was turned back into its previous channel.

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In the wake of this flood and to prevent future flooding, the residents of Imperial Valley were forced to make major improvements of the irrigation system. By 1916 the Imperial Irrigation District had bought the rights and property of the California Development Company and Southern Pacific Company, and settlement of Imperial Valley expanded along with the growth of agriculture.

The All-American Canal was completed in 1941, eliminating those portions of the supply systems previously located in Mexico and a reliable water supply was assured. Agriculture still continues to be the predominant activity in Imperial Valley, however, other major industries are now becoming part of a wider economic base such as geothermal energy development, mining, customs brokers, tourism, and the provision of essential regional and national facilities such as correctional institutions and military training facilities.

III. HUMAN AND NATURAL RESOURCES

Imperial County is located in the southeast corner of California. It is bordered on the west by San Diego County, on the north by Riverside County, on the east by the Colorado River which forms the Arizona boundary, and on the south by 84 miles of the International Boundary with the Republic of Mexico (Baja California). The County covers an area of 4,597 square miles or 2,942,080 acres.

Approximately fifty percent of County lands are undeveloped and under federal ownership and jurisdiction. Presently, one-fifth of the nearly 3 million acres of the County is irrigated for agricultural purposes, most notably the central area known as Imperial Valley. The developed area, where the County's incorporated cities, unincorporated communities, and supporting facilities are situated comprises less than one percent of the land. Approximately seven percent of the County is the Salton Sea. The following table, which also appears in the Land Use Element, shows generalized land uses for the County.

IMPERIAL COUNTY LAND USE DISTRIBUTION (IN ACRES*)		
Irrigated (Agriculture)		
	Imperial Valley	512,163
	Bard Valley (Including Reservation)	14,737
	Palo Verde Valley	7,428
	Total	534,328 (18.2%)
Developed		
	Incorporated	9,274
	Unincorporated	8,754
	Total	18,028 (0.6%)
	Salton Sea**	211,840 (7.2%)
Desert/Mountains		
	Federal	1,459,926
	State	37,760
	Indian	10,910
	Private	669,288
	Total	2,177,884 (74.0%)
IMPERIAL COUNTY TOTAL		2,942,080 Acres
* All acreages are approximations and should, therefore, only be used for informational purposes.		
** Calculated at elevation of -230.		

A. Social Characteristics

1. County Population

Imperial County Planning Department bases its population estimates on building permits and housing unit change. From this annual compilation the Population Research Unit of the California Department of Finance (DOF) estimates the annual change in population. According to 1992 DOF estimates, the unincorporated area population is 28,826 and the total County population is 117,421. This compares to the 1990 census results of 27,360 for the unincorporated area and 109,303 for the entire County. The following table, also from the Land Use Element, presents the 1990 census data.

IMPERIAL COUNTY POPULATION AND HOUSING (1990)		
Community	Population	Housing Units
Brawley	18,923	6,124
Calexico	18,633	4,832
Calipatria	2,690	757
El Centro	31,384	10,180
Holtville	4,820	1,477
Imperial	4,113	1,372
Westmorland	1,380	432
City Subtotal	81,943	25,174
Unincorporated Area	27,360	11,375
Total	109,303	36,549

Source: Bureau of the Census/U.S. Department of Commerce

IMPERIAL COUNTY POPULATION AND HOUSING UNINCORPORATED COMMUNITIES 1990		
Community	Population	Housing Units
Heber	2,566	600
Niland	1,183	535
Seeley	1,228	365
Ocotillo, Nomirage, Plaster City	719	648*
Salton Sea	1,953	1,263
Winterhaven/Bard	3,155	1,637*

Total	10,804	5,048
* Estimated from 1980 figures, adjusted based on 1990 population. Source: 1990 Census, Department of Finance		

Population in the unincorporated areas of the County tends to concentrate in agricultural areas and in recreation/retirement communities. Agriculture related unincorporated communities include the townsites of Heber, Niland, and Seeley in the Imperial Valley. Along the Colorado River, in the eastern portion of the County, small population clusters also exist within the townsites of Palo Verde and Winterhaven. Recreation/retirement communities include Ocotillo/Nomirage located in the southwest portion of the County, and Hot Mineral Spa and Bombay Beach on the northeastern shore of the Salton Sea. The West Shores communities of Salton City, Salton Sea Beach, and Desert Shores are also largely retirement and recreation communities, though increasingly their populations are becoming more diversified. These communities experience a noticeable increase in population during the winter months when visitors converge to the area to avoid cold, wet winters in other parts of the United States and Canada.

The County of Imperial has a slightly different age distribution than the state average in the proportion of children between the age group 0-19 (38%). The 5-14 year old group (21%) is significantly larger than the state average (14.85%) which indicates that there is a larger than average percentage of school age children. Consequently, school enrollments will not decline. Persons over 55, however, lag behind in the age proportion (18%) compared to the California average (19.71%).

The seven incorporated cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland, account for 75 percent of the total population; and, in the past, have grown at a faster pace than the rural areas. The City of El Centro is the County Seat and, with a 1990 population of 31,384, the largest city in the County and the administrative, financial, medical, and governmental center for the region.

2. Income

Imperial County's 1992 median family income, as estimated by the State Department of Finance, was \$31,500. This is similar to many of the state's rural counties, but less than the state's agricultural counties. Families classified as living in poverty, as defined by the Federal Bureau of the Census, constituted 23.8% of the County population in 1990, the highest rate of any California county, and a significant increase from 1980 when 15.3% of the County population was identified by the federal census as living in poverty. The federal poverty level for a family of four is an annual household income of \$12,675. Statewide, 12.5% of the population fell below the poverty level in 1990. Unlike many California counties where poverty overwhelming burdens black or Hispanic residents, Imperial County's rate was not substantially different, with 22.5% of white, 27.8% of black, and 29.4% of Hispanic residents reporting incomes below the poverty level.

3. Employment

Agriculture and its related industries constitute the predominant economic base in Imperial County and is the largest employer with 35.1% of the work force. Government is the second largest employer with 21.3%, followed by retail trade with 15.2%. Due to the County's good soils, a year-round growing season, gently sloping topography and complex system of irrigation canals, it has become one of the most productive agricultural regions in the world. Although agriculture is the dominant economic base, agricultural employment in Imperial County has slowly decreased. The 1990 annual average farm employment was estimated at 14,500 persons, down 400 from the previous year's average. The total crop valuation for agricultural commodities as compiled by the Office of Agricultural Commissioner showed a total valuation of \$1,106,811,000 in 1990.

Other significant contributors to the local economy are government; retail trade; winter visitors or "snowbirds"; the construction of two state prisons in the County; the growth of the geothermal industry in the area; mining of gold, aggregate, and other mineral resources; the expansion of the Naval Air Facility; an additional Mexico/USA border crossing; and approval of the North American Free Trade Agreement (NAFTA).

Of particular concern is the County's high unemployment rate which ranges between 30-40% annually, compared to 7-10% for the rest of California. In September 1992, the County Community Economic Development office estimated unemployment at 33.1% countywide. While much of this unemployment can be attributed to the presence of seasonally unemployed agricultural workers from Mexico and locally registered with the State Employment Development Department (EDD), an estimate of this factor is not known.

4. Housing

Based on 1990 housing information by the Bureau of the Census and Department of Finance, Imperial County had 36,549 housing units of which 21,749 or 59% were single-family units; 7,428 or 20% were multi-family units; and 7,382 or 20% were mobile homes. Mobile homes are particularly prevalent in the unincorporated areas of the County.

In the unincorporated portion of Imperial County the overall vacancy rate in 1990 was 16.74%, compared to 7.64% for the County total. This higher rate can be accounted for by the higher percentage of seasonally occupied housing units which are located in the County's desert communities, particularly around the Salton Sea.

5. Urban Services

a. Water and Sewer

The history of Imperial County is tied to the availability of water, and the availability of this resource will play an important role in determining the population and economic growth of the region. Imperial Irrigation District (IID) distributes water to over 500,000 acres of farmland as well as to ten communities in the County for domestic purposes: Calexico, Holtville, El Centro, Imperial, Brawley, Westmorland, Calipatria, Niland, Seeley, and Heber. Each of these cities and unincorporated communities has its own water treatment facilities for treating and distributing water within its jurisdiction. Ocotillo/Nomirage is provided water service by private water companies and individual wells; Palo Verde by the Palo Verde County Water District; and Hot Mineral Spa/Bombay Beach by

the Coachella Valley Water District. The Winterhaven Water District (WWD) supplies water to approximately 1,000 customers in Winterhaven.

Water service for non-drinking domestic use in rural areas has also historically been provided from IID canals and laterals. Because this water has not received treatment for human consumption, these rural customers supplement the IID water with drinking water delivered by private companies to 100-gallon water storage tanks at each home. On December 22, 1992, the U.S. Environmental Protection Agency (EPA) directed IID to stop new residential connections to their canals, to advise existing customers of the health dangers from drinking canal water, and to develop a plan to provide water treatment for rural domestic water users.

Sewage treatment is provided by each of the cities and by the unincorporated communities of Heber, Niland, Seeley, and Winterhaven. These sewage treatment plants are licensed by the California Regional Water Quality Control Board (CRWQCB) for the Colorado River Basin and generally provide primary and secondary treatment. Rural residences on existing lots and minor subdivisions utilize septic tanks and leach line systems which generally require a minimum lot size of 20,000 square feet (approximately one half acre) per dwelling unit for approval by the County Health Department. Bombay Beach has a public sewage system operated by the Coachella Valley Water District, while Hot Mineral Spa relies on subsurface septic systems or facilities operated by mobile home and RV Parks. Ocotillo/Nomirage and Palo Verde have no sewage treatment facilities and also rely on subsurface septic systems.

b. Solid Waste Disposal Facilities

All cities regulate waste storage and disposal and provide for waste collection services within their jurisdiction, utilizing either a city-operated system or a contract with a private firm. Waste collection services are available in some unincorporated areas through contract with private firms.

Currently there are ten County-operated Class III disposal sites throughout Imperial County which accept non-hazardous wastes. Three of the County landfills, near Brawley, Imperial, and Calexico, are under the ownership or control of the County; six, Holtville, Niland, Salton City, Hot Mineral Spa, Ocotillo, and Palo Verde, are on Bureau of Land Management (BLM) property; and one, the Picacho landfill, serves the Winterhaven/Bard area and is located on land owned by the Quechan Indian Reservation.

In addition to the public sites, Imperial Republic Acquisitions operates a private Class III waste disposal facility in the unincorporated area northwest of the City of Imperial; Laidlaw Environmental Services operates a Class I facility west of the City of Westmorland; and Desert Valley Company operates a Class II solid waste disposal/storage site northwest of the City of Westmorland.

For more detailed information on solid and hazardous waste disposal sites, please refer to the Health Department, Imperial County Hazardous Waste Management Plan. The Imperial County Integrated Waste Management Plan is being prepared by the Department of Public Works, with a draft to be presented to the State Integrated Waste Management Board in January 1994.

c. Power/Gas

Electrical power requirements for residential, commercial and industrial uses within Imperial County are provided by the Imperial Irrigation District (IID). The only exception is the Palo Verde area where power is supplied by Southern California Edison.

In 1984, IID was connected to the new 500-KV Southwest Powerlink. This transmission system can be utilized to import resources for the District's needs and to export geothermal energy. The IID and geothermal industry recently completed the Heber to Coachella Valley 230 KV line through a mutually-agreed upon financing arrangement.

Liquid petroleum products come to and pass through the County via the twenty inch Santa Fe Pacific Pipe Lines. This line, generally within the Southern Pacific Railroad right-of-way, follows the northwest to southeast trend of the County. The main storage facility is located at Aten and Clark Roads just east of Imperial. Natural gas comes to the County in parallel eight to ten inch lines of the Southern California Gas Company which run generally straight south through the County.

d. Public Safety

The Sheriff's Department is responsible for enforcement of State laws and County ordinances, operation of jail detention facilities, prevention of crime, and apprehension of criminals in unincorporated areas. The adult detention facilities include the County jail and minimum security facility.

Sheriff substations are located in the communities of Brawley, Salton City, and Winterhaven, with resident deputies located in the unincorporated communities of Ocotillo, Bombay Beach, Niland and Palo Verde. All other areas are patrolled by the main patrol division.

Additional public safety is provided by the County Fire Department/Office of Emergency Services in cooperation with the incorporated cities and volunteer units in the unincorporated communities. The County Fire Department's main facility is located at the County Airport in Imperial.

e. Regional Transportation

Interstate 8 (I-8) is the primary east/west route through the County between San Diego and Yuma, Arizona. It passes through the City of El Centro and provides connections via State Routes 86 and 111 to Heber and Calexico to the south and to Imperial and Brawley to the north. SR-86 continues along the west side of the Salton Sea to serve the City of Westmorland and the Salton City area, and joins Interstate 10 at Indio in Riverside County. SR-111 serves the east side of the Salton Sea, through Calipatria and Bombay Beach/Hot Mineral Spa to also connect with I-10 in Indio. Both routes carry inter-regional commercial and agricultural traffic from Imperial County and Mexicali, Mexico to markets and transportation centers in Los Angeles and Orange County. These routes are also heavily used by recreational travelers to destinations in Imperial County, Baja California, and Arizona.

State Route 78 (SR-78) commences at I-10 at Blythe in Riverside County, traverses Imperial County in an east/west fashion through Palo Verde, Brawley, and Westmorland, and continues through San Diego's north county before terminating at I-5 in Oceanside.

Regional airline operations are provided to Imperial County Airport and Calexico International Airport. In addition, airports in Brawley and Calexico provide regional service. Railway freight operations use the Southern Pacific line from Riverside County along the east side of the Salton Sea to Yuma and points east. The San Diego and Eastern Railroad has been non-operational through the Jacumba Mountains following Tropical Storm Kathleen in 1976. Work to re-open the line has not yet been completed.

f. **Education**

The County educational system is made up of eighteen school districts consisting of 37 elementary schools, 7 high schools, 6 adult schools, one community college (Imperial Valley College) and one satellite campus of San Diego State University. The Imperial County Office of Education serves as the intermediate unit between the school districts and the State Department of Education. Among the services provided are Special Education, Migrant Education, Youth Employment Services and the Regional Occupation Program.

g. **Health Care**

Imperial County has three hospitals located in the three major cities: Calexico Hospital in Calexico, El Centro Regional Medical Center in El Centro, and Pioneers Memorial Hospital located in Brawley. Each hospital provides varying degrees of health education information and programs. The Clinica de Salud del Pueblo, a primary health care clinic provides medical and dental service for lower income families with clinics in Brawley, Calexico, and Blythe.

The County Health Department provides community health education, outreach services to seniors, and children's immunization clinics. Imperial Valley Home Patient Care is a private agency providing a variety of home health services to Imperial County residents.

Imperial County Mental Health Services include out-patient counseling and a day treatment center. Acute involuntary mental health patients are transported to hospitals outside the County. Drug and alcohol education is also provided in the schools and various service clubs.

6. Recreational Resources

Imperial County's unique natural environment provides opportunities for numerous recreational activities and has made the County a destination for recreationists and nature lovers from Southern California and the nation. The mountains, desert, Salton Sea, and Colorado River lure tens of thousands of visitors annually. The warm winter climate attracts "snowbirds" who return each year to RV Parks and recreational communities.

Passive activities include hiking, rockhounding, bird watching, fishing, and relaxing in natural hot water springs; while more active pursuits include off-road vehicle use, water-skiing, golf, and tennis.

With nearly one million acres managed locally by the federal Bureau of Land Management, many improved and primitive camping areas exist throughout the County. In particular, off-road vehicle activities in the Algodones Sand Dunes attract over 50,000 people on several weekends each year to open use areas at Glamis, Gecko, Mammoth Wash, and Buttercup Valley. Other off-road vehicle areas include Ocotillo Wells Off-Highway Vehicle Park and the Heber Dunes.

7. Cultural Resources

In Imperial County most archeological work can be separated into two distinct sections: prehistoric and historic. Prehistoric archaeology deals with aboriginal culture and systems which existed prior to Spanish colonization in 1769. Historical archaeology deals with uncovering facts that no known historical documentation has provided.

Approximately 7,000 prehistoric sites have been recorded in Imperial County. A wide variety of site types are present including settlements, trails, rock art, intaglios, fish traps, and resource procurement and manufacturing locations. The current distribution and availability of such resources are a consequence of several environmental and historic factors. Environmental factors include the periodic flooding of ancient Lake Cahuilla and the existence of the New River and Alamo River, all of which encouraged prehistoric settlement and resource use in the vicinity of their shorelines and riverbanks.

Approximately 200 historic sites have also been recorded in the County. Important historic resources date back to 1540, when the Hernando de Alarcon Expedition discovered Alta California from near the intersection of Interstate 8 and Highway 186 on the Colorado River. The next major historical event occurred in 1775 when Juan Bautista de Anza first passed through the area. The Anza Trail itself constitutes a significant cultural resource in the Yuha Desert, as does the later Sonoran/Southern Emigrant Trail which served as a major route to and from coastal California from 1825 to 1865. Several historical markers have been established along the Anza Trail, including the monument of Los Puertecitos near Highway 78 and Kane Springs Road.

Two additional significant resources that stem from the Spanish period (1769-1821) are the La Purisma Conception Mission site, located at Mission St. Thomas on Indian Hill, and the San Pedro y San Pablo de Bicuñer Mission site, located near Laguna Dam. The former was constructed in 1780 at the request of the local Indians, and the latter in January 1781 as a strategic settlement for those crossing the Colorado River. Both were attacked and destroyed by the Quechans on July 17, 1781.

One of the few known historic sites from the Mexican period (1821-1848) is Fort Romualdo Pacheco. Located about seven miles west of Imperial near the New River, this fort was the only Mexican fort in Alta California, and was constructed to help maintain the Sonoran Trail. It was constructed in 1825 and attacked by the Kamia on April 26, 1826, resulting in the deaths of three soldiers and the fort's abandonment.

Few sites remain from the early American period (1848 through the early 1900s), since little settlement and other use occurred until the availability of irrigation water in 1901. One American period site has received a historical monument for being the location where the first irrigation water

entered the County. This monument is located a few feet from the U.S.-Mexican border on Barbara Worth Road, between Calexico and the Alamo River.

Another significant historical site is the Plank Road near I-8 along the Algodones Sand Dunes. Utilized from 1914 to 1927, this seven-mile long road had been dedicated as California Registered Historical Landmark No. 845. Other site of local historical importance are described in *Imperial Valley Historical Markers* (Little 1982).

B. Governmental Structure

1. Cities, Special Districts, and Private Utilities

Imperial County is served by a variety of governmental organizations and a few private utility companies which play a role in local land use management and development. The seven incorporated cities within the County are Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland. Each jurisdiction has its own General Plan and each provides facilities for water and sewage treatment, police and fire services, and other governmental functions.

The unincorporated communities which also provide local services through single- or multi-purpose special districts are Bombay Beach, Heber, Niland, Ocotillo, Palo Verde, Seeley, Winterhaven, and the Salton City area. Services provided are usually limited to water treatment for domestic use, but may also include sewage treatment, fire protection, and park maintenance. For example, in Ocotillo only a volunteer fire department is provided by its District; in Palo Verde, only water treatment is provided; sewer and water treatment is provided in Heber and Seeley; and sewer, park maintenance, and management of a local golf course is provided in Salton City.

Private utility companies also operate in the County, the largest of which is Southern California Gas Company which serves Calipatria, Calexico, El Centro, Heber, Holtville, Imperial, Niland, Seeley, and Westmorland. Several private water companies provide domestic water in Ocotillo; and in Hot Mineral Spa sewage treatment is provided by individual mobile home/RV parks.

2. Imperial Irrigation District

Imperial Irrigation District (IID) is the principal regional agency in the County, in terms of services provided. Except in each of the four distant corners of the County, IID provides water for agriculture and to local cities and districts to treat for domestic use. It also distributes electrical power purchased from outside the County and from local hydroelectric and steam plants. Recently, it has been evaluating the possibility of building and operating sewage treatment plants.

3. Local Agency Formation Commission

The Local Agency Formation Commission (LAFCO) is an intra-local agency that was created by state legislation and is designed to ensure that changes in governmental organization occur in a manner which provides efficient and quality services and preserves open space land resources. The creation of LAFCO was a legislative response to actions by local jurisdictions in the 1940's and 1950's that incorporated or annexed large, irregular portions of land in a manner which resulted in irrational urban boundaries and "stranded" some populated areas without efficient services or with no services at all. In 1963, the Legislature established Local Agency Formation Commissions in each county and gave them regulatory authority over local agency boundary changes. Additional legislation in the 1960's extended LAFCO authority, and in the 1970's the Legislature recognized the connection between decisions concerning governmental organization and the issues of urban sprawl and loss of prime agricultural land. The Legislature and the courts have also required LAFCO agencies to implement the California Environmental Quality Act (CEQA) as it applies to LAFCO actions.

LAFCO is empowered to review, approve or disapprove incorporations and disincorporations of cities; special district formations and dissolutions; boundary changes of cities; special district annexations, consolidations, and reorganizations; and to establish local government "spheres of influence". The sphere of influence for each governmental agency is a plan for its ultimate boundary and service area. The LAFCO function is outlined in State of California, Government Code Section 56000 *et seq.*, known as the Cortese-Knox Local Government Reorganization Act of 1985.

The sphere of influence of each affected local agency is one of the many factors that LAFCO must consider when acting on a proposal for annexation or other boundary change pursuant to Government Code Section 56841(h). Every determination made by LAFCO regarding matters under its jurisdiction must be consistent with the spheres of influence of the local agencies affected by those determinations.

A copy of LAFCOs rules may be obtained from the Executive Officer, c/o the Imperial County Planning/Building Department.

4. Airport Land Use Commission

The basic purpose of an airport land use commission is to help ensure that proposed development in the vicinity of airports will be compatible with airport operations. The Imperial County Airport Land Use Commission (ALUC) is organized in the basic manner provided by state law -- two county representatives, two representatives of the cities in the county, two representatives of the airport managers, and one general public representative. Staff for the Commission is provided by the Imperial County Planning Department.

The Commission adopted the *Airport Land Use Compatibility Plan* June 5, 1991. The Plan sets forth the criteria and policies which the ALUC will use in assessing the compatibility between the principal airports in Imperial County and proposed land use development in the areas surrounding them. The emphasis of the Plan is on review of local general and specific plans, zoning ordinances, and other land use documents covering broad geographical areas. The Commission does not have authority over existing incompatible land uses or the operation of any airport.

The Plan specifically pertains to the land uses surrounding the following seven airports: Brawley Municipal Airport, Calexico International Airport, Calipatria Municipal Airport, Holtville Airport, Imperial County Airport, Salton Sea Airport, and the Naval Air Facility El Centro. Additionally, the Plan provides guidance for Commission review of new airports and heliports proposed for construction in the County.

5. Air Pollution Control District

Imperial County is located within the Southeast Desert Air Basin (SEDAB) covering the Imperial, Coachella and Antelope Valleys eastward to the California border. The Imperial County Air Pollution Control District (APCD) was established in 1971. It has County-wide jurisdiction and is responsible for ensuring that the ambient air quality standards of the federal Clean Air Act and the California Clean Air Act are achieved and maintained. The state Air Resources Board (ARB) also shares this local responsibility and is solely responsible vehicular emission control.

Particulate matter originating from agricultural activities is the primary air quality concern in Imperial County. Air pollution monitoring stations controlled by APCD are located in Brawley, El Centro, and Calexico. These stations determine if the County is meeting the National Ambient Air Quality Standards (NAAQS). These standards are the levels of air quality necessary to protect the public health and welfare from any adverse effects with an adequate margin of safety.

C. Natural Environment

1. Landform

The Salton Trough, the most dominant landform within the County, comprises the northern landlocked portion of the Gulf of California and includes the Coachella, Imperial and Mexicali Valleys. The elevation of this broad alluvial plain ranges from 47 feet above sea level at the high point of the Colorado River Delta in Mexico to -275 feet below sea level near the Riverside County line. The lowest portion of the Trough is covered by the Salton Sea, California's largest inland body of water. The sea covers approximately 211,000 acres or 330 square miles, and was at its highest level in April, 1986 at -226 feet.

The complex geologic structure of the Salton Trough has been evolving for millions of years. It is a "rift" in the earth's crustal plates. The East Pacific Rise is the boundary between the Pacific and North American Plates. It extends up the Gulf of California by a series of "spreading centers" with strike slip faults. The thinning of the crust from the slow but continuous widening of the Salton Trough causes the earth's magma to rise closer to the surface and generate abnormally high heat flow which, in turn, heats deep groundwaters.

The irrigated portion of the County is roughly coincident with the shoreline of the ancient Lake Cahuilla and the sea level contour. Non-marine and alluvium sediments cover large portions of the area, especially at the base of the mountain ranges. The major drainage watershed of the County and northern Baja California into the Salton Sea covers 8,360 square miles. The valley has two natural waterways, the Alamo River and New River, which originate south of the border and flow northward to the Salton Sea. These waterways are historic channels which carried Colorado River water and/or stormwater at various times. Presently, the continuous flow into the Salton Sea is due to irrigation run-off.

The mountains are primarily extrusions of volcanic, granitic, igneous and metamorphic rock complexes and exhibit extensive faulting. These include the Santa Rosa, Fish Creek, Coyote, and Jacumba Mountains to the west; the Chocolate Mountains to the northeast; the Algodones Sand Dunes, Picacho Peaks, and Cargo Muchacho Mountains to the southeast; and Palo Verde Peak to the northeast. The highest point in the County is 4,284 feet at Blue Angel Peak.

The Algodones Sand Dunes are over 40 miles in length and five miles wide and are generally located between the eastern edge of the Imperial Valley agricultural region and the Southern Pacific Railroad. These sand dunes are the most extensive in California, rising to heights of over 300 feet above the surrounding desert floor.

2. Geology

Several significant geologic hazards occur within Imperial County. Particularly noteworthy are seismic activity, flooding, and subsidence. Others include expansive soils and erosion. Detailed information on local geologic hazards can be found in the Seismic and Public Safety Element.

Most likely, some portion of Imperial County will be affected by a minor earthquake (less than Richter magnitude of 3.5 and causing little or no damage) every few months. Every five years, the County may experience a moderately damaging event (magnitude of 5.5 or greater). At least once every fifty years there will probably be a major earthquake (6.8 or greater). Micro seismicity occurs almost continuously in Imperial County (events less than 2.0), often dozens and sometimes hundreds of events per day.

Subsidence has been naturally occurring throughout the Salton Trough. This natural subsidence averages nearly two inches per year at the center of the Salton Sea, yet decreases to zero near the Mexican border. The subsidence is generally uniform, but local depressions, such as the Mesquite Sink south of Brawley, have formed. Earthquakes have also caused abrupt elevation changes in excess of one foot across fault lines.

The geologically young, unconsolidated sediments of the Salton Trough are subject to failure during earthquakes, especially throughout the irrigated portion where it is generally saturated. Liquefaction and related loss of foundation support is a concern which requires appropriate structural design for new buildings.

Flooding is another geological hazard within the County. Floodplains are generally located adjacent to rivers and other bodies of water, and in low lying areas near a water source. These are areas that are predicted to experience inundation from storms having a frequency of once every one hundred years. Floodways are more hazardous due to the anticipated velocities of the flood waters and expected damage to life and property. Such designations occur along the New and Alamo Rivers; Myers Creek, which flows into an alluvial fan in the Ocotillo area; within the levees along the

Colorado River; along the San Felipe Creek; and where numerous washes occur throughout the County.

Further information can be obtained by maps, reports, and studies on file with the County Planning Department including Flood Insurance Rate Maps (FIRMs) prepared by the Federal Emergency Management Agency, the Alquist-Priolo Special Studies Zones maps of local earthquake faults prepared by the State Geologist, the County General Plan Conservation and Open Space Element, and the Seismic and Public Safety Element.

3. Climate and Air Quality

Imperial County has an arid climate with hot, dry summers and mild winters. The climatic condition of the area is governed by large-scale warming and sinking of air in the semi-permanent subtropical high pressure center over the Pacific Ocean. The high pressure ridge blocks out most mid-latitude storms except in the winter when the high ridge is weakest and farthest south. Also, the coastal mountains prevent the intrusion of the cool, damp air found in the California coastal regions.

The flat terrain and strong temperature differentials created by intense heating and cooling patterns produce moderate winds and deep thermal circulation systems. Thus, even though the summers are hot, the general dispersion of local air pollution is greater than in the coastal basins where polluted inversion layers may remain for long periods.

The daily temperatures and seasonal variations can be extreme. The clear skies and rapid heating and cooling of the desert soils create high temperatures by day and quick cooling by night. The average annual rainfall is about 3 inches, the average annual air temperature is about 72 degrees Fahrenheit, and the average frost-free season is about 300 days per year.

The local air quality levels are currently better than most state standards. In the last two years, the County has not exceeded the federal ozone standard of 0.12 parts per million (ppm); however, particulate matter concentrations do not meet either state or federal standards. This failure is due to natural conditions such as wind blown sand and dust, and man made conditions such as agricultural burning of fields.

4. Soils

The soils of Imperial Valley consist of silty clays, silty clay loams, and clay loams that have formed on nearly level old lake beds and floodplain deposits. The soils are generally deep, high calcareous, and usually contain gypsum and soluble salts. The central part of the County, which is irrigated, generally has fine textured silts. Sandy soils predominate in higher areas, such as the East and West Mesas, and are typical of most of the deserts in the southwestern United States. These soils do not have well defined horizons and are several thousand feet deep.

In the dry climate of Imperial County, the soils have no potential for farming and only limited potential for wildlife habitat unless they are irrigated. The federal Soil Conservation Service's Soil Survey is a detailed inventory and evaluation of Imperial County soils (see Conservation and Open Space Element of the General Plan). Information derived from the Soil Survey publication may be useful in planning the use and management of soils for crops and pastures, as sites for buildings, highways, and other transportation systems, sanitary facilities, parks and other recreational facilities, and for wildlife habitats. From this data, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses

and other structures caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable may be selected, and measures to overcome soil limitations can be planned.

5. Water Resources

The source of virtually all surface waters in Imperial County is the Colorado River. The water is diverted from the Colorado River at the Palo Verde Weir north of Blythe by the Palo Verde Irrigation District for use in the Palo Verde Valley of northeast Imperial County and southeast Riverside County; and at the Imperial Dam into the All-American Canal by the Imperial Irrigation District (IID) and the Bard Irrigation District for use in the Imperial, Yuma, Bard, and Coachella Valleys. The 82-mile All-American Canal, the three-mile New Briar Canal, and 52 miles of drains are owned by the Bureau of Reclamation and are operated and maintained by IID.

The District also owns and operates a 1,590-mile network of main canals and laterals and 1,406 miles of main and lateral drains to serve approximately 500,000 acres of irrigated farm land. Water is also provided by IID to cities and special districts throughout the County which treat and distribute the water for urban uses.

6. Biological Resources

Plants. As part of the lower Colorado River Basin, much of the County has historically been a creosote bush (*Larrea divaricata*) plant community. With agriculture as the dominant activity since the early 20th Century, the constant clearing of the valley floor for farming has destroyed much of the native plant life. Remnants of natural plant communities exist along the Alamo and New Rivers, along the watershed boundaries of the surrounding mountains, and at the edge of the Salton Sea.

The plant species are predominantly those which are salt tolerant: saltbush (*Atriplex canescens* spp.), iodine bush (*Allenrolfea occidentalis*), tamarisk (*Tamarix* sp.), mesquite (*Prosopis juliflora*), arrow weed (*Pluchea sericea*), sea blight (*Suaeda* sp.), and other halophytes (salt tolerant plants).

The Conservation and Open Space Element of the County General Plan has a map indicating where sensitive plant species are located. Another source which lists the rare, threatened and endangered plant species is the Bureau of Land Management's "California Desert Conservation Area Plan (1980)." Within this federal Plan, plants are protected through the designation of Areas of Critical Environmental Concern (ACEC).

Animals. Natural desert wildlife populations can be found throughout the County, but mainly are concentrated in areas where there is limited agricultural disturbance due to plowing, planting, and the harvesting of crops. The natural desert environment surrounds the irrigated portion of the valley and also occurs as scattered patches within the farm lands. With two rivers and hundreds of miles of irrigation canals and drainage ditches, the abundant water supply creates pockets of riparian habitat where non-desert animal life exists.

Imperial County is located on one of the most important flyway corridors for migrant waterfowl, shorebirds, and songbirds. Generally, the greatest numbers and diversity of birds are found during the autumn and spring months. The presence of the Salton Sea, rivers, canals, drainage ditches, and fish farms are a strong attraction to bird species for food sources, nesting and resting sites. Refuges and management areas created by the California Department of Fish and Game and U. S. Fish and Wildlife Service also attract various mammals, bird species, reptiles, and amphibians.

7. Geothermal Resources

Generally, temperatures gradually increase with depth below the surface of the earth. Areas where increased temperatures are significantly higher are referred to as "geothermal anomalies". These anomalies may be caused by one or a combination of the following:

- Thinning of the earth's crust or volcanic activity bringing the hot magma of earth's interior closer to the surface.
- Chemical or mechanical activities deep in the crust itself which generate heat.
- Insulating layers in the rock and soil which confine the earth's heat so that temperatures build up.

If no water is present, the anomaly is called "hot dry rock". A few geothermal anomalies produce steam, such as the Geysers in Northern California. However, most water-dominated anomalies, like Imperial Valley, have hot fluids. Fifteen percent of the heat is contained in the fluids; the remaining eighty-five percent is in the rock itself.

The California Division of Mines and Geology recognizes the Salton Trough as an area underlain at shallow depths by thermal water of sufficient temperature for direct heat application. Separate anomalies are distributed throughout the Trough and have hotter fluids that are suitable for electrical generation. The percentage of dissolved salts in the hot water is extremely high which has resulted in the saline corrosion of equipment from use of this brine. Recent large scale development of geothermal resources has resulted from the ability to engineer cost-effective technology which overcomes technical problems and makes geothermal development economically feasible.

Although the entire Salton Trough is an anomaly, certain "hot spots" exist. Slow convection currents in the reservoir have developed, with the hotter fluids rising in some places, cooling near the surface, spreading out and descending in other places. Also, and perhaps most significantly, at various locations some of the sedimentary layers act as blankets preventing the heat from reaching the surface and escaping into the atmosphere. Clays, impermeable to water, and volcanic tuffs, for example, provide these confining insulating layers. Local hot spots are the Salton Sea, Heber, East Mesa and Brawley. Imperial Valley generally, and the Salton Sea anomaly in particular, may be the largest geothermal resource in the world. For this reason, the County General Plan includes the Geothermal and Transmission Element in order to provide information and policy to guide local development of this unique resource.

APPENDIX A

LIST OF ORGANIZATIONS AND PERSONS CONSULTED

The following organizations and persons were consulted in the preparation of the Imperial County General Plan, including the 1993 Update:

Local:

Airport Land Use Commission
Bombay Beach Community Service District
Brawley School District
Brawley Union School High School District
Brawley, City of
Brawley, City of, Library
Calexico Unified School District
Calexico, City of, Planning Department
Calexico, City of, Library
Calipatria Unified School District
Calipatria, City of
Central High School District
County of Imperial, Airport/Real Property, Dan Pavao, Manager
County of Imperial, Assessors Office, Jose Rodriguez
County of Imperial, Building Board of Appeals, Chairman
County of Imperial, Buildings and Grounds Department/Parks and Recreation Department, Randy Rister
County of Imperial, County Counsel Office, Joanne Yeager, Assistant County Counsel
County of Imperial, Department of Health Services, Environmental Health Services, Tom Wolf
County of Imperial, Department of Public Works, S. Harry Orfanos, Director
County of Imperial, Fire Department/Office of Emergency Services, Nicanor Benavidez, Chief
County of Imperial, Library, Berita Fulmer
County of Imperial, Office of Education
County of Imperial, Office of the Agricultural Commissioner, Steve Birdsall
Coyote Valley Mutual Water Company
El Centro School District
El Centro, City of, Planning Department
El Centro, City of, Library
Farm Bureau
Heber Public Utilities District
Heber School District
Holtville Unified School District
Holtville, City of
Imperial County Association of Realtors
Imperial Irrigation District, Charles L. Shreves, Manager
Imperial Irrigation District, Chairman, Board of Directors
Imperial Irrigation District, Water Department, Jesse Silva
Imperial Irrigation District, Power Department, Hank Legaspi
Imperial Unified School District
Imperial Valley College Museum, Jay C. Von Werlhoff, Archaeologist
Imperial Valley College, Hector Lopez, Ph.D.,
Imperial, City of
Kiwanis Early Risers Club of El Centro
Local Agency Formation Commission, Chairman
Magnolia Union School District
McCabe Union School District
Meadows Union School District
Mulberry School District
Niland Chamber of Commerce
Ocotillo Community Council

Ocotillo Mutual Water Company
Palo Verde Homeowners Association
Regional Economic Development, Inc.
Rotary Club of El Centro
Salton Community Services District
Salton Sea Fish and Wildlife Club
San Diego State University, Imperial Valley Campus
San Pasqual Valley Unified School District
Seeley County Water District
Seeley Union School District
The Great Salton Sea Experience
Westmorland Union School District
Westmorland, City of
Winterhaven County Water District

State:

State of California, Office of the Governor, Office of Local Government Affairs, Antero A. Rivasplata, Principal Planner
State of California, Caltrans, District 11, Bob Corbin, Civil Engineer
State of California, Department of Conservation, Division of Mines and Geology/Farmland Mapping and Monitoring Program
State of California, Department of Corrections, Planning and Construction Division,
State of California, Department of Finance, Population Research Unit
State of California, Department of Fish and Game, John Thompson, Wildlife Biologist
State of California, Department of Fish and Game, Kimberly Nicol, Fishery Biologist
State of California, Department of Fish and Game, Ronald E. Powell, Wildlife Manager Biologist
State of California, Department of Health Services, Office of Noise Control
State of California, Department of Resources, State Mining and Geology Board
State of California, Employment Development Department, Employment Data and Research
State of California, Regional Water Quality Control Board, Colorado River Basin
State of California, State Lands Commission

Federal:

Bureau of Indian Affairs
Quechan Indian Tribe
Torres-Martinez Indian Reservation
U.S. Army Corps of Engineers
U.S. Customs Service
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of Commerce, Bureau of the Census
U.S. Department of the Interior, Bureau of Land Management, El Centro Resource Area
U.S. Department of the Interior, Bureau of Reclamation
U.S. Fish and Wildlife Service, Calipatria
U.S. Marine Corps Air Station, Yuma
U.S. Naval Air Facility, El Centro

Regional:

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- AT&T
- Coachella School District
- Coachella Valley Water District
- Pacific Bell
- Palo Verde Water District
- Riverside, County of, Planning Department
- San Diego Gas and Electric, San Diego
- San Diego, County of, Planning Department
- Southern California Association of Governments
- Southern California Edison
- Southern California Gas Company
- Yuma, City of
- Yuma, County of
- Yuma Valley Water District